ENGLISH

AVR 745 Audio/Video Receiver

OWNER'S MANUAL

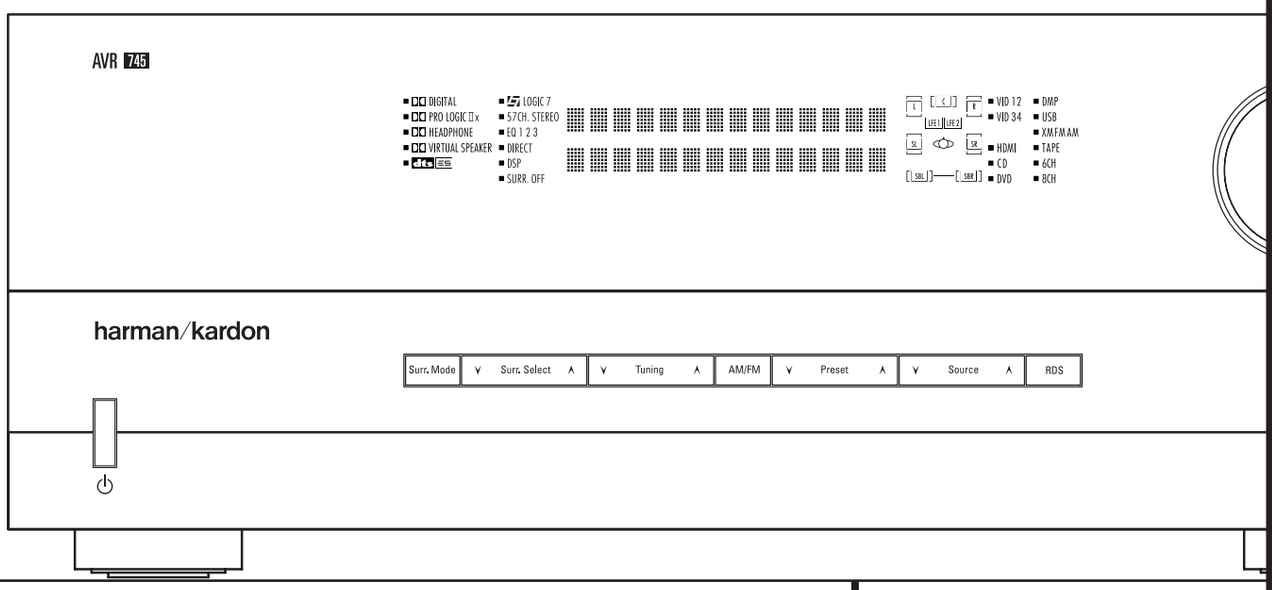

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Table of Contents

3 Introduction
4 Safety Information
4 Unpacking
5 Front Panel Controls
7 Rear Panel Connections
10 Main Remote Control Functions
12 Zone II Remote Control Functions
14 Installation and Connections
14 Audio Connections
14 Video Connections
15 HDMI Connections
16 SCART A/V Connections
18 System and Power Connections
20 Speaker Selection
20 Speaker Placement
22 System Configuration
22 First Turn On
22 Using the On-Screen Display
23 System Setup
23 In/Out Input Setup
26 Video Monitor Settings
26 Video Setup
29 Audio Setup
29 Surround Setup
31 Night Mode Settings
31 Using EzSet/EQ II
36 Manual Setup
36 Speaker Setup
38 Delay Settings
39 Output Level Adjustment
41 Additional Input Adjustments
41 EzSet/EQ II Preset Selection
42 Operation
42 Surround Mode Chart
44 Basic Operation
44 Source Selection
45 6/8-Channel Direct Input
45 Controls and Use of Headphones
46 Surround Mode Selection
46 Digital Audio Playback
47 Dolby Digital
47 DTS
47 PCM Audio Playback
47 Selecting a Digital Source
48 Digital Bitstream Indicators
48 USB Playback
49 Speaker/Channel Indicators
49 Night Mode
50 Using The Bridge™
50 Video Adjustments and Operation
51 Tape Recording
51 Front Panel Input/Output Connections
51 Output Level Adjustment
51 EzSet/EQ II Operation
52 Dim Function
52 Memory backup
53 Advanced Features
53 Front Panel Display Fade
53 Display Brightness
53 Turn-On Volume Level
54 Semi-OSD Settings
54 Full-OSD Time Out Adjustment
54 DMP The Bridge Auto Power
54 HDMI Video Auto Function
55 Multiroom Operation
56 Infrared Output Selection
57 Tuner Operation
57 Basic Tuner Operation
57 Preset Tuning
58 RDS Operation
58 RDS Tuning
58 RDS Display Options
58 Program Search
59 Troubleshooting Guide
59 Processor Reset
60 Appendix
63 Technical Specifications

Declaration of Conformity

CE

We, Harman Consumer Group, Inc.
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, Inc.
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

EXAMPLE – (Synchro type) indicates a message that is displayed on the remote control's LCD screen

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

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

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

Ⓐ – (letter in an oval) indicates a button on the Zone II remote

The appearance of the text or cursor for your receiver's on-screen menus may vary slightly from the illustrations in this manual. Whether the text appears in all uppercase or upper- and lowercase characters, performance and operation remain the same.

The instructions shown for using the TC 30 remote are correct as of the date this manual was printed. They may change slightly from time to time when the TC 30's internal software is upgraded to add new features.

Introduction

Thank you for choosing Harman Kardon!
With the purchase of a Harman Kardon AVR 745 you are about to begin many years of listening enjoyment.

The AVR 745 has the most extensive range of audio and video processing, control and connectivity options ever offered by Harman Kardon, enabling it to provide the best possible audio and video reproduction with any type of source material. Teaming advanced processing circuitry with proprietary technologies such as EzSet/EQ II, the AVR 745 seamlessly integrates every component in your entertainment system to deliver the best possible sound and images.

Some of the leading-edge features that are available with the AVR 745, such as HDMI™ connectivity, DCDi by Faroudja® video processing with upscaling to 1080i, and the TC 30 activity-based remote, are new to even the most experienced home theater enthusiast.

To obtain the maximum enjoyment from your new receiver, we urge you to read this manual. A few minutes spent learning the functions of the various controls will enable you to take advantage of all the power the AVR is able to deliver.

If you have any questions about this product, its installation or its operation, please contact your retailer or custom installer. They are your best local sources of information.

Description and Features
The AVR 745 serves as the hub of your home entertainment system, providing a wide range of listening possibilities for almost any audio or video program source, whether it is the broadcast of a movie or sporting event in HDTV or a vintage mono or stereo recording. When playing digital audio sources from either the conventional optical and coaxial inputs, or through the HDMI 1.1 compliant connections, the AVR 745 decodes Dolby Digital, Dolby Digital EX, DTS and DTS-ES data streams. Two-channel stereo and matrix surround sources benefit from all current Dolby Pro Logic IIx modes and DTS Neo:6. The latest version of our proprietary Logic 7® process is on-board to create a wider, more enveloping sound field and more defined surround channel positioning, regardless of the type of source material. Additional audio playback and processing options include a direct connection to compatible computer-based sources through a direct USB connection.

The AVR 745 takes the "video" part of its name seriously. Along with two HDMI inputs and three 100MHz analog component video inputs, the AVR 745's video processing allows you to individually adjust the video processing parameters for each input, and then scale the output signal to 720p or 1080i to match the requirements of your specific video display. Thanks to award winning Faroudja® technology, your video sources never looked better. Tying audio and video together, the AVR 745 provides A/V sync delay so that the lip sync errors – commonly seen when digital video processing is used in a source, program or video display – are eliminated.

Coax and optical digital outputs are available for direct connection to digital recorders, and both the front panel analog audio/video and coaxial digital jacks may be switched to outputs for use with portable recorders – a Harman Kardon exclusive. Two video recording outputs, preamp-out and a color-coded eight-channel input make the AVR virtually future-proof, with everything needed to accommodate tomorrow's new formats right on board.

The AVR 745's flexibility and power extend beyond your main home theater or listening room. The AVR includes a sophisticated multi-zone control system that allows you to select one source for use in the main room and a different one (Audio and Video) in a second room. Complete control over volume is possible with a separate infrared control link. To make it easy to operate the AVR from a remote room, a separate "ZR 10" remote is included.

Additional multiroom options include the option to assign two of the AVR's output channels to the multiroom system and the ability to link the AVR to innovative A-BUS® keypads for multiroom operation without the need for external amplifiers.

The AVR 745's powerful amplifier uses traditional Harman Kardon high-current design technologies to meet the wide dynamic range of any program selection.

Harman Kardon invented the high-fidelity receiver more than fifty years ago. With state-of-the-art circuitry and time-honored circuit designs, the AVR is the perfect combination of the latest in digital audio technology, a quiet yet powerful analog amplifier in an elegant, easy-to-use package.

- **Dolby* Digital, Dolby Digital EX and Dolby Pro Logic* IIx Decoding, and the full suite of DTS® modes, including DTS-ES® 6.1 Discrete & Matrix and Neo:6® and DTS 96/24**
- **Seven channels of high-current amplification with two channels assignable to either surround back or multiroom applications**
- **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**
- **USB connectivity for audio playback with compatible computers and quick system upgrades**
- **Two HDMI™ 1.1 and three assignable high-bandwidth analog component inputs for compatibility with the latest high-definition video sources**
- **Harman Kardon's advanced EzSet/EQ II automatically configures speaker settings and sets room equalization for quick, easy and accurate system setup**
- **High-bandwidth, HDTV-compatible component video switching**
- **Front panel analog A/V inputs, switchable to outputs**
- **Front panel digital inputs with coax digital output capability for easy connection to portable digital devices and the latest video game consoles**
- **Multiple digital inputs and outputs**
- **On-screen menu and display system**
- **Extensive multiroom options, including a standard Zone II remote, assignable amplifier channels and A-BUS/*READY*® capability for listening to a separate source in a remote zone**
- **6-Channel/8-Channel Direct Input and Preamp Outputs for Easy Expansion and Use with Future Audio Formats**
- **Extensive bass management options, including Quadruple Crossover**
- **Dual subwoofer outputs for 7.2 operation with improved low-frequency performance**
- **A/V Sync delay adjustable for each input delivers perfect lip sync with digital programs or video displays**
- **Harman Kardon's TC 30 activity-based remote with color LCD screen for total system control**

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 745 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.

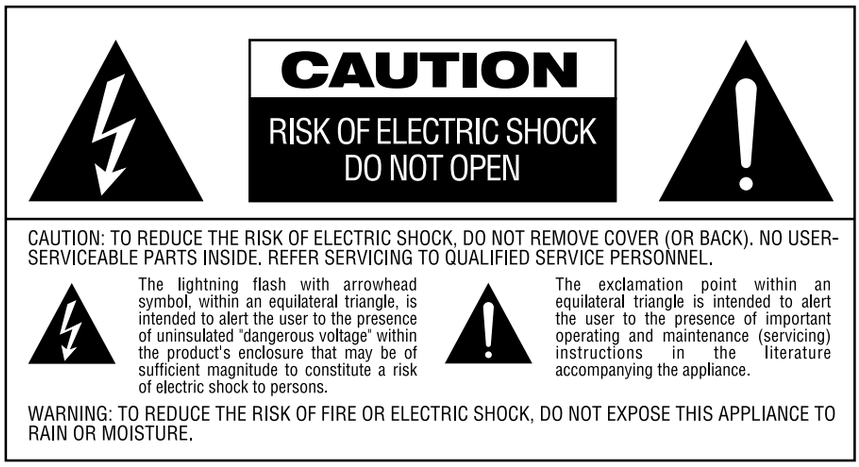
Handle the AC Power Cord Gently
When disconnecting the power cord from an AC outlet, always pull the plug, never pull the cord. If you do not intend to use the unit for any considerable length of time, disconnect the plug from the AC outlet.

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.



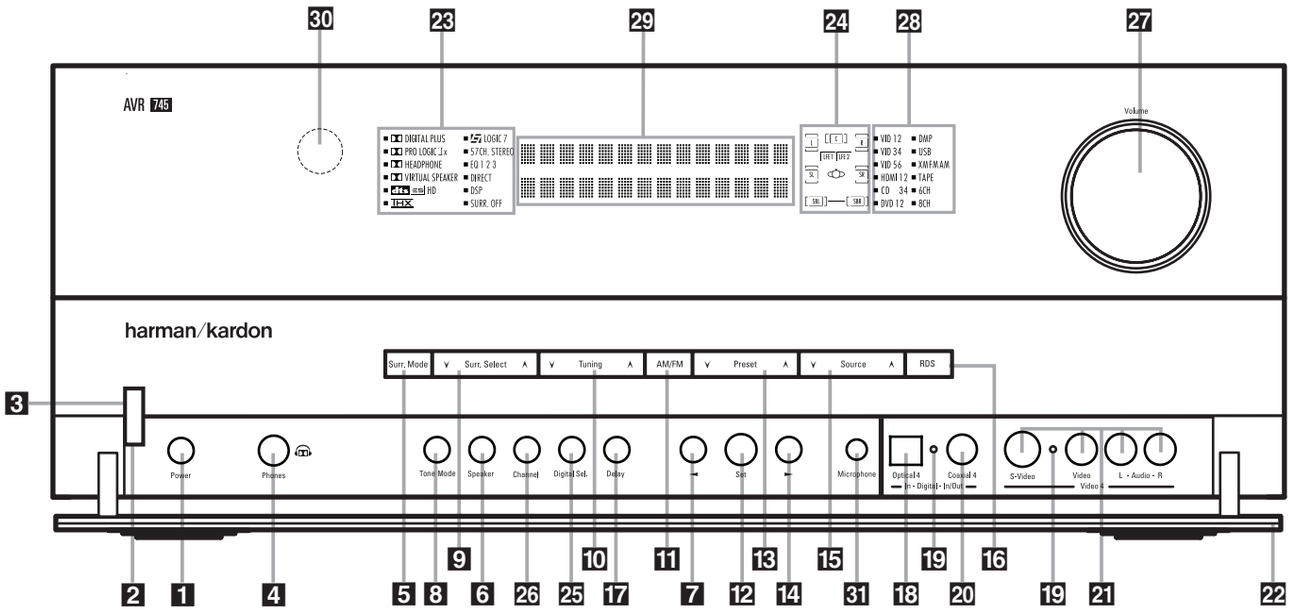
Unpacking

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 Surround Mode Group Selector
6 Speaker Selector
7 ◀ Button
8 Tone Mode
9 Surround Mode Selector
10 Tuning Selector
11 Tuner Band Selector
12 Set Button
13 Preset Station Selector
14 ▶ Button
15 Input Source Selector
16 RDS Selector
17 Delay Adjust Selector
18 Digital Optical 4 Input
19 Input/Output Status Indicators
20 Digital Coax 4 Jack
21 Video 4 Input/Output Jacks
22 Front Panel Control Door
23 Surround Mode Indicators
24 Speaker/Channel Input Indicators
25 Digital Select Button
26 Channel Select Button
27 Volume Control
28 Input Indicators
29 Main Information Display
30 Remote Sensor Window
31 EzSet/EQ II Microphone Jacks

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** surrounding the **System Power Control 2**. This button MUST be pressed in to operate the unit. To turn the unit off completely and prevent the use of the remote control, this switch should be pressed until it pops out from the front panel so that the word "OFF" may be read at the top of the switch.
NOTE: This switch is normally left in the "ON" position.

2 System Power Control: When the **Main Power Switch 1** is "ON," press this button to turn on the AVR; press it again to turn the unit off (to Standby). Note that the **Power Indicator** surrounding the switch **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 main room speakers and all **Preamp Outputs 38** will automatically be turned off when the headphone jack is in use.

5 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 on-screen display and in the **Lower Display Line 29**, press the **Surround Mode Selector 9** to cycle through the individual modes available. For example, press this button to select Dolby modes, and then press the **Surround Mode Selector 9** to choose from the various mode options.

6 Speaker Selector: Press this button to begin the process of configuring the AVR for the type of speakers it is being used with. For complete information on configuring the speaker settings using the front-panel controls see page 36.

7 ◀ Button: When an adjustment is being made using the **Channel Select 26** or **Digital Select 25** buttons, this button may be pressed to scroll through the available options.

8 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 29**, 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 29**, the output signal will be "flat," without any balance, bass or treble alteration, no matter how the actual **Controls** are adjusted. (For more information, see page 45).

Front Panel Controls

9 Surround Mode Selector: Press this button to cycle through the individual surround modes available after the **Surround Mode Group Selector 5** was pressed (see item **5** above). Note that depending on the type of input, some modes are not always available. (See page 42 for more information about surround modes).

10 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 29** (see page 57 for more information on tuning stations).

11 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 57 for more information on the tuner).

12 Set Button: When making choices during the setup and configuration process, press this button to enter the desired setting as shown in the **Main Information Display 29** into the AVR's memory.

13 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 57 for more information on tuner programming.)

14 ▶ Button: When an adjustment is being made using the **Channel Select 26** or **Digital Select 25** buttons, this button may be pressed to scroll through the available options.

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

16 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 58 for more information on RDS).

17 Delay Adjust Selector: Press this button to begin the process of adjusting the delay settings for Dolby surround modes. See page 38 for more information on delay adjustments.

18 Digital Optical 4 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.

19 Input/Output Status Indicators: These LED indicators will normally light green to show that the front panel Video 4 A/V **21** jacks or the Coaxial 4 digital **20** jack is operating as an input. When either of these jacks has been configured for use as an output, the indicator will turn red to show that the jack may be used for recording. (See page 51 for more information on configuring the front panel jacks as outputs, rather than inputs.)

20 Digital Coax 4 Jack: This jack is normally used for connection to the output of portable audio devices, video game consoles or other products that have a coax digital jack. It may also be configured as an output jack, to feed a digital signal to a CD-R, MiniDisc or other digital recording device. (See page 51 for information on configuring the Digital Coax 4 Jack to an output.)

21 Video 4 Input/Output 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. They may also be configured as output jacks (also S-Video) to feed a signal to any recording Audio or Video device (see page 51 for more information).

22 Front-Panel Control Door: To open the door so that the front-panel jacks and controls behind this door may be accessed, gently pull the door down and towards you using either upper corner of the door.

23 Surround Mode Indicators: The current selected mode or function will appear as one of these indicators. Note that when the unit is turned on, the entire list of available modes will light briefly, and then revert to normal operation with only the active mode indicator illuminated.

24 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 36 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 48 for more information on the Channel Indicators).

25 Digital Select Button: When playing a source that has a digital output, press this button to select between the **Optical 18 33** and **Coaxial 20 34 Digital** inputs (See page 47 for more information).

26 Channel Select Button: Press this button to begin the process of trimming the channel output levels using an external audio source. (For more information on output level trim adjustment, see page 51).

27 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.

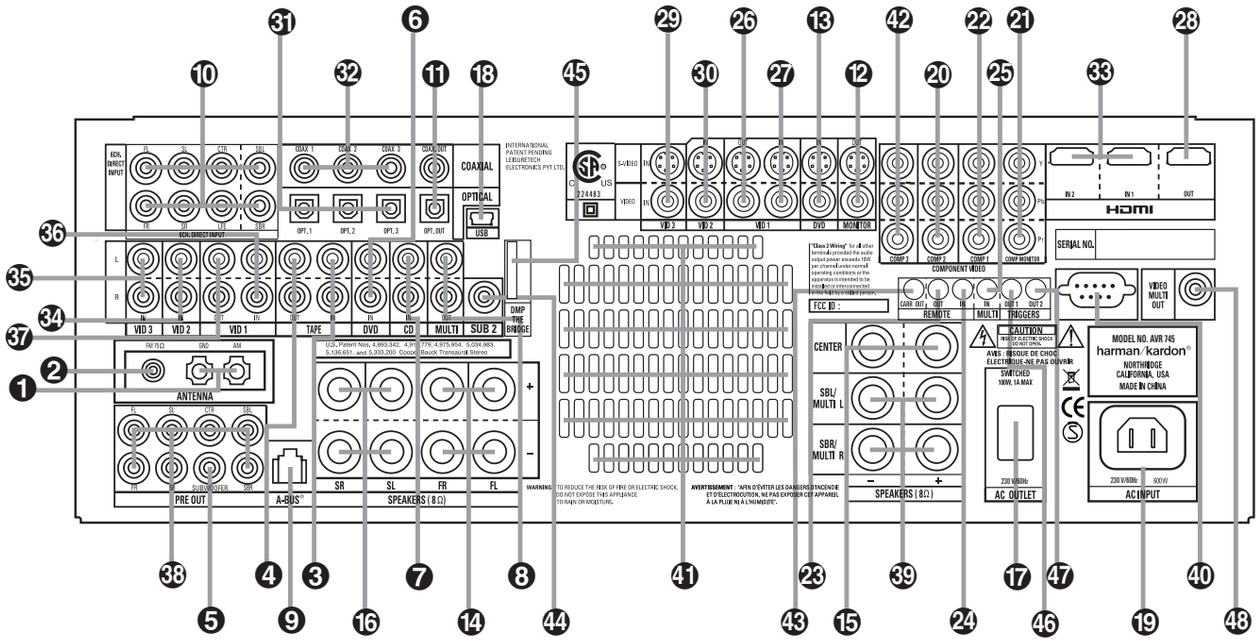
28 Input indicators: The current selected mode or function will appear as one of these indicators. Note that when the unit is turned on, the entire list of available modes will light briefly, and then revert to normal operation with only the active mode indicator illuminated.

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

30 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.

31 EzSet/EQ II Microphone Jack: Before starting the EzSet/EQ II automated setup process, plug the microphone into this jack. The microphone does not need to be plugged in at other times.

Rear Panel Connections



❶ AM Antenna
❷ FM Antenna
❸ Tape Inputs
❹ Tape Outputs
❺ Main Subwoofer Output
❻ DVD Audio Inputs
❼ CD Inputs
❽ Multiroom Audio Outputs
❾ A-BUS Connector
❿ 8-Channel Direct Inputs
⓫ Digital Audio Outputs
⓬ Video Monitor Outputs
⓭ DVD Video Inputs
⓮ Front Speaker Outputs
⓯ Center Speaker Outputs
⓰ Surround Speaker Outputs
⓱ Switched AC Accessory Outlet
⓲ USB Connector
⓳ AC Power Cord Jack
⓴ Video 2 Component Video Inputs
㉑ Component Video Outputs
㉒ Video 1 Component Video Inputs
㉓ Remote IR Output
㉔ Remote IR Input
㉕ Multiroom IR Input
㉖ Video 1 Video Outputs
㉗ Video 1 Video Inputs
㉘ HDMI Output
㉙ Video 3 Video Inputs
㉚ Video 2 Video Inputs
㉛ Optical Digital Inputs
㉜ Coaxial Digital Inputs
㉝ HDMI Inputs
㉞ Video 2 Audio Inputs
㉟ Video 3 Audio Inputs
㊱ Video 1 Audio Inputs
㊲ Video 1 Audio Outputs
㊳ Preamp Outputs
㊴ Surround Back/Multiroom Speaker Outputs
㊵ RS-232 Port
㊶ Fan Vents
㊷ DVD/Video 3 Component Video Inputs
㊸ Remote IR Carrier Output
㊹ Subwoofer 2 Output
㊺ The Bridge Digital Media Player (DMP) Input
㊻ Trigger 1 Output
㊼ Trigger 2 Output
㊽ Multiroom Video Output

NOTE: To assist in making the correct connections for multichannel input/output and speaker connections, all connection jacks and terminals have been color coded in conformance with the latest CEA standards as follows:

Front Left:	White
Front Right:	Red
Center:	Green
Surround Left:	Blue
Surround Right:	Gray
Surround Back Left:	Brown
Surround Back Right:	Tan
Subwoofer (LFE):	Purple
Digital Audio:	Orange
Composite Video:	Yellow
Component Video "Y":	Green
Component Video "Pr":	Red
Component Video "Pb":	Blue

❶ **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.

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

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

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

❺ **Main 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. If only one subwoofer is used in your system, connect it here.

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

❼ **CD Inputs:** Connect these jacks to the analog output of a compact disc player or CD changer or any other audio source.

❽ **Multiroom Audio Outputs:** Connect these jacks to an optional audio power amplifier to listen to the source selected by the multiroom system in a remote room.

❾ **A-BUS Connector:** Connect this jack to an optional A-BUS-certified remote room keypad or amplifier to extend the multiroom capabilities of your AVR. See page 18 for more information on A-BUS.

Rear Panel Connections

⑩ **8-Channel Direct Inputs:** These jacks are used for connection to source devices such as DVD-Audio or SACD players with discrete analog outputs. Depending on the source device in use, all eight jacks may be used, though in many cases only connections to the front left/right, center, surround left/right and LFE (subwoofer input) jacks will be used for standard 5.1 audio signals.

⑪ **Digital Audio Outputs:** Connect these jacks to the matching digital input connector on a digital recorder such as a CD-R or MiniDisc recorder.

⑫ **Video Monitor Outputs:** Connect this jack to the composite and/or S-Video input of a TV monitor or video projector to view the on-screen menus and the output of any standard Video or S-Video source selected by the receiver's video switcher.

⑬ **DVD Video Inputs:** Connect these jacks to the composite or S-Video output jacks on a DVD player or other video source.

⑭ **Front Speaker Outputs:** Connect these outputs to the matching + or – terminals on your left and right speakers. In conformance with the new CEA color code specification, the White terminal is the positive, or "+" terminal that should be connected to the red (+) terminal on Front Left speaker with the older color coding, while the Red terminal is the positive, or "+" terminal that should be connected to the red (+) terminal on Front Right speaker. Connect the black (–) terminals on the AVR to the black (–) terminals on the speakers. See page 14 for more information on speaker polarity.

⑮ **Center Speaker Outputs:** Connect these outputs to the matching + and – terminals on your center channel speaker. In conformance with the new CEA color code specification, the Green Terminal is the positive, or "+" terminal that should be connected to the red (+) terminal on speakers with the older color coding. Connect the black (–) terminal on the AVR to the black negative (–) terminal on your speaker. (See page 14 for more information on speaker polarity.)

⑯ **Surround Speaker Outputs:** Connect these outputs to the matching + and – terminals on your surround channel speakers. In conformance with the new CEA color code specification, the Blue terminal is the positive, or "+" terminal that should be connected to the red (+) terminal on the Surround Left speaker with older color coding, while the Gray terminal should be connected to the red (+) terminal on the Surround Right speaker with the older color coding. Connect the black (–) terminal on the AVR to the matching black negative (–) terminals for each surround speaker. (See page 14 for more information on speaker polarity.)

⑰ **Switched AC Accessory Outlet:** This outlet may be used to power any device that you wish to have turn on when the AVR is turned on with the **System Power Control** switch 2.

⑱ **USB Connector:** Connect a cable with a USB "Mini B" connector to the AVR and the other end to a compatible computer running Windows® 2000, Windows® XP or higher with the latest service packs installed, to use this port to listen to audio from the computer through the AVR 745. This connection is also used to connect a compatible computer to the AVR for firmware upgrades, when available. See page 48 for more information on playback of computer audio with the AVR. Instructions for upgrades will accompany the upgrade file download package.

⑲ **AC Power Cord Jack:** Connect the AC power cord to this jack when the installation is complete. To ensure safe operation, use only the power cord supplied with the unit. If a replacement is required it must be of the same type and capacity.

⑳ **Component Video 2 Inputs:** These inputs may be used with any video source device equipped with analog Y/Pr/Pb or RGB component video outputs. The factory default is for these jacks to be a linked to the Video 2 input, but you may change the setting at any time through the IN/OUT SETUP menu. See page 14 for more information on configuring the component video inputs.

㉑ **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** ⑳㉒ is selected the signal will be sent to these jacks.

㉒ **Component Video 1 Inputs:** These inputs may be used with any source device equipped with analog Y/Pr/Pb or RGB component video outputs. The factory default is for these jacks to be a linked to the Video 1 input, but you may change the setting at any time through the IN/OUT SETUP menu. See page 14 for more information on configuring the component video inputs.

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 15).

㉓ **Remote IR Output:** This connection permits the IR sensor in the receiver to serve other remote controlled devices. Connect this jack to the "IR IN" jack on Harman Kardon or other compatible equipment.

㉔ **Remote IR Input:** If the AVR's front-panel IR sensor is blocked due to cabinet doors or other obstructions, an external IR sensor may be used. Connect the output of the sensor to this jack.

㉕ **Multiroom IR Input:** Connect the output of an IR sensor in a remote room to this jack to operate the AVR's multiroom control system.

㉖ **Video 1 Video Outputs:** Connect these jacks to the **RECORD/INPUT** composite or S-Video jack on a VCR.

㉗ **Video 1 Video Inputs:** Connect these jacks to the **PLAY/OUT** composite or S-Video jacks on a VCR or other video source.

㉘ **HDMI Output:** Connect this jack to the HDMI input on a compatible HDMI-equipped video display.

㉙ **Video 3 Video Inputs:** Connect these jacks to the **PLAY/OUT** composite or S-Video jacks on any video source.

㉚ **Video 2 Video Inputs:** Connect these jacks to the **PLAY/OUT** composite or S-Video jacks on a second VCR or other video source.

㉛ **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, a 2 channel MPEG 1 signal, an HDCD data stream or a standard PCM digital source.

Rear Panel Connections

㉜ 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, a 2 channel MPEG 1 signal, an HDCD data stream or a standard PCM digital source. Do not connect the RF digital output of an LD player to these jacks.

㉝ HDMI Inputs: Connect the HDMI output of video sources such as a DVD player, set-top box or HDTV tuner to either of these jacks.

㉞ Video 2 Audio Inputs: Connect these jacks to the **PLAY/OUT** audio jacks on a second VCR or other audio or video source.

㉟ Video 3 Audio Inputs: Connect these jacks to the **PLAY/OUT** audio jacks on any audio or video source.

㊱ Video 1 Audio Inputs: Connect these jacks to the **PLAY/OUT** audio jacks on a VCR or other audio or video source.

㊲ Video 1 Audio Outputs: Connect these jacks to the **RECORD/INPUT** audio jacks on a VCR or any other Audio recorder.

㊳ Preamp Outputs: Connect these jacks to an optional, external power amplifier for applications where higher power is desired.

㊴ Surround Back/Multiroom Speaker Outputs: These speaker terminals are normally used to power the surround back left/surround back right speakers in a 7.1 channel system. However, they may also be used to power the speakers in a second zone, which will receive the output selected for a multiroom system.
To change the output fed to these terminals from the default of the Surround Back speakers to the Multiroom Output, you must change a setting in the Multiroom Menu of the OSD system. See page 55 for more information on configuring this speaker output. In normal surround system use, the brown and black terminals are the surround back left channel positive (+) and negative (–) connections and the tan and black terminals are the surround back right positive (+) and negative (–) terminals.
For multiroom use, connect the brown and black SBL terminals to the red and black connections on the left remote zone speaker and connect the tan and black SBR terminals to the red and black terminals on the right remote zone speaker.

㊵ RS-232 Port: This jack may be used to control the AVR 745 over a bi-directional RS-232 serial control link to a compatible computer or programmable remote control system. Due to the complexity of programming RS-232 commands we strongly recommend that connections to this port for control purposes be made by a trained and qualified technician. This jack may also link to a compatible computer to upgrade the software and operating system of the AVR 745 when appropriate upgrades are available.

㊶ Fan Vents: These ventilation holes are the output of the AVR's airflow system. To ensure proper operation of the unit and to avoid possible damage to delicate surfaces, make certain that these holes are not blocked and that there is at least three inches of open space between the vent holes and any wooden or fabric surface.

㊷ DVD/Video 3 Component Video Inputs: These inputs may be used with any source device equipped with analog Y/Pr/Pb or RGB component video outputs. The factory default is for these jacks to be a linked to the DVD input, but you may change the setting at any time through the IN/OUT SETUP menu. See page 14 for more information on configuring the component video inputs.

㊸ Remote IR Carrier Output: The output of this jack is the full signal received at the **Remote Sensor Window** 30 or input through the **Remote IR Input** ㉔ including the carrier frequency that is removed from signals at the **Remote IR Output** ㉓. Use this output to extend IR remote signals to the input of compatible products by direct connection or through the use of optional, external IR "blasters". If you are in doubt as to which of the two IR Output jacks to use, we recommend that you consult with your dealer or installer, or check with the manufacturer of the external equipment you wish to control.

㊹ Subwoofer 2 Output: If your system has two subwoofers, connect one to **Main Subwoofer Output** ❺, and connect the line level input of a second subwoofer to this jack.

㊺ The Bridge Digital Media Player (DMP) Connector: With the AVR 745 turned off, connect one end of the optional Harman Kardon The Bridge to this proprietary connector, and the other to your compatible Apple iPod. When the Digital Media Player source is selected, you may view your iPod's control and navigation messages on your video display (if one is connected to one of the **Video Monitor Outputs** ⑫), and in the **Upper** and **Lower Display Lines** 29. You may navigate the iPod and select tracks for playback using the **▲▼◀▶ Buttons** ⑭ Ⓕ, the **Set Button** ⑮ Ⓠ and **Transport Controls** ⑩ Ⓟ on your AVR remote. See page 50 for more information.

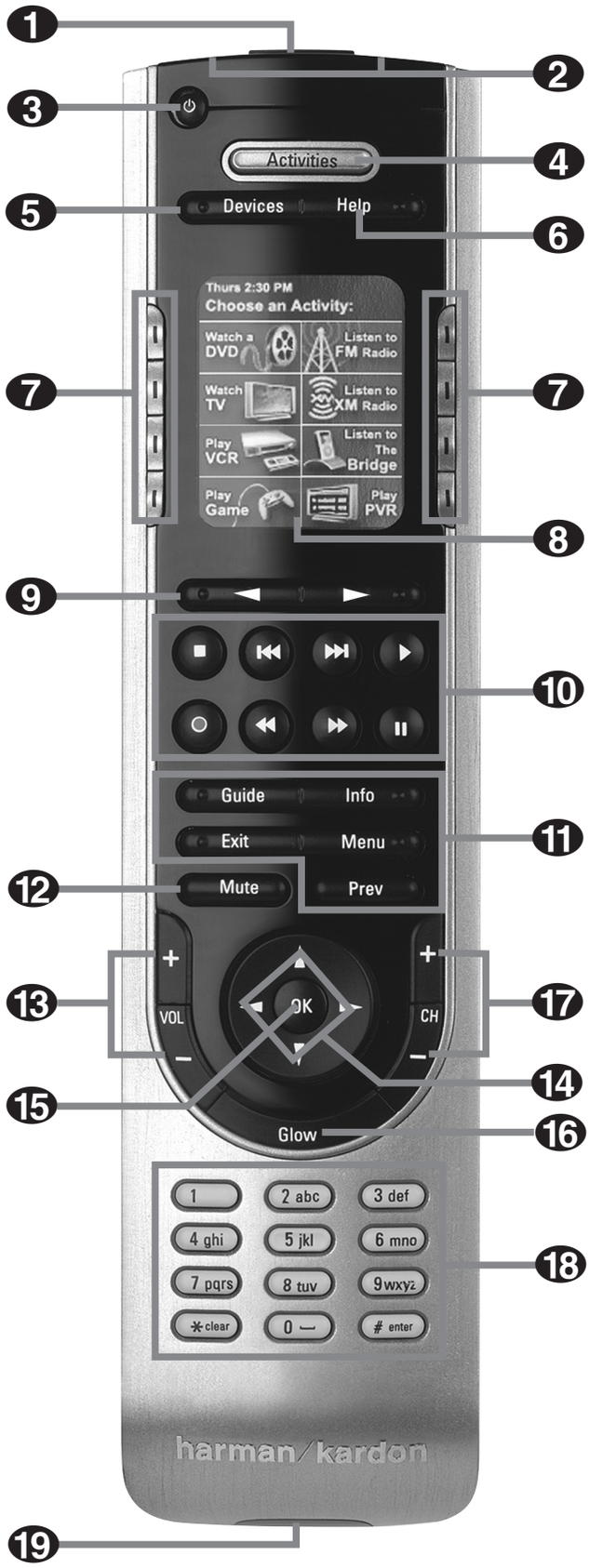
㊻ Trigger 1 Output: Connect this jack to the "Trigger In" jack of an optional external component such as an audio power amplifier that you want to be controlled to mirror the power state of the AVR 745. When this connection is used, the AVR 745 will automatically send a low-voltage signal to the connected device that turns it on when the AVR 745 is on and off when the AVR 745 is placed in the Standby Mode. The connected component must respond to 6-volt presence as the control signal.

㊼ Trigger 2 Output: Connect this jack to the "Trigger In" jack of an optional, external component such as a projection screen or motorized blinds that you want to turn on or off in response to the power state of the AVR 745, but only when certain inputs are selected. (For example, lower a screen when a Video related mode is selected, but not for the tuner or a CD player.) For the 5-volt control signal to be sent to the jack for device control, you must activate the appropriate setting in PAGE 2 of the IN/OUT SETUP menu. See page 19 for more information.

㊽ Multiroom Video Output: Connect this jack to the cable and/or optional, external video distribution system that delivers the video source selected for multizone distribution to remote rooms. Only composite video is available.

Main Remote Control Functions

1. USB Connector
2. IR Emitter Window
3. Power Button
4. Activities Button
5. Devices Button
6. Help Button
7. Screen Buttons
8. LCD Screen
9. Page Left/Right Buttons
10. Transport Control Buttons
11. Device Control Buttons
12. Mute Button
13. Volume Controls
14. Navigation Buttons
15. OK/Enter Button
16. Glow Button
17. Channel Up/Down
18. Numeric Keys
19. Infrared Learning Port



Main Remote Control Functions

❶ **USB Connector:** Push down on the rubber cover to access the USB connecter. To program the TC 30 from our Web site, connect the supplied USB cable here, and then to your computer.

❷ **IR Emitter Window:** Point this end of the remote toward the devices being controlled.

❸ **Power Button:** Press this button to turn a Device off.

❹ **Activities Button:** Press this button to view the list of Activities programmed into your TC 30. Press the Screen Button next to an Activity to select it and turn on the Devices in that Activity.

❺ **Devices Button:** Press this button to display a list of all the devices programmed in your TC 30. To control the Device, press the Screen Button next to the desired device's name.

❻ **HELP Button:** If you are having problems with an Activity, press this button for interactive help screens that will resolve issues with synchronizing the status of the components in your system.

❼ **Screen Buttons:** Press the buttons at either side of the LCD screen to select the Activity, Device or command shown next to the button.

❽ **LCD Screen:** The LCD screen displays system messages, help screens and the functions assigned to the **Screen Buttons** ❼, depending on the remote's current status.

❾ **Page Left/Right Buttons:** Press these buttons to show additional screen display pages for a Device, activity or setup function.

❿ **Transport Control Buttons:** Press these buttons to control the transport functions (Stop/Skip Back/Skip Forward/Play/Record/Fast Reverse/Fast Forward/Pause) for Devices such as DVD or CD players, digital recorders and VCRs when they are active.

⓫ **Device Control Buttons:** These buttons directly control functions of the currently active Device. The names on the individual button names are the typical function, but the actual function will vary with the device.

⓬ **Mute Button:** Press this button to activate the MUTE function of the Device being controlled.

⓭ **Volume Controls:** Press these buttons to change the volume of the Device being controlled.

⓮ **Navigation Buttons:** The function of these "up/down/left/right" buttons varies according to the Device being controlled.

⓯ **OK/Enter Button:** This button is normally the "Enter" or "Select" function for the Device being controlled, but its function will vary according to the Device being controlled.

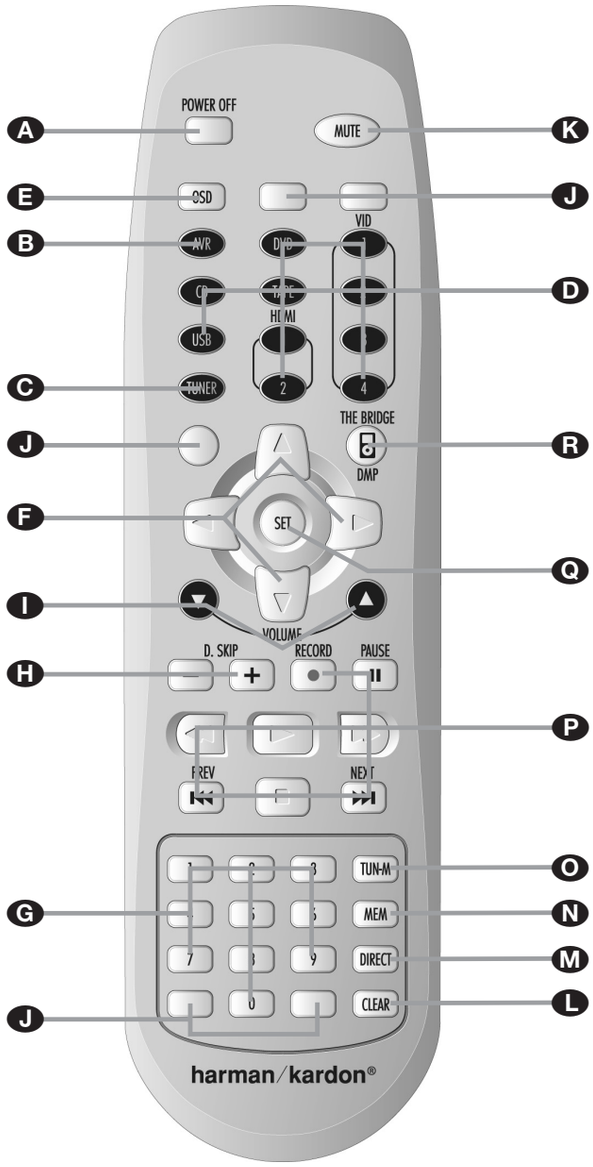
⓰ **Glow Button:** Press this button to illuminate the LCD screen and the button backlighting. The backlighting will also come on when any button is pushed. You may change the setting for the length of time the lighting is on via the TC 30 Web site. The backlighting will also turn on automatically any time you move the remote, thanks to a built-in "tilt sensor." You may disable the "tilt-on" function in the Remote Options section of the TC 30 Web site.

⓱ **Channel Up/Down:** Press these buttons to change the channel or station of the device being controlled.

⓲ **Numeric Keys:** These buttons enter numeric values for the device being controlled.

⓳ **Infrared Learning Port:** When "learning" commands from a Device's remote into the TC 30, point the IR transmitter on the remote being "learned" here.

Zone II Remote Control Functions



The Zone II remote may be used in either the same room where the AVR is located, or it may be used in a separate room with an optional infrared sensor that is connected to the AVR's **Multi IR** input jack 25.

We strongly recommend that the ZR 10 remote be used for the initial configuration and setup process for the AVR 745.

A Power Off: When used in the room where the AVR is located, press this button to place the unit in Standby. When it is used in a remote room with a sensor that is connected to the **Multi IR** jack 25, this button turns the Multi-Room system off.

B AVR Selector: Press this button to turn on the AVR. The input in use when the unit was last on will be selected.

C AM/FM Tuner Select: Press this button to select the Tuner as the input to the Multiroom system. Press it again to change between the AM and FM bands.

D Input Selectors: When the AVR is off, press one of these buttons to turn the unit on and to select a specific input. When the unit is already in use, pressing one of these buttons will change the input.

E OSD Button: Press this button to activate the On Screen Display (OSD) system used to set up or adjust the AVR's parameters.

F Navigation Controls: Depending on the menu or function in use, pressing these buttons will navigate through menus, scroll through option lists or configuration choices, or move the cursor position. Press the left, right, up or down button, as appropriate to the adjustment being made.

- A Power Off
- B AVR Selector
- C AM/FM Tuner Select
- D Input Selectors
- E OSD Button
- F Navigation Controls
- G Numeric Keys
- H Disc Skip
- I Volume Up/Down
- J Blank Buttons
- K Mute
- L Clear Button
- M Direct Button
- N Memory Button
- O Tuner Mode Button
- P Transport Controls
- Q Set Button
- R The Bridge /DMP Selector

NOTE: The Zone II remote may be used in either the same room where the AVR is located, or it may be used in a separate room with an optional infrared sensor that is connected to the AVR's **Multi IR** input jack 25. When it is used in the same room as the AVR, it will control the functions of the AVR or any compatible Harman Kardon products in that room. When it is used in a separate room via a sensor connected to the **Multi IR** Jack 25, the buttons for power, input source, volume and mute will control the source and volume for the second zone, as connected to the Multi Out Jacks 8. (See page 55 for complete information on using the Multiroom system.)

Zone II Remote Control Functions

G 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.

H Disc Skip: Press this button to change discs on compatible Harman Kardon CD or DVD changers.

I Volume Up/Down: When used in the room where the AVR is located, press this button to raise or lower the volume in that room. When it is used in a remote room with a sensor that is connected to the **Multi IR** Jack 25, this button will raise or lower the volume in the remote room.

J Blank Buttons: These buttons are not active. Pressing them will not change or control any function on the AVR 745 or other IR devices.

K Mute: When used in the room where the AVR is located, press this button to temporarily silence the unit. When it is used in a remote room with a sensor that is connected to the Multi IR Jack 25, this button will temporarily silence the feed to the remote room only. Press the button again to return to the previous volume level.
Important Note: No matter in which room the Zone II remote is used, as with the main remote it is important to remember to press the **Input Selector** button D that corresponds to the unit you wish to operate befor you change the device to be controlled.

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

M 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** G to select a station (See page 57 for more information on the tuner).

N 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** 29, you then have five seconds to enter a preset memory location using the **Numeric Keys** G. (See page 57 for more information.)

O 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** 29, pressing the **Tuning** buttons 21 will move the frequency up or down in single-step increments. When the FM band is in use and AUTO appears in the **Main Information Display** 29, pressing this button will change to monaural reception making even week stations audible. (See page 57 for more information.)

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

Q 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.

R The Bridge Digital Media Player (DMP) Selector: When Harman Kardon's The Bridge (optional) is connected to The Bridge **Digital Media Player (DMP) Connector** 9 and a compatible Apple® iPod® is docked in The Bridge, pressing this selector will select the iPod as the audio source input device for the AVR 745. In addition, if a video display is connected to one of the **Video Monitor Outputs** 12, the iPod's messages will appear on screen, and in the **Upper** and **Lower Display Lines** 29. The **▲/▼/◀/▶ Buttons** 14 F, the **Set Button** 15 Q and the **Transport Controls** 11 P may be used to navigate the iPod and to operate many functions. See page 50, and the manuals for The Bridge and your iPod for more information.

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.

Before starting to connect your AVR 745 to the source devices, display device, speakers and other components in your system, you should also unpack the TC 30 remote, which is found in the separate box inside the AVR 745 carton. So that the TC 30 is ready when you begin the system configuration process, install the battery, connect the charger and place the remote in the charging cradle, as it takes approximately twelve hours for the battery to fully charge.

Audio Equipment Connections

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

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

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

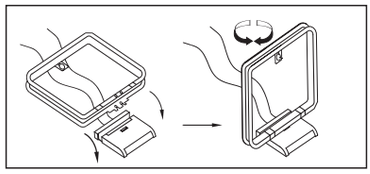
NOTE: When the CD player has both fixed and variable audio outputs it is best to use the fixed output unless you find that the input to the receiver is so low that the sound is noisy, or so high that the signal is distorted.

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

3. Connect the digital output of any digital sources such as a CD or DVD changer or player, advanced video game, a digital satellite receiver, HDTV tuner or digital cable set-top box or the output of a compatible computer sound card to the **Optical** and **Coaxial Digital Inputs** ㉛ ㉜ 18 20.

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

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



6. Connect the supplied FM antenna to the **FM (75 ohm)** connection ❷. 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 should use a 300-ohm-to-75-ohm adapter to make the connection.

7. Connect the front, center and surround speaker outputs ⓮⓯⓰㊴ to the respective speakers.

To ensure 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 mm^2.

Cable with an area of 1.5 mm^2 may be used for short runs of less than 4 m. We do not recommend that you use cables with an area less than 1 mm^2 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 any appropriate testing agency standards. Questions about running cables inside walls should be referred to your installer or a licensed electrician who is familiar with the applicable local building codes in your area.

When connecting wires to the speakers, be certain to observe proper polarity. Note that the positive (+) terminal of each speaker connection now carries a specific color code as noted on page 7. However, most speakers will still use a red terminal for the postive (+) connection. Connect the "negative" or "black" wire to the same terminal on both the receiver and the 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.

8. Connections to a single subwoofer are normally made via a line level audio connection from the **Subwoofer Output** ❺ 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.

If your system uses two subwoofers, connect the **Subwoofer 2 Output** ㊹ jack on the AVR to the Line Input of the second subwoofer.

9. If an external multi-channel audio source with 5.1 or 7.1 outputs such as an external digital processor/decoder, DVD-Audio or SACD player is used, connect the outputs of that device to the **8-Channel Direct Inputs** ⓾.

Analog Video Equipment Connections

Analog 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.

1. Connect a VCR's audio and video Play/Out jacks to the **Video 1** or **Video 2 In** jacks ㉗㉚ ㉞㊱ on the rear panel. The Audio and Video Record/In jacks on the VCR should be connected to the **Video 1 Out** jacks ㉖㊲ on the AVR.

2. Connect the analog audio and video outputs of a satellite receiver, cable TV converter or television set or any other video source to the **Video 3** ㉙㉟ jacks.

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

4. If any of the video source devices has analog component video (Y/Pr/Pb) outputs, but not HDMI, connect them to **Component Video Inputs** ⑳㉒. The chart on page 60 has the default settings for various source devices, but you may make any connection and change the configuration setting using the IN/OUT SETUP menu, as described on page 23.

5. The default video connection for a DVD player is to use the **Component Video Input 3 Jacks** ㊷ on the AVR, but you may change this assignment in the IN/OUT SETUP menu (see page 23). A DVD player's composite and S-video outputs may also be connected to the **DVD Video Inputs** ⓭. Only one connection type is required, although a composite or S-video connection is required if the AVR 745 is to be used in a multiroom video system.

6. The default audio connection for a DVD player is to link the coaxial digital audio output on the DVD player to the **Coaxial 1 Digital Audio Input** ㉜, but you may also make a connection to either the **Coaxial** ㉜ or **Optical** ㉛ digital inputs, or the **Analog DVD Audio Inputs** ❻. You may change the assignment in the IN/OUT SETUP menu as described on page 23, or by using the front-panel **Digital Input Selector** 25.

7. If you wish to use a portable audio/video product such as a camcorder, portable media player or digital still camera with the AVR, or make a connection to a video game console or other source that may not always be connected to the AVR, connect the video outputs of the source to the **Video 4 Input/Output Jacks** 21 behind the front door 22. If the source has digital audio outputs, connect them to the **Optical 4 Digital Input** 18 or the **Coaxial 4 Digital Jack** 20.

Connection Notes:
When making connections to the **Component Video Inputs** ⑳㉒㊷ or the **Coaxial** ㉜ or **Optical** ㉛ digital audio inputs, it is a good idea to make note of which jacks are connected to which source, using the Worksheet in the Appendix. This will help simplify the configuration process.

NOTE: When connecting a device such as a digital cable box or other set-top tuner product with a digital audio output, we recommend that you connect both the digital and analog outputs of the product to your AVR. The audio input polling feature of the AVR will then be able to make certain that you have a constant audio feed, since it will automatically switch the audio input to the analog jacks if the digital feed is interrupted or not available for a particular channel.

8. 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** 18 20 21. A device connected to the **Video 4 jacks** 21 is selected as the Video 4 input, and connected to the digital jacks 18 20 it is selected as "Optical 4" or "Coaxial 4" input. (See page 51 for more information on input configuration.)

9. Connect the AVR to your video display using one of the following connections:

- If you have a video display with an HDMI or DVI input, make the connection using the **HDMI Output** ㉘, as described in the next section.
- If your video display has component video inputs (Y/Pr/Pb), connect the **Component Video Outputs** ㉑.
- If your display does not have digital or component video inputs, connect the **Video Monitor Output** ⑫ on the AVR to the matching input on your display. Only one connection is needed, and S-video is the higher quality signal.

HDMI Connections

HDMI™ is the abbreviation for High-Definition Multimedia Interface, which is quickly becoming the standard connection point between advanced video/audio source products and displays, particularly for high-definition video signals. HDMI is a digital connection, eliminating the need to convert signals back and forth from digital to analog to deliver a higher quality signal when used with digital sources. The signals carried on HDMI may, but do not always, include audio, offering the possibility of a complete one-wire connection from a source to the AVR. However, it is important to note that there are a number of different versions of the HDMI standard in use. Before connecting any HDMI products to your AVR, it is helpful to find out in advance their level of HDMI connectivity.

Some source or display components in your system may use DVI (Digital Video Interface) for digital video connections. DVI carries the same digital video signals as HDMI but uses a larger connector and does not transport audio or control signals. In most cases, you may mix and match DVI and HDMI digital video connections by using optional connector adapters. Note, however, that some DVI-equipped video displays are not compatible with the HDCP copy protection coding that is increasingly carried with signals connected via HDMI. If you have an HDMI source and a DVI-equipped display, you may occasionally be unable to view a program if the display does not include HDCP. This is not the fault of the AVR or your source; it simply indicates that the video display is not compatible.

HDMI Input Connections

The different "Version" levels of HDMI define which type of audio signals it is compatible with. Based on the lowest level of HDMI among your sources, the connections to the AVR should be made as follows:

- **HDMI 1.0** sources carry digital video and multichannel or 2-channel PCM audio signals only. Connect the HDMI output of a 1.0 source to either of the **HDMI Inputs** ㉝ on the AVR. If the product is a DVD-Audio player or other source that has multichannel analog audio outputs, connect them to the **8-Channel Direct Inputs** ⑩. With an HDMI 1.0 source, particularly a DVD player, make certain that the menus in the source device are set to "Bitstream Out" or "Original" so that 5.1 digital audio is available. If you find that 5.1 Dolby Digital or DTS audio is not available on the HDMI connection, it will be necessary to make an additional connection between the source and the AVR 745 to either the **Coaxial** ㉜ 20 or **Optical** ㉛ 18 **Digital Inputs**.
- **HDMI 1.1** sources carry the multichannel digital audio output from DVD-Audio players in addition to the digital video. If you have an HDMI 1.1-equipped product, the only connection needed for listening in the main room is from the HDMI output of the source to either of the **HDMI Inputs** ㉝ on the AVR. If the player has SACD capability, you will need to connect the analog outputs of the source to the **8-Channel Direct Inputs** ⑩.
- **HDMI 1.2** (and higher) sources should be connected as shown above for HDMI 1.1, except that a separate analog connection is not needed for SACD players.

- It is not possible to feed an analog composite or S-video signal to a recorder or the AVR's multizone system when an HDMI input is in use. If an HDMI-equipped source also has analog audio and video outputs, connect them to the **Video 2** or **Video 3 Video** ㉙㉚ and **Audio** ㉞㉟ on the AVR.
- In some instances, HDMI-equipped sources will not permit more than one video output at a time, and thus you cannot use the same source in the main listening room and with the recorder or remote zone at the same time. This is not a fault of the AVR, but rather a function of the content protection systems that are part of the HDMI standard.

HDMI Output Connections

Connect the **HDMI Output** ㉘ to an HDMI input on your video display. Thanks to the AVR 745's video processing system, all video input signals are converted to an HDMI output, so only one connection is required between the AVR and your display.

SCART A/V Connections

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

Many european video devices are equipped with RCA (Cinch) or S-Video jacks only partially, not for all audio and video in/outputs needed as described above, but with a so called Scart or Euro-AV connector (almost rectangular jack with 21 pins, see drawings on next 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** ⑫, 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 shown in the diagrams above and in the instruction attached to the adapter. If uncertain, don't hesitate to consult your dealer.

Figure 1: SCART/Cinch-Adapter for playback; signal flow: SCART → Cinch

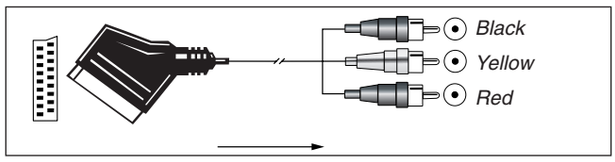


Figure 2: SCART/Cinch-Adapter for record and playback; signal flow: SCART ↔ Cinch

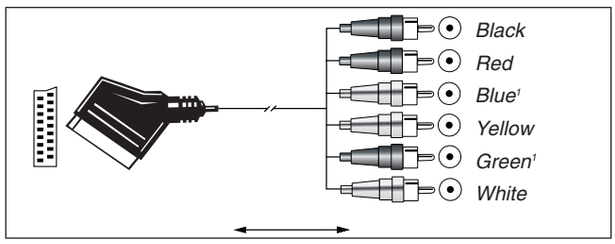


Figure 3: Cinch/SCART-Adapter for playback; signal flow: Cinch → SCART

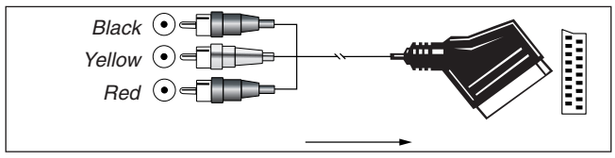


Figure 4: SCART/S-Video Adapter for playback; signal flow: SCART → Cinch

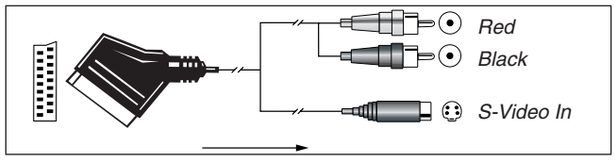


Figure 5: SCART/S-Video Adapter for record and playback; signal flow: SCART ↔ Cinch

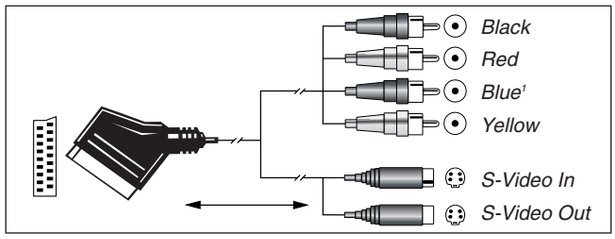
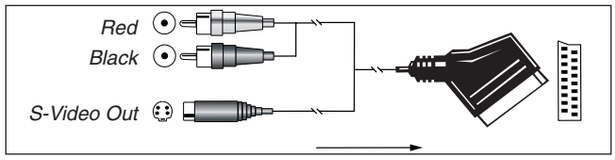


Figure 6: SCART/S-Video Adapter for playback; signal flow: Cinch → SCART



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

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 with 4:3 TVs with selectable 16:9 format) 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.

Note for RGB signal with SCART:
If you use a unit providing RGB signals on a SCART output (as e.g. most DVD players do) and you want to use that RGB signal, this SCART output must be connected directly to your TV. Although the AVR can switch three-way video signals (like component signals Y/Pb/Pr), most TVs need separate sync signals for RGB (also with SCART) that cannot be switched and provided by the AVR.
RGB signals can be pathed through the AVR only when no separate sync signal is needed (see last "Video Connection Note" on page 16).

System and Power Connections

The AVR 745 is designed for flexible use with multiroom systems, external control components and power amplifiers.

Main Room Remote Control Extension
If the receiver is placed behind a solid or smoked glass cabinet door, the obstruction may prevent the remote sensor from receiving commands. In this event, the remote sensor of any Harman Kardon or other compatible device, not covered by the door, or an optional remote sensor may be used. Connect the **Remote IR Output** of that device or the output of the remote sensor to the **Remote IR Input** jack ㉔.

If other components are also prevented from receiving remote commands, only one sensor is needed. Simply use this unit's sensor or a remote eye by running a connection from the **Remote IR Output** jack ㉓ to the **Remote IR Input** jack on Harman Kardon or other compatible equipment.

Multiroom IR Link
The key to remote room operation is to link the remote room to the AVR's location with wire for an infrared receiver and speakers or an amplifier. The remote room IR receiver (this can be an optional IR receiver or any other remotable Harman Kardon device in the remote room with IR sensor integrated) should be connected to the AVR via standard coaxial cable. Connect the **Remote IR Output** of the device or of the optional sensor with the **Multiroom IR Input** jack ㉕ on the AVR's rear panel.

If other Harman Kardon compatible source equipment is part of the main room installation, the **Remote IR Output** jack ㉓ on the rear panel should be connected to the IR IN jack on that source device. This will enable the remote room location to control source equipment functions.

When a remote IR sensor is used to control non-Harman Kardon source equipment, we recommend that you make a direct connection or use an optional, external IR "blaster" connected to the **Remote IR Carrier Output Jack** ㊸. If you are in doubt as to which IR Output jack to use for the equipment in your system, contact your dealer or installer, or the manufacturer's support site and ask whether the unit to be controlled uses "full carrier" or "stripped" carrier IR commands. When "full carrier commands" are used, make the connection to the **Remote IR Carrier Output Jack** ㊸. Otherwise, make the connection to the **Remote IR Output Jack** ㉓ as noted above.

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

Multiroom Audio Connections
Depending on your system`s requirement and distance from the AVR to the remote room, three options are available for audio connection:

Option 1: Use high-quality, shielded audio interconnect phono cable from the AVR's location to the remote room. In the remote room, connect the interconnect cable to a stereo power amplifier. The amplifier will be connected to the room's speakers. At the AVR, plug the audio interconnect cables into the **Multiroom Output Jacks** ❽ on the AVR's rear panel.

Option 2: Place the amplifier that will provide power to the remote location speakers in the same room as the AVR, and connect the **Multiroom Output** jacks ❽ on the rear panel of the AVR to the audio input of the remote room amplifier. Use the appropriate speaker wire to connect the optional power amplifier to the remote speakers. High-quality wire of at least 2.5 mm^2 is recommended for long multiroom connections.

Option 3: Taking advantage of the AVR's built-in seven-channel amplifier, it is possible to use two of the amplifier channels to power speakers in the remote room. When using this option you will not be able to use the full 7.1-channel capabilities of the AVR in the main listening room, but you will be able to add another listening room without additional external power amplifiers. To use the internal amplifiers to power a remote zone, connect the speakers for the remote room location to the **Surround Back/Multiroom Speaker Outputs** ㊴. Before using the remote room you will need to configure the amplifiers for surround operation by changing a setting in the Multiroom menu, following the instructions shown on page 55.

NOTE: For all options, you may connect an optional IR sensor (Harman Kardon He 1000) in the remote room to the AVR via an appropriate cable. Connect the sensor's cable to the **Multiroom IR Input** ㉕ on the AVR and use the Zone II remote to control the room volume. Alternatively, you may install an optional volume control between the output of the amplifiers and the speakers.

Multiroom Video Connections
The AVR 745's multiroom system is designed to send both video and audio signals to a remote room location. This may be the same source that is in use in the main room, or you may select a separate input source through the Multiroom menus or remote, as explained on page 55.

The only additional connection required to add video capabilities to your multiroom system is to connect the **Multiroom Video Output** ㊽ either directly to the video display in the remote room or to any optional video distribution amplifiers that may be required when the length of the connection cable is such that additional amplification is required.

The following items may be of additional assistance when using video as part of a multiroom system with the AVR 745:

- Component video sources may not be routed through the multiroom system. When using a component video device, you should also make a composite or S-Video connection to permit use of the multiroom system.
- As with all cable installations, when running any wiring inside a wall be certain that the cable carries the proper NEC rating for the application. The use of improperly rated cables may present a safety hazard. Consult a qualified installer or licensed electrician should you have any questions about the use of in-wall cables for video or audio.
- When connecting the AVR 745 to the remote room video display, be aware of the distance limitations that may exist for both composite and S-Video connections. Although the use of low-loss coax for composite video and higher-grade S-Video cables may reduce signal loss, optional distribution amplifiers may occasionally be required when long cable runs are used.

A-BUS Installation Connections
The AVR is among the very few receivers available today that offers built-in A-BUS/*READY®* operation. When used with an optional A-BUS keypad or control module, you have all the benefits of remote zone operation without the need for an external power amplifier.

To use the AVR with an approved A-BUS product, simply connect the keypad or module that is in the remote room to the AVR using standard "Category 5" wiring that is properly rated for the inwall use specific to the installation. Terminate the wiring at the receiver end to a standard RJ-45 jack in compliance with the instructions furnished with the A-BUS module.

No further installation or adjustment is needed, as the A-BUS connector on the AVR routes the signals in and out of the keypad to their proper destination for power, signal source and control. The output fed to the A-BUS jack is determined by the AVR's multiroom system, and the menus may be used as is.

RS-232 Connections

The AVR is equipped with an **RS-232 Serial Connection Port** ㊵ that may be used for two purposes. When the port is connected to a compatible, optional, external computer, keypad or control system the AVR is capable of bi-directional communications that enable the external system to control the AVR, and for the AVR to report status and handshake data back to the controller. Use of the RS-232 port for this type of control requires specific technical knowledge, and we recommend that any connection and programming for control be made by a trained installer or technician familiar with the equipment being used. The RS-232 port may also be used as an access point through which the AVR's operating system and surround mode memories may be updated via connection to a compatible computer. At the time that any upgrade is available, instructions for making the connection and installing the upgrade will be available through the Product Support area of the Harman Kardon Web site at www.harmankardon.com.

The physical connection to the AVR's RS-232 port is a standard D-9 connection but to assure compatible and proper operation, specific software commands and pin wiring schemes may be required.

USB Connections

The AVR 745 is one of the few A/V receivers to offer a USB connection that may be used for both playback of compatible audio content from a computer and for loading of system updates (when available).

The physical connection between a computer and the AVR is a simple one, requiring only a cable with a USB "A" type connector on one side and a USB "Mini B" on the other. If you do not need the USB cable provided with the AVR 745 for programming the TC 30 remote, it may be used for this purpose.

Connect the larger, "A" connector on the cable to your computer or a USB hub and the end with the "Mini" USB connector to the **USB Jack** ⑱ on the AVR's rear panel.

NOTES ON USB:

- The USB jack on the AVR 745 is for connection to a computer, or to a hub connected to a computer, only. DO NOT connect it directly to other devices such as card readers, USB memory storage devices, external hard drives, USB accessories, digital cameras or cellular phones. Connection to these devices may cause damage to the device and/or the AVR that is not covered by the AVR's warranty.
- The AVR 745's USB connection may only be used for audio playback and system upgrades. It may not be used for other purposes, such as system control, video or still-image playback.

Trigger Jack Connection

The AVR 745 is equipped with two low-voltage **Amp Trigger Jacks** ㊻㊼ that may be used to activate optional, external power amplifiers, screen motors, motorized blinds or other compatible products that may be part of a home theater installation. Once the connections are made, operation is seamless in that the low-voltage control signal is sent to the screen, blinds or other device when the AVR 745 is turned on, and it is turned off along with the AVR. **Due to the complexity of interfacing with power-controlled devices, we strongly recommend that the installation be done by a qualified installer.**

The AVR 745's trigger jacks are 3.5mm mono mini plugs that delivers a 5-volt DC signal to the center pin ("tip") of the plug (+) with the outer shaft ("ring") of the plug as the negative (–) or ground connection.

AC Power Connections

This unit is equipped with two accessory AC outlets. They may be used to power accessory devices, but they should not be used with high-current draw equipment such as power amplifiers. The total power draw to the **Switched Outlet** ⑰ must not exceed 100 watts.

The **Switched** ⑰ outlet will receive power only when the unit is on completely. This is recommended for devices that have no power switch or a mechanical power switch that may be left in the "ON" position.

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

The AVR features a removable power cord that allows wires to be run to a complex installation so that the unit, itself, need not be installed until it is ready for connection. When all connections described above have been made, connect the AC Power cord to the **AC Power Cord Jack** ⑲.

The AVR draws significantly more current than other household devices such as computers that use removable power cords. For that reason, it is important that only the cord supplied with the unit (or a direct replacement of identical capacity) be used.

Once the power cord is connected, you are almost ready to enjoy the AVR's incredible power and fidelity!

Speaker Selection

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

Speaker Placement

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

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

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

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

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

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

When the AVR is used in 5.1-channel operation, the preferred location for surround speakers is on the side walls of the room, at or slightly behind the listening position. In a 7.1-channel system, both side surround and back surround speakers are required. The center of the speaker should face you (see below).

A 6.1 surround speaker adds an additional center back surround speaker to the system, enabling you to enjoy the benefits of advanced surround modes such as Dolby Digital EX, DTS-ES and Harman Kardon's proprietary Logic 7/7.1 processing.

To step up to a 6.1 system, first place the speakers for a 5.1 system. The "sixth" speaker should ideally be placed at the center of the room's rear wall, pointing directly toward the front center channel speaker.

Note: The 6.1-channel configuration is not recommended for the AVR 745. We strongly recommend a 7.1-channel installation as described below. When 6.1-channel materials are played through a 7.1-channel system, the same surround back channel information is played through both the left and right surround back speakers.

If you are only able to install a single surround back speaker at this time, you will not be able to run the full EzSet/EQ II 7.2-channel calibration procedure. In that case, we suggest you install all of your speakers except the surround back speaker, and run the EzSet/EQ II procedure for a 5.1-channel system (see page 31). After EzSet/EQ II has finished, connect the single surround back speaker to the *left* **Surround Back Speaker Outputs** ⑯. Then follow the instructions starting on page 36 to manually configure your surround back speaker.

We recommend that you consider adding a second surround back speaker as soon as possible.

Rear surround speakers are required when a full 7.1-channel system is installed, and they may also be used in 5.1 channel mode as an alternative mounting position when it is not practical to place the main surround speakers at the sides of the room. Speakers may be placed on a rear wall, behind the listening position. As with the side speakers, the center of the rear surrounds should face you. The speakers should be no more than 2 meters behind the rear of the seating area.

The additional Surround Back Left/Right speakers are placed at about 150 degrees on the circle, pointing inward, toward the listening area. The easiest way to visualize the placement of these speakers is to place the surround back left speaker directly opposite the right front speaker and to place the surround back right speaker directly opposite the left front speaker.

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.

The AVR 745 is equipped for 7.2 operation, which means that you can increase the low-frequency performance of your system by using two subwoofers, rather than one. When using two subwoofers, the following tips will add to the smoothness and power of the bass reproduction:

- Although it is not mandatory, you will have the best performance when both subwoofers are identical in terms of driver size, amplifier power and cabinet design (e.g., ported or sealed).
- The optimal placement when two subwoofers are in use is to have them on the side walls of the room, to the immediate left and right of the listening position. If that positioning is not practical, a good alternative is to place the subwoofers in the front left and right corners of the room, or to place the subwoofers in any two corners of the room.
- Regardless of which subwoofer placement option is chosen, EzSet/EQ II will help to smooth room conditions to deliver the optimal bass response.

For more information on subwoofer placement, as well as a variety of topics relating to audio and home theater, visit the Technology section of our Web site at www.harmankardon.com Links are provided there to informative white papers written by the acoustic and electronics experts at Harman Kardon and at our parent company, Harman International Industries, Inc.

Installation and Connections

Notes on speaker placement:

1. The limitations of your listening room, including the placement of walls and furniture, may make it difficult to follow the speaker placement suggestions shown above. Depending on the specific layout of the room, here are some ways to compensate for unusual conditions:

- Try to follow the suggested placement, but move the speakers within a meter from the preferred locations.
- Regardless of where they are placed, always try to make certain that the main surround speakers are the same distance from the front speakers. (For example, try not to have the right surround speaker further back into the room than the left surround speaker.)
- If it is not possible to wall-mount or place speakers on a shelf, consider the use of optional floor stands, available for many speakers.

2. When using ceiling-mounted in-wall speakers, follow the same guidelines shown for conventional floorstanding or shelf-mounted speakers.

3. When you have reassigned the surround back channels for use in a multiroom system, follow the speaker placement instructions for a 5.1-channel system for your main listening area (see page 20).

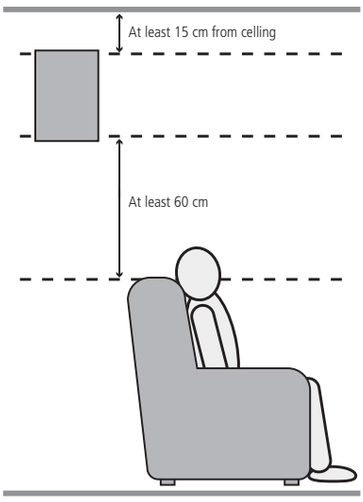
Remote Control Setup

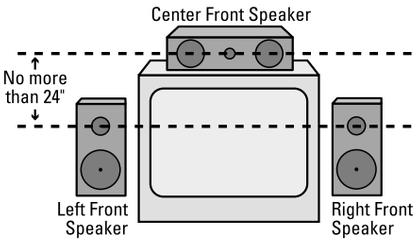
The AVR 745 comes with two remotes, Harman Kardon's TC 30 activity-based remote control with color LCD and the ZR 10, which is designed primarily for use in remote rooms but which may also be used as a compact remote in your main home theater room.

The TC 30 remote packed with your new receiver will operate the AVR 745 without any further programming. However, in order to take full advantage of the TC 30's power and flexibility, you will need to program it via the Internet so that the codes needed to control the other devices in your system (such as a video display, DVD players and set-top boxes) are transferred into the TC 30's memory. Programming the TC 30 is easy, and complete instructions for setting up the TC 30 may be found in the separate Installation Guide for the remote.

Before using the TC 30, you must install the rechargeable battery and connect the charging cradle to its power supply. The battery should then be charged for at least twelve hours before using the TC 30.

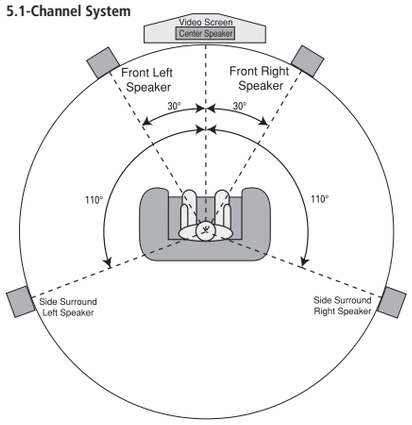
To allow you to continue with the setup of your AVR 745 while the TC 30 battery is charging, the ZR 10 may be used to navigate through the system menus. No configuration is required; simply remove the battery compartment door on the back of the ZR 10 and install the AAA batteries supplied with the AVR. Replace the battery cover and you are ready to go!



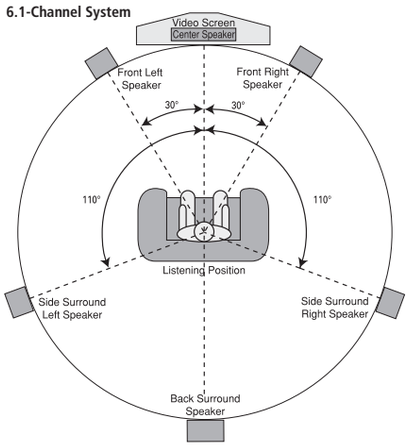


A) Front Channel Speaker Installation with Direct-View TV Sets or Rear-Screen Projectors

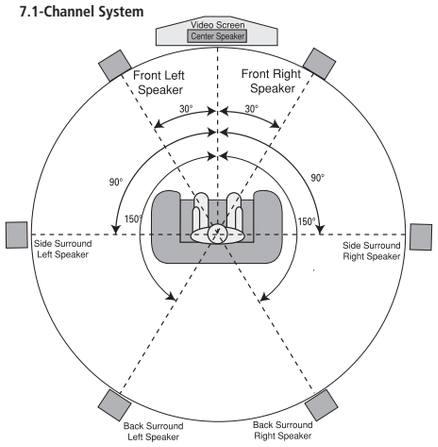
5.1-Channel System



6.1-Channel System



7.1-Channel System



System Configuration

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

Although it is necessary to assign input/output settings and surround mode choices manually, we recommend that you take advantage of the power and precision of EzSet/EQ II to automatically select and enter the settings for all other audio parameters. This will not only save you time; it will ensure that your room is calibrated and equalized with an accuracy not possible when these settings are made manually. You are now ready to power up the AVR 745 to begin these final adjustments.

First Turn On

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

1. Make certain that the AC power cord is firmly inserted in to the **AC Power cord Recepticle** ⑲ and plug the cord into an unswitched AC outlet. To maintian the unit's safety rating, DO NOT substitute the power cord for one with lower current capacity.

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 main front-panel lens. If left in place, the film may affect the performance of your remote control.

4. Turn the AVR on either by pressing the **System Power Control** 2 or the **Input Source Selector** 15 on the front panel, or via the remote by pressing the the **Devices Button** ❺ on the TC 30 and then pressing the **Screen Button** ❼ at the top of the left side of the remote, next to the screen message AV RECEIVER. The **Power Indicator** 3 will turn blue to confirm that the unit is on, and the **Main Information Display** 29 will also light up.

Using the On-Screen Display

When making the following adjustments, you may find them easier to make via the unit's on-screen display system. These easy-to-read displays give you a clear picture of the current status of the unit and facilitate speaker, delay, input or digital selection you are making.

To view the on-screen displays, make certain you have made a connection video or HDMI on the rear panel to the appropriate matching input of your TV or projector. In order to view the AVR's displays, the correct video input must be selected on your video display.

IMPORTANT NOTE: When viewing the on-screen menus using a CRT-based projector, plasma display or any direct-view CRT monitor or television, it is important that they not be left on the screen for an extended period of time. As with any video display, but particularly with projectors, constant display of a static image such as these menus or video game images may cause the image to be permanently "burned into" the CRT. This type of damage is not covered by the AVR warranty and may not be covered by the projector TV set's warranty.

The AVR has two on-screen display modes, "Semi-OSD" and "Full-OSD." When making configuration adjustments, it is recommended that the Full-OSD mode be used. This will place a complete status report or option listing on the screen, making it easier to view the available options and make the settings on the screen. The Semi-OSD mode uses one-line displays only.

Making Configuration Adjustments

To activate and configure the AVR 745 using the full-OSD system, either the TC 30 remote or the ZR 10 remote may be used, though you may find the ZR 10 an easier choice for this purpose.

With the TC 30:

- Press the **Devices Button** ❺.
- When the images on the LCD screen change, press the **Screen Button** ❼ at the top of the left side of the remote, next to the screen message AV RECEIVER.
- Press the **Menu Button** ⓫ to activate the OSD menu system.
- When the MASTER MENU or any subsequent menu is on the screen, use the ▲/▼ **Navigation Buttons** ⓮ to move through the menus or submenus. Press the **OK/Enter Button** ⓯, when appropriate, to enter a selection.
- To scroll through the options available for a specific menu, press the ◀/▶ **Navigation Button** ⓮. In most cases, you may simply select the option and then use the ▲/▼ **Navigation Buttons** ⓮ to move to the next line, while in some cases you may need to press the **OK/Enter Button** ⓯ first. The detailed instructions for each menu will tell you which buttons to press.
- Press the **Menu Button** ⓫ to remove the menus from the screen and return to normal operation.

With the ZR 10:

- Press the **OSD Button** Ⓔ to activate the menu system. The MASTER MENU (Figure 1) will appear.
- Once the MASTER MENU or any subsequent menu is on the screen, use the ▲/▼ **Navigation Buttons** Ⓕ to move through the menus or sub-menus. Press the **Set Button** Ⓠ, when appropriate, to enter a selection.
- To scroll through the available options for a specific menu, press the ◀/▶ **Navigation Button** Ⓕ. In most cases, you may simply select the option and then use the ▲/▼ **Navigation Buttons** Ⓕ to move to the next option, while in some cases you may need to press the **Set Button** Ⓠ first. The detailed instructions for each menu will tell you which buttons to press.

```
      ** MASTER MENU **

→ IN/OUT SETUP
  VIDEO MONITOR SETTINGS
  VIDEO SETUP
  AUDIO ADJUST
  SURROUND SETUP
  EZSET/EQ
  MULTI-ROOM
  ADVANCED
```

Figure 1

The full-OSD menus remain on the screen for twenty seconds after the last button press, after which they "time out" and disappear from the screen. The length of time menus remain on the screen before the time-out may be increased to as long as fifty seconds by adjusting the settings for FULL OSD TIME OUT in the ADVANCED SELECT menu, as shown on page 50.

In addition to the menu-driven full-OSD system, a number of settings and adjustments may be made directly from the TC 30 remote, using the semi-OSD system. To make adjustments using the semi-OSD, with the TC 30:

- Press the **Devices Button** ❺.
- When the images in the LCD change, press the **Screen Button** ❼ at the top of the left side of the remote control, next to the screen message AV RECEIVER.
- The screen images will change again. To adjust a setting on the first page of options, press the **Screen Button** ❼ to the left or right of the item you wish to change, and then use the ▲/▼ **Navigation Buttons** ⓮ to move through the available settings and option choices. Press the **OK/Enter Button** ⓯, when appropriate, to enter a selection.

• More adjustment options may be accessed by pressing the **Page Left/Right Buttons** ⑨.

When the full-OSD system is in use, the menu selections are not shown in the **Upper** or **Lower Display Lines** 29 and OSD ON will appear in the **Upper Display Line** 29 to remind you that a video display must be used. When the semi-OSD system is used in conjunction with the discrete configuration buttons, the on-screen display will show the current menu selection. That selection will also be shown in the **Upper** or **Lower Display Lines** 29, depending on which parameter is being adjusted.

NOTE: Semi-OSD messages are not available when a 720p or 1080i image is being viewed.

System Setup

The AVR 745 features an advanced memory system that enables you to establish different configurations for component video assignment, digital input, surround mode for each input source. To ease the speaker setting, the same speaker setting can also be made for all inputs. 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. Once these settings are made, they will automatically be recalled whenever you select that input.

To simplify initial configuration and operation, the AVR 745 has been preconfigured with input settings that are typical for home theater systems. These settings are detailed in the worksheets in the Appendix. Before adjusting the input settings, it is a good idea to compare your input connections to the defaults so that you may see where changes need to be made.

Before using the unit, you will probably want to change the settings for some inputs so that they are properly configured to reflect the use of digital or analog inputs and the surround mode associated with the input. Remember that since the AVR memorizes the settings for each input individually, you will need to make these adjustments for each input used. However, once they are made, further adjustment is only required when system components are changed.

To make this process as quick and as easy as possible, we suggest that you use the full-OSD system with the on-screen menus, and step through each input.

In/Out Setup

The first step in configuring the AVR is to select an input, i.e. to associate an analog or digital input with each input source in use, e.g. **CD** or **DVD**. Note that once an input is selected, all settings for the Digital Input, Speaker Configuration and Surround Mode will "attach" themselves to that input and be stored in a non-volatile memory. This means that once made, the selection of an input will automatically recall those settings. For that reason, the procedures described below must be repeated for each input source so that you have the opportunity to custom tailor each source to your specific listening requirements. However, once made they need not be changed again unless you need to alter a setting.

When using the full-OSD system to make the setup adjustments, press the **Menu Button** ⑪ or the **OSD** button Ⓔ once so that the MASTER MENU (Figure 1) appears. Note that the → cursor will be next to the IN/OUT SETUP line. Press the **OK/Enter Button** ⑮ or the **Set** button Ⓠ to enter the menu and the IN/OUT SETUP menu (Figure 2) will appear on the screen. Press the ◀/▶ buttons ⑭Ⓕ until the desired input name appears in the highlighted video, as well as being indicated in the front panel **Input Indicators** 28.

```
      * IN/OUT SETUP *

→ SOURCE: VIDEO 1
  TITLE:
  AUDIO IN-PORT: ANALOG
  AUDIO AUTO POLL: ON OFF
  VIDEO IN-PORT: AUTO
  COMPONENT INPUT: COMP 1
  VIDEO PROCESS: FAROUDJA
  A/V SYNC DLAY: 0mS
  MASTER MENU PAGE 2
```

Figure 2

When one of the four Video inputs is selected as the source, you have the option of renaming the input as it appears in the on-screen and front panel messages. This is helpful if you have more than one VCR, if you wish to associate a specific product brand name with the input, or to simply enter any name that will help you to remember which source is being selected.

To change the input name, press the ▲/▼ **Navigation Button** ⑭Ⓕ on the remote so that the → cursor is pointing to TITLE. Next, press and hold the **Set Button** ⑮Ⓠ for a few seconds until a flashing box appears to the right of the colon. Immediately release the **OK/Enter Button** ⑮ or the **Set Button** Ⓠ, as you are now ready to enter the device name.

Press the ▲/▼ **Navigation Button** ⑭Ⓕ and note that a complete set of alpha-numeric characters will appear with the start of the alphabet in capital letters followed by the lower-case letters and then numbers and symbols. When you press the ▼ **Navigation Button** ⑭Ⓕ, a series of symbols and numbers will appear, followed by a reverse list of the alphabet in lower-case letters. Press the button either way until the first letter of the desired name appears. If you wish to enter a blank space as the first character, press the ▶ **Navigation Button** ⑭Ⓕ.

When the desired character appears, press the ▶ **Navigation Button** ⑭Ⓕ and repeat the process for the next letter, and continue until the desired name is entered, up to a maximum of fourteen characters.

Press the **OK/Enter Button** ⑮ or the **Set** button Ⓠ to enter the input name into the system memory and to proceed with the configuration process.

After entering the input title, press the ▲/▼ **Navigation Button** ⑭Ⓕ to move to the next line.

The audio input defaults for all sources except the Tuner, USB and 6/8-Channel Direct inputs are shown in the table in the Appendix. If your system configuration follows the default table, no changes are needed and you may press the ▲/▼ **Navigation Button** ⑭Ⓕ to move to the next line.

With the cursor pointing to AUDIO IN-PORT, press the ◀/▶ **Navigation Button** ⑭Ⓕ to change the default to a different audio input connection. When the name of the desired input appears, press the ▲/▼ **Navigation Button** ⑭Ⓕ to move to the next line.

Note that in addition to using the menu system to change the audio input, you may change it at any time with the TC 30 remote by following these steps:

• Press the **Devices Button** ⑤.

• When the images in the LCD change, press the **Screen Button** ⑦ at the top of the left side of the remote, next to the screen message A V RECEIVER.

• At the next screen, press the **Screen Button** ⑦ to the left of the message SETUP MENU.

- When the new list of options appears, press the **Screen Button** 7 to the right of DIGITAL INPUT. The current digital input name will begin to flash in the **Upper Display Line** 29.
- Press the ◀/▶ **Navigation Button** 14 F until the desired input name appears on the right side of the **Upper Display Line** 29 or in the semi-OSD message.
- After five seconds, the input name will stop flashing, as it is entered into the system memory and the unit will return to normal operation.

In normal operation, when a digital audio stream is interrupted, the unit will automatically switch to the analog inputs associated with that source. This is particularly useful with cable set-top boxes where the input is normally digital, but occasionally changes to analog. If you wish to configure an input so that the auto-poll circuit is turned off, while the on-screen cursor is pointing to the AUDIO AUTOPOLL line, simply press the ◀/▶ **Navigation Button** 14 F so that OFF (rather than ON) is in a white video highlight.

When the desired auto-poll setting is entered, press the ▲/▼ **Navigation Button** 14 F to move to the next line.

When the cursor is at the VIDEO IN-PORT line, you are able to select an alternative to the default input setting for the video input associated with any source. For the Video 1 and Video 4 inputs, the factory default of AUTO will select either composite or S-video, depending on which has an active signal. For the Video 2, Video 3 and DVD inputs, the AUTO setting will normally select the default component input, but if it is not in use, the system will revert to a composite or S-video output if either one is active.

To have the AVR always look to a specific source connection when an input is selected, make certain that the on-screen cursor is pointing to the VIDEO IN-PORT line, and then press the ◀/▶ **Navigation Button** 14 F until the name of the desired input appears. The default setting for HDMI inputs is AUTO and normally need not be changed. However, in systems where the HDMI connection is used for multichannel audio only (e.g., HDMI 1.1), but the video connection is component, due to limitations on the video display, the setting here should be changed to COMPONENT.

When the desired video input setting has been made, press the ▲/▼ **Navigation Button** 14 F to move to the next line.

If your system includes any sources that are equipped with Y/Pr/Pb component video outputs, the AVR is able to switch them to send the proper signals to your video display. Each of the **Component Video Inputs** 20 22 42 is assigned to a default source, as shown in the table in the Appendix, but if you have connected your system differently than the factory settings, you may select any of the three inputs for any source except the HDMI inputs or the Tuner. If your system does not include component video at this time, or if you do not need to change these defaults, press the ▼ **Navigation Button** 14 F to go to the next setting.

To change the Component Video assignment, first make certain that the → cursor is pointing to the COMPONENT IN line on the menu screen, and then press the ◀/▶ **Navigation Button** 14 F until you see the desired input in the highlighted video.

When the desired component input has been selected, press the ▼ **Navigation Button** 14 F go to the next setting.

At the VIDEO PROCESS line, you are able to select which type of video processing or conversion, if any, is to be used with the input source being configured. The default setting is to have the AVR 745's Faroudja processing circuitry in use, which will deliver the best image quality when a digital video display is in use. If you do not need to change the setting, simply press the ▲/▼ **Navigation Button** 14 F to move to the next line.

If your video display is not capable of accepting high-resolution (480p and above) signals through either an HDMI or component video connection, it is very important that this setting be changed. Three options are available:

The default setting is FAROUDJA. Depending on the input source, the video signals will be handled in different ways:

- A standard-definition (480i or 576i) analog signal (composite, S-video or component) will be digitized and sent to the Faroudja video processor for enhancement. The signal will be available as both an analog component and HDMI signal. The standard definition video signal will also be available at the record outputs.
- An analog component high-definition signal will be digitized and sent to the Faroudja video processor for enhancement. The signal will be available as both an analog component and an HDMI signal, but not at the analog composite or S-video monitor or record outputs.
- Any HDMI signal other than 1080i will be sent to the Faroudja video processor for enhancement and it will be available as an output at both the HDMI and analog component outputs. Program material that carries HDCP copy protection encoding will only be available through the HDMI output.
- HDMI signals in 1080i resolution will be sent directly to the HDMI and analog component outputs without processing. Program material that carries HDCP copy protection encoding will only be available through the HDMI output.

The V-CONVERSION setting will not apply any video enhancement or processing to the incoming video signal, but it will output it in one of the following ways, depending on the input source.

- A standard-definition (480i or 576i) analog signal (composite, S-video or component) will be converted so that it is available as an HDMI signal at its input resolution, as well as at the standard composite, S-video or component analog video outputs. The signal will also be available at the record outputs.
- An analog component high-definition signal will be digitized and output at its input resolution through the HDMI outputs and as an analog component signal, but not through the analog composite or S-video monitor or record outputs.
- HDMI input signals, regardless of their resolution, will be output through both the HDMI and analog component outputs. Program material that carries HDCP copy protection encoding will only be available through the HDMI output.

The BYPASS setting will not apply any video enhancement or processing to the incoming video signal, but it will output it in one of the following ways, depending on the input source.

- Analog signals (composite, S-video or component) will output only in the resolution and format that matches the input for both the main "Monitor" connection as well as for the record outputs.
- HDMI input signals, regardless of their resolution, will be output through the HDMI and analog component outputs. Program material that carries HDCP copy protection encoding will only be available through the HDMI output.

In addition to the changes to the video processing configuration that are made through the IN/OUT SETUP menu, you may change the setting for an input at any time by pressing the ◀/▶ **Buttons 7 14** on the front panel to cycle through the available choices.

When any needed change to the video processing setting has been made, press the ▲/▼ **Navigation Button 14 F** to move to the next line.

At the A/V SYNC DELAY line, you are able to enter a setting that delays the audio output slightly behind the video so that the loss of lip sync that may occur due to digital video processing in the transmission of a program, in the playback unit or in the display is corrected. This lack of lip sync is not a fault of the sources; rather, it is a by-product of video signal processing. In most cases, we recommend that the delay adjustment be made using the direct-access controls on the remote so that you may more accurately adjust the delay while viewing the on-screen image, following the instructions shown on page 36, but you may also make it here using the menu system. As the amount of delay needed may vary from one source to another, we strongly recommend that you adjust it for each input.

To adjust the A/V sync delay time from the IN/OUT SETUP menu, make certain that the cursor is pointing to the A/V SYNC DELAY line, and then press the ◀/▶ **Navigation Button 14 F** until the desired amount of delay is applied so that the on-screen video matches the audio.

When all configuration adjustments on this menu screen have been made, press the ▲/▼ **Navigation Button 14 F** until the on-screen cursor is pointing to PAGE 2 and then press the **OK/Enter Button 15** on the TC 30 or the **Set Button Q** on the ZR 10 remote to move to the second screen of input/output settings. If all settings for input configuration are complete, press the ▲/▼ **Navigation Button 14 F** until the on-screen cursor is pointing to MASTER MENU and then press the **Set Button Q** on the ZR 10 remote to return to the main menu screen.

The second page of the IN/OUT SETUP menu (Figure 3) allows you to further configure the AVR 745 for special custom features.

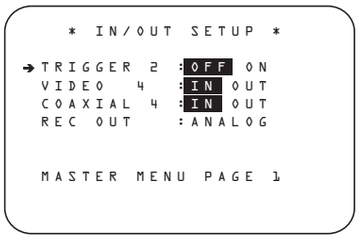


Figure 3

The TRIGGER 2 line enables you to choose whether a trigger voltage signal is sent to the **Trigger 2 Output Jack 47** when a specific input is selected. Unlike the **Trigger 1 Output 46**, which always has a trigger voltage present when the AVR 745 is turned on, the default for the Trigger 2 connection is off. The setting on this menu line allows you to turn it on for a specific input so that an input or source-dependent accessory (such as a motorized projection screen or blinds) may only be activated when, for example, an input which requires a projection screen or darkened room is selected.

To change the setting, press the ◀/▶ **Navigation Button 14 F** until the desired setting appears. Press the ▲/▼ **Navigation Button 14 F** to move to the next line when the setting is correct or if no configuration changes are required.

An exclusive Harman Kardon feature is the ability to switch front panel jacks from their normal use as inputs to output connections so that portable recording devices may easily be connected. The front panel analog **Video 4 Jacks 21** are normally set as an input for use with camcorders, video games and other portable audio/video products, but they may be switched to an output for connection to portable audio/video recorders. To temporarily switch them to outputs, select the IN/OUT SETUP menu. Press the ▼ button **14 F** until the on-screen → cursor is pointing to the VIDEO 4 line. Press the ▶ button **14 F** so that the word OUT is highlighted. Note that the **Input/Output Status Indicator 19** between the S and Composite video jacks will turn red, indicating that the analog **Video 4 jacks 21** are now record outputs.

On the AVR, the **Coaxial 4 Digital Jack 20** is normally an input, but it may also be switched to a digital output for use with CD-R/RW decks, MD recorders or other digital audio recorders. To change the jack to an output, press the ▲/▼ buttons **14 F** while the IN/OUT SETUP menu is on the screen so that the → cursor is next to COAXIAL 4. Then press the ◀/▶ buttons **14 F** so that the word OUT is highlighted. Note that the **Digital Coax 4 Status Indicator 19** will turn red, indicating that the jack is now a record output.

Note: A signal will be sent to this jack only when the input selected for use by the AVR is digital. Digital signals will be passed through regardless of their format, and which digital input (optical or coax) they are fed from. However, analog signals are not converted to digital, and the format of the signal (e.g., PCM, Dolby Digital or DTS) may not be changed.

Selection of the jacks as an output will remain effective as long as the AVR is on. However, once the unit is turned off, the jack will revert to its normal use as an input when the unit is turned on again.

The REC OUT line enables you to select what the audio output is at the analog record outputs for the input source being configured. Press the ◀/▶ **Navigation Button 14 F** to choose one of the following if you wish to change the default setting:

- ANALOG selects an unprocessed pass-through of an analog source and is the default setting for most inputs.
- DSP DOWNMIX selects a two-channel downmix of a multichannel digital input.

When the adjustment has been made, or if no adjustment is required and all settings on this page are complete, press the ▲/▼ **Navigation Button 14 F** until the on-screen cursor is pointing to PAGE 1 and then press the **OK/Enter Button 15** on the TC 30 or the **Set Button Q** on the ZR 10 remote to return to the main IN/OUT SETUP menu to configure another input, or if no further input configuration adjustments are needed, press the ▲/▼ **Navigation Button 14 F** until the on-screen cursor is pointing to MASTER MENU and then press the **OK/Enter Button 15** on the TC 30 or the **Set Button Q** on the ZR 10 remote to return to the main menu screen.

Video Monitor Settings

The VIDEO MONITOR SETTINGS menu (Figure 4) is unique in that it contains a mix of information display lines that detail status information about the AVR 745's video system settings, along with a few lines where a specific parameter may be changed. With the MASTER MENU on the screen, press the ▲/▼ **Navigation Button** 14 F until the on-screen cursor is pointing to VIDEO MONITOR SETTINGS and then press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q on the ZR 10 remote to move to the menu screen.

```
  *VIDEO MONITOR SETTINGS*
  IN VIDEO FORMAT: 1080i
  IN VIDEO COPY PROT: ON
  VIDEO PROCESS: FAROUDJA
  OUT VIDEO FORMAT: 1080i
➔ COMPONENT OUT: OFF
  S-VIDEO OUT: OFF
  COMPOSITE OUT: OFF
  DISPLAY INTER: HDMI/DVI
  HDMI AUDIO OUT: NO
  BACK TO MASTER MENU
```

Figure 4

The IN VIDEO FORMAT line is an informational display of the resolution of the incoming video stream, and may not be adjusted.

The IN VIDEO COPY PROT line is an informational display that shows whether or not an incoming video signal contains copy protection encoding, and may not be adjusted.

The VIDEO PROCESS line is an informational display of the setting made in the IN/OUT SETUP menu indicating how incoming video is processed for the input being viewed, and may not be adjusted.

The OUT VIDEO FORMAT line is a non-adjustable informational display of the video resolution of the output signal, as determined by the input and whether or not video processing or conversion is in use.

The COMPONENT OUT line is an informational display of whether or not the Component Video outputs are ENABLED or OFF, based on the input signal type and resolution, and whether or not the incoming video signal has HDCP content protection. It may not be adjusted.

The S-VIDEO OUT line is an informational display of whether or not the S-video outputs are available at a 576i resolution (or OFF), based on the input signal type and resolution and whether or not the incoming video signal has HDCP content protection. It may not be adjusted.

The DISPLAY INTER line allows you to choose between an ANALOG video output default value and an HDMI/DVI output by pressing the ◄/► **Navigation Button** 14 F to make the desired selection. When the setting is ANALOG, the HDMI output is placed in a Standby mode so that it automatically switches to HDMI when an HDMI signal is detected. If a high-definition input source is not HDCP-content-protected, it may be output through the component jacks; otherwise, it will be sent only to the HDMI outputs. The HDMI/DVI setting routes all converted or processed video to the HDMI outputs.

The HDMI AUDIO OUT line allows you to choose whether a two-channel downmix of the audio that accompanies the selected source is sent over the HDMI connection (YES) at the maximum bit rate the display's audio system is capable of handling, or not (NO). To change the setting, press the ◄/► **Navigation Button** 14 F to make the desired selection.

When required adjustments have been made for this input, or if no adjustment is required, press the ▲/▼ **Navigation Button** 14 F until the on-screen cursor is pointing to BACK TO MASTER MENU and then press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q on the ZR 10 remote to return to the main menu screen.

Video Setup

The AVR 745 is unique among audio/video receivers in that it not only includes an onboard video processing system using DCDi by Faroudja technology, but that it also allows the video controls to be individually set for each video input source. This permits you to compensate for the problems inherent in older technologies such as VCR while taking the maximum advantage of new source options such as DVD, digital cable and satellite programming.

IMPORTANT NOTE: The video processor is only available when the AVR 745 is connected to a "digital ready" or HDTV video display, which is defined as a product that is able to accommodate input sources of 480P or greater through Y/Pr/Pb analog component inputs or HDMI connections. If your video display does not have that capability, you may skip the settings in this section, as they will not apply to your home theater system.

Within the VIDEO SETUP MAIN menu are the settings that define the input and establish the global settings for the video output. The two video ADVANCED CONFIGURATION submenus contain the individual parameters that will be applied to the specific video input in use. Before proceeding with the setup, we suggest that you look at the default settings for each input, which are listed in the appendix to this manual. If the settings for any input mirror the configuration of your home theater system, then no further adjustment is needed.

It is worth noting that the impact of many of the individual settings is subtle, and it is only when they are grouped together that the full power of the video processing system is unleashed. That means that there is no "right" or "wrong" setting in many cases, and the setting that looks best to your eyes is the one that is truly correct for your specific combination of equipment, room environment and your own personal viewing preferences. Feel free to experiment with different setting combinations, as you can't "hurt" anything by doing so.

When you do reach the combination of settings for both your display system and each input, it is a good idea to write those settings down using the worksheets found on pages 60 to 62. (A copy of the blank worksheets may also be found in the support section our Web site at www.harmankardon.com/support.)

To reach the VIDEO MAIN menu, first make sure the MASTER MENU is on the screen, and then press the ▲/▼ **Navigation Button** 14 F until the on-screen cursor is pointing to VIDEO SETUP and then press the **OK/Enter Button** 15 on the TC 30 or the Set Button Q on the ZR 10 remote. The VIDEO MAIN menu (Figure 5) will appear on the screen.

```
      ** VIDEO MAIN **

➔ SOURCE           :VIDEO 1
  TITLE            :
  VIDEO IN-PORT    :AUTO
  VIDEO PROCESS    :FAROUDJA
  SOURCE TYPE      :VCR
  DISPLAY TYPE     :CRT
  ENHANCE LEVEL    :32
  PICT ADJUST      :ORIGINAL
  ADVANCED CONFIG SET
  BACK TO MASTER MENU
```

Figure 5

System Configuration

Once the main VIDEO MAIN menu is displayed with the on-screen ➔ cursor pointing to SOURCE press the ◀/▶ **Navigation Buttons** ⑭ Ⓕ until the name of the input you wish to change the settings for is shown. At the same time, any video input name that you had previously programmed to individualize the source setting will be shown on the TITLE line. If you have not already changed the input name and wish to do so at this time, press the ▼ **Navigation Button** ⑭ Ⓕ so that the on-screen ➞ cursor is pointing to TITLE and follow the instructions for changing the input source name as shown on page 23.

Once the source to be adjusted has been selected, press the ▲/▼ **Navigation Button** ⑭ Ⓕ until the on-screen cursor is pointing to SOURCE TYPE as the two lines below the TITLE line are informational only, and their setting may not be adjusted in this menu.

- The VIDEO IN-PORT line shows the video input jacks used for this input. If AUTO has been selected, the display will alternate between AUTO and the actual active input.
- The VIDEO PROCESS line shows whether the system is in the Bypass, Video Conversion or Faroudja video processing mode. Note that the FAROUDJA setting must be enabled for the input being adjusted through the IN/OUT MENU in order for the settings available on this menu and the ADVANCED CONFIGURATION menus to be active.

Once an input is selected, the first configuration choice is to tell the AVR 745 what type of device is being used for that source. To change this setting from the system default, press the ▼ **Navigation Button** ⑭ Ⓕ so that the on-screen ➞ cursor is pointing to SOURCE TYPE and then press the ◀/▶ **Navigation Buttons** ⑭ Ⓕ to select from among the options shown one that is closest to the type of product connected to that input. The selection made will change the settings on the ADVANCED CONFIGURATION SUB-MENUS to the parameters best suited to that type of device. Of course, you may also change these settings yourself at any time through the submenus.

The list of input source defaults is:

DVD: This setting is optimized for use with the output signal of a typical DVD player.

VCR: This setting is optimized for use with the output signal of an analog videocassette recorder.

CABLE DIG: This setting is optimized for use with digital cable set-top boxes. However, it is important to note that even when a digital cable system is in use, there may be a mix of digital and analog channels. We recommend that you start with this setting and then change the options in the ADVANCED CONFIGURATION menus as needed to tailor the output to your preferences.

SAT DIG: This setting is optimized for use with digital satellite-system set-top boxes.

CABLE ANALOG: This setting is optimized for use with analog cable set-top boxes.

SAT ANALOG: This setting is optimized for use with analog satellite-system set-top boxes.

CAMERA ANA: This setting is optimized for use with analog VHS and VHS-C camcorders.

CAMERA DIG: This setting is optimized for use with digital camcorders or still image cameras.

The DISPLAY TYPE line is a global, rather than input-dependant setting, as there is only one display connected to the AVR. The settings here are primarily changes to the video enhancement level and aspect ratio for a specific type of device, and defaults were selected after testing on a wide range of product brands. To change this setting, press the ▼ **Navigation Button** ⑭ Ⓕ so that the on-screen ➞ Cursor is pointing to DISPLAY TYPE and then press the ◀/▶ **Navigation Button** ⑭ Ⓕ to select from among the options shown that is closest to the type of display being used. The selection made will change the settings on the ADVANCED CONFIGURATION SUB-MENUS to the parameters best suited to that type of device. Of course, you may also change these settings yourself at any time through the sub-menus. The list of video source defaults is:

CRT: This setting is optimized for use with displays that use cathode ray tubes (CRTs) to display images. For the purposes of this setting it does not matter if the display is a single tube, direct view CRT television or a three-tube front or rear projector.
The default aspect ratio is 4:3, but you may change that setting if desired on the second page of the Advanced Configuration submenus, as shown on page 28.

REAR PROJECT: This setting is optimized for rear projectors, regardless of the imaging technology used.

FRONT PROJECT: This setting is optimized for front projectors, regardless of the imaging technology used.

PLASMA: This setting is optimized for plasma displays, regardless of whether they are full High Definition-capable or "ED" displays that are HD-compatible.

DLP: This setting is optimized for use with projectors that use light engines with Texas Instruments DLP™ technology. For the purposes of this setting, it does not matter whether the display uses one or three chips, or whether the display is a front- or rear-projection system. The default aspect ratio is 16:9, but you may change that setting if desired on the second page of the Advanced Configuration submenus, as shown on page 28.

LCD: This setting is optimized for use with displays that use liquid crystal display (LCD) technology. For the purposes of this setting, it does not matter whether the display is a direct-view LCD flat panel, or a front- or rear-projection system using three LCDs as its light engine. The default aspect ratio is 16:9, but you may change that setting if desired on the second page of the Advanced Configuration submenus, as shown on page 28.

The ENHANCE LEVEL setting adjusts the degree to which the enhancement circuits that adjust the high frequency content of the signal are applied. This is similar to the "Sharpness" control on a traditional television. This setting acts on the vertical and horizontal as well as the luminance and chrominance signals to offer what will appear as enhanced depth in the picture as well as greater small object detail. In general, lower settings are applicable for digital displays and sources, while higher settings may be preferred for CRT based-displays and analog sources.

If you wish to change the default setting to suit your specific display type, input sources and personal image preferences, when the VIDEO MAIN menu is on the screen, press the ▼ **Navigation Button** ⑭ Ⓕ so that the on-screen ➞ Cursor is pointing to ENHANCE LEVEL and then press the ◀/▶ **Navigation Button** ⑭ Ⓕ to enter the setting that delivers the best image to your eyes on the scale of 0 to 100.

Once the settings have been made on the main video setup screen, you may either return to the main setup menu or proceed to the two Advanced Configuration setting menus. The options on those pages are set by your choice on the SOURCE TYPE line as shown above, but you may wish to change one or more of the settings to customize video presentation.

To return to the MAIN MENU, press the ▼ **Navigation Button** 14 F so that the on-screen → cursor is pointing to BACK TO MASTER MENU and press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q.

To change the settings on the ADVANCED CONFIGURATION menus, press the ▼ **Navigation Button** 14 F so that the on-screen → cursor is pointing to ADVANCED CONFIG SET and press the **Set Button** Q. The first page of the ADVANCED CONFIGURATION menus (Figure 6a) will appear on-screen.

Advanced Configuration Settings

The Advanced Configuration Settings may be used to change the individual items that make up the default profile for each video input. You may change none, one or as many of the settings as you wish to create the on-screen image that you prefer. As with all of the video settings, you can't "hurt" anything by experimenting with the settings and while the defaults represent the result of extensive lab testing with a variety of display types, input sources and test signals, there is no "right" or "wrong" setting other than the ones that look best to you.

The settings available on Page 1 of the ADVANCED CONFIGURATION menus (Figure 6a) are all On/Off settings. When the page is shown, use the ▲/▼ **Navigation Button** 14 F to move the on-screen → cursor next to the line for the setting you wish to change. Then, press the ◄/► **Navigation Button** 14 F to turn the setting on or off.

```
  *ADVANCED CONFIG PAGE1*
→ NOISE REDUCTION     :ON
  X-COLOR SUPPRESSOR  :ON
  DCDi INTERPOLATION  :ON
  FILM MODE DETECT    :ON
  FILM MODE EDIT DET  :ON
  FLESHTONE NOIS RED  :ON
  COMP VIDEO ENHANCE  :ON

  TO VIDEO MAIN PAGE1
```

Figure 6a

The settings available on Page 1 of the ADVANCED CONFIGURATION menu are the following:

NOISE REDUCTION: When this setting is turned on, there is a reduction in the video noise that is often present in analog input sources.

X-COLOR SUPRRESSION: When this setting is on, there is a reduction in the cross-color interference that typically appears in composite video sources as moiré in finely detailed objects.

DCDi INTERPOLATION: DCDi stands for Directional Correlation De-interlacing, and it is a Faroudja technology that examines each pixel for the optimal direction from which to interpolate the video information with regard to local edges. This adaptive process prevents the appearance of staircasing and the jagged edges that are often visible with other means of de-interlacing.

FILM MODE DETECT: When this setting is on, special circuits are used to detect the presence of film-originated material so that the original film-frame sequence may be recovered by weaving together the appropriate video fields.

FILM MODE EDIT DETECT: When this setting is on additional processing is applied when film-based material is detected so that any disruption in the frame sequence of film-based material due to video edits or the overlay of video text over film is compensated for by processing before artifacts such as feathering may appear.

FLESHTONE NOISE REDUCTION: When this setting is on, the processing is adapted to preserve the detail in faces and flesh tones while reducing noise in the total picture.

COMPOSITE VIDEO ENHANCE: When this setting is on, composite video signals are processed at the level set in the main Video menu to adjust the high frequency content of the signal. This setting acts on the vertical and horizontal as well as the luminance and chrominance signals to offer what will appear as enhanced depth in the picture as well as greater small object detail.

When all settings on this submenu page that require adjustment have been made, use the ◄/► **Navigation Buttons** 14 F to move the on-screen → cursor next to PAGE 2 and then press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q. to move the next page of Advanced Configuration settings, or move the on-screen → cursor next to the TO VIDEO MAIN line to return to the main Video menu.

```
  *ADVANCED CONFIG PAGE2*
→ VCR SYNC TIME ENH:ON
  TEST VIDEO        :OFF
  OUT ASPECT RATIO  :4:3
  BRIGHTNESS        :100
  CONTRAST          :100
  SATURATION        :100

  TO VIDEO MAIN PAGE2
```

Figure 6b

The settings available on Page 2 of the ADVANCED CONFIGURATION menu (Figure 6b) are the following:

TEST VIDEO: The test signals that are called up on this line are designed for use in factory setup of the AVR 745's video processing circuit and they are not designed for user adjustment of any controls on your video sources, on your video display or on the AVR 745 itself. You may bypass this setting line unless you wish to view the signals, but remember that they are not designed for any consumer use.

To view the test signals, with the on-screen → cursor next to the TEST VIDEO line, press the ◄/► **Navigation Buttons** 14 F to select one of the test signals described below, and then press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q to activate the test signal. The test signal will remain on the screen for the length of time selected in the ADVANCED SETTINGS menu for the on-screen menus, as explained on page 53. The four test signals are:

Color Bars: These are a variation of traditional split-field color bars used to check the internal settings for luminance/chrominance voltage levels with respect to the eight basic colors.

TriangleFixed: This test signal puts two opposing triangles on-screen, with a black triangle on the right and a white triangle on the left to test aspects of the pull-down logic software.

TriangleFlashing: This test signal also puts two opposing black and white triangles on the screen, but it flashes them at a high frame rate to test the 3/2 pull-down edit detection and other aspects of the processor and interpolation software.

Ramp/Square: This complex pattern uses a variety of fixed and pulsating gray-scale tests to test different aspects of the 3/2 pull-down edit detection and other aspects of the processor and interpolation software.

The OUT ASPECT RATIO line sets the aspect ratio for the input source currently being adjusted. To make a change from the default setting, press the ◀/▶ **Navigation Buttons** 14 F. Remember that this setting impacts the actual playback only. The on-screen menus will always be output as a 4:3 signal, though they may be stretched to 16:9 by a setting available in your video display.

BRIGHTNESS: The changes to this setting are similar to the Brightness control on your display, changing the video level. If circumstances are such that a source has a low signal and appears dark you may wish to change this setting, but be careful not to increase it to the point where the video display is over-driven into clipping or blooming.

CONTRAST: The changes to this setting are similar to the Contrast control on your display, changing the white level to compensate for poor contrast.

SATURATION: The changes to this setting are similar to the Color control on your display, and may be used as needed to compensate for over or under color saturation.

When all settings on this sub-menu page that require adjustment have been made, use the ◀/▶ **Navigation Buttons** 14 F to move the on-screen → cursor next to PAGE 1 and then press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q to return to the previous ADVANCED CONFIGURATION settings page, or move the on-screen → cursor next to the TO VIDEO MAIN line to return to the main Video menu.

Audio Setup

This menu allows you to configure the tone controls. If you do not wish to change any of those settings at this time, proceed to the next menu screen. However, to make configuration changes to those parameters, make certain that the MASTER MENU is on the screen with the → cursor pointing to the AUDIO SETUP line, and press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q. The AUDIO SETUP menu (Figure 7) will appear.

```
    * AUDIO SETUP *

→TONE            :IN OUT
 BASS            : 0
 TREBLE          : 0


 BACK TO MASTER MENU
```

Figure 7

The first line controls whether or not the bass/treble tone controls are in the signal path. The normal default is for them to be in-line, but if you wish to remove them from the circuit for "flat" response, first make certain that the → cursor is pointing to the TONE line on the menu and press the ◀/▶ **Navigation Button** 14 F so that OUT is highlighted in reverse video.

If you wish to leave the tone controls in the signal path, the amount off boost or cut for bass and treble may be adjusted by pressing the ▲/▼ **Navigation Button** 14 F so that the → cursor is next to the line for the setting you wish to adjust. Next, press the ◀/▶ **Navigation Button** 14 F until the desired setting is shown.

When all desired changes have been made on this menu, press the ▲/▼ **Navigation Button** 14 F so that the → cursor is next to the BACK TO MAIN MENU line and press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q.

Surround Setup

The next step for that input is to set the surround mode you wish to use with that 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 42 may help you select the mode best suited to the input source selected. For example you may select Dolby Pro Logic II or Logic 7 for most analog inputs and Dolby Digital for inputs connected to digital sources. In the case of inputs such as a CD Player, Tape Deck or Tuner, you may wish to set the mode to Stereo, if that is your preferred listening mode for standard stereo sources, where it is unlikely that surround encoded material will be used. Alternatively, the 5 Channel Stereo or Logic 7 Music mode may also be a good choice for stereo-only source material.

It is easiest to complete the surround setup using the full-OSD on-screen menus. From the MASTER menu (Figure 1), press the ▲/▼ buttons 14 F until the → cursor is next to the SURROUND SELECT menu. Press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q so that the SURROUND SELECT menu (Figure 8) is on the screen.

```
 ** SURROUND SETUP **
➔SOURCE:   VIDEO 1
 AUDIO IN PORT: ANALOG
 AUDIO IN: PCM 44.1kHz
 ADC SAMPLING: 48K 96K
 SURR MODE: LOGIC 7
 SURR SELECT: MUSIC 5.1
 DEFAULT SURR: LAST
 SURROUND CONFIG
 DOLBY SURR SETUP
 BACK TO MASTER MENU
```

Figure 8

The first line on the menu allows you to select the input for which the specific surround settings will be applied. Press the ◀/▶ **Navigation Buttons** 14 F to select the input source to be configured.

The AUDIO IN-PORT and AUDIO IN lines are for display only and may not be changed through the SURROUND SETUP menu. The AUDIO IN-PORT displays the physical connection source for the current active input, and the AUDIO IN line shows the signal type present. Note that an UNLOCK message in the AUDIO IN line indicates that a digital physical input source has been selected, but that no data stream is present.

When the input selection has been made, press the ▲/▼ **Navigation Button** 14 F to move to the next configuration line.

The ADC SAMPLING line is where you determine whether the unit's upsampling feature is turned on or off. The default setting of 48kHz puts the feature in a bypass, or "off," mode and will pass digital audio data through the DSP at its native sample rate. To process incoming 44.1kHz signals at a higher resolution, upsampled 96kHz sample rate, press the ◀/▶ **Navigation Buttons** 14 F once so that 96kHz is highlighted.

When the desired setting has been made, or if no adjustment is required at this line, press the ▲/▼ **Navigation Button** 14 F to move to the next configuration line.

The SURR MODE and SELECT lines are related, as they guide you to the choice of the surround mode that will be activated whenever the input being configured is selected.

At the SURR MODE line, press the ◀/▶ **Navigation Buttons** 14 F to select the surround mode group (such as Dolby modes, DTS modes, Logic 7 modes, and DSP or Stereo modes) that is applicable to the input source. After making a selection, press the ▲/▼ **Navigation Button** 14 F to move to the SELECT line.

At the SELECT line, you are able to choose the specific mode to be used from within the major surround mode group. The choice of modes is governed by the input type (as some modes such as Dolby Digital or DTS-ES are not available for analog sources), as well as by the speaker configuration, since some modes are only available when a full 7.1 speaker complement is present. The full list of available modes is detailed in the surround mode chart on page 42. In addition, you may also use the settings in the SURROUND CONFIG menus to delete modes you do not normally use from the available choices.

When both a surround mode group and a specific surround mode have been selected, press the ▲/▼ **Navigation Button** 14 F to move to the next configuration line.

The DEFAULT SURR mode line is where you choose the mode that is activated when a digital source is selected. The factory default setting of LAST will activate the last-used mode for any digital source. If you prefer to always have a digital source switch to the specific mode encoded by digital data flags in the incoming audio data stream, press the ◀/▶ **Navigation Buttons** 14 F so that ORIGINAL appears.

Before proceeding to the SURROUND CONFIG line, it is worth noting that the settings in the submenus attached to that line may require a considerable amount of time to complete. Although they are useful in that they allow you to customize the list of surround modes that appear in normal use of the AVR, you may wish to bypass those settings at this time so that you may complete the configuration process. You may return to this menu line at a later time, once you have had a chance to listen to the various surround modes and determine which you want to "keep" and which you do not want to use. The settings in this line are not primary controls and do not impact the way the AVR "sounds."

To proceed to the SURROUND CONFIG line, press the ▲/▼ **Navigation Button** 14 F to move to that line; otherwise, press it again to move to the DOLBY SURR SETUP line and skip to the instructions for that setting.

The SURROUND CONFIG line is your gateway to a broad range of surround mode configurations. To continue, press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q on the ZR 10 remote to go to the main SURROUND CONFIG menu (Figure 9).

```
  ** SURROUND CONFIG **

➔ LOGIC 7 GLOBAL:OFF
  DOLBY MULTI CONFIG
  DOLBY 2.0 CONFIG
  DTS CONFIG
  PCM 44.1/48kHz CONFIG
  PCM 96k CONFIG

  BACK TO SURROUND CONFIG
```

Figure 9

The LOGIC 7 GLOBAL line is the only item on this menu page that is menu-specific, and it allows you to select whether or not Logic 7 will be the default surround mode for any incoming audio signal. The default setting is OFF, which chooses the native mode. Press the ◀/▶ **Navigation Buttons** 14 F so that ON appears, to activate the global Logic 7 setting for this input.

The remaining five items in this menu are global settings that take you to a submenu listing the individual surround modes available within the selected mode group. To select a surround mode list, press the ▲/▼ **Navigation Button** 14 F until the on-screen cursor is pointing to the desired mode, and then press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q on the ZR 10 remote. Within each menu, press the ▲/▼ **Navigation Button** 14 F to move the cursor up and down through the list, and then press the ◀/▶ **Navigation Buttons** 14 F to turn the mode "ON" or "OFF."

- When a mode is ON, the mode will appear in all menu selections whenever you are changing the surround mode.
- When a mode is OFF, the mode will not appear.
- Some modes, such as Dolby Digital, DTS and the Stereo mode in the PCM menus, are not defeatable.

A complete list of the AVR 745's surround modes may be found on page 42, but here are some items that will help you decide which modes you want included in your setup, and which modes you may wish to turn off.

- The DOLBY MULT CONFIG group contains the surround modes available when a multichannel Dolby Digital, encoded source is present. This includes both the native Dolby Discrete mode, which cannot be turned off, as well as other modes which may be applied as post-processing on the source and system speaker configuration.
- The DOLBY 2.0 CONFIG group contains the surround modes available when a two-channel Dolby Digital-encoded source is present. This includes both the native Dolby Discrete mode, which cannot be turned off, as well as other modes which may be applied as post-processing on the source and system speaker configuration.
- The DTS CONFIG group contains the surround modes available when a DTS-encoded digital source is present. This includes both the native DTS Discrete mode, which cannot be turned off, as well as other modes which may be applied as post-processing on the source and system speaker configuration.
- The PCM 44.1/48KHZ CONFIG group contains the surround modes available when a PCM digital data stream is present. This includes not only PCM sources from DVD or CD players, but also all two-channel analog sources that are in use, as they are converted to PCM within the AVR 745. The modes available include the proprietary Dolby modes (including Dolby Headphone and Dolby Virtual Speaker), DTS processing, our own Logic 7 modes, the conventional "DSP" modes (such as "Hall" and "Theater") and the "Stereo" modes.
- The PCM 96KHZ CONFIG group contains the surround modes available when a PCM digital data stream is present. This includes not only 96kHz PCM sources from DVD or CD players, but also all two-channel analog sources when 96kHz is chosen in the ADC SAMPLING mode line in the SURROUND SETUP menu. The modes available include the proprietary Dolby mode (including Dolby Headphone and Dolby Virtual Speaker), DTS processing, our own Logic 7 modes, the conventional "DSP" modes (such as "Hall" and "Theater") and the "Stereo" modes.

When all surround modes that are not required have been turned off, press the ▲/▼ **Navigation Button** 14 F until the on-screen cursor is pointing to BACK TO SURROUND CONFIG; then press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q on the ZR 10 remote.

Note: When a Dolby Digital or DTS source is selected and playing, the AVR will select the appropriate surround mode automatically, no matter which surround mode was selected for that input as default. Then no other surround modes will be available, except all Pro Logic II modes with Dolby Digital 2 channel (2.0) recordings.

On the Dolby menu (Figure 10), the selection choices include Dolby Digital, Dolby Pro Logic II and IIx Music, Dolby Pro Logic II and IIx Cinema, Dolby Pro Logic, Dolby Virtual Speaker Reference and Wide, and Dolby 3 Stereo. A complete explanation of these modes is found on Page 42.
The Dolby Digital EX mode is only available when the system is set for 6.1/7.1 operation by configuring the Surround Back speakers to "Small" or "Large" as described on page 36. When a disc is playing that contains a special "flag" signal in the digital audio data stream, the EX mode will be selected automatically. It may also be selected using this menu or through the front panel or remote controls. A complete explanation of these modes is found on page 42.

When the → cursor is pointing to the MODE line, press the ◀/▶ **Navigation Buttons** ⑭ Ⓕ to select the desired Dolby surround mode, again remembering that the choice of available modes will vary with the type of program material being played and the number of speakers in your system configuratioin.

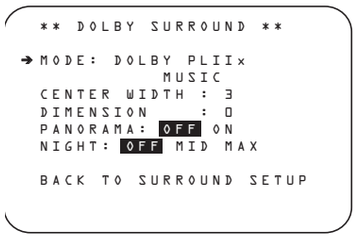


Figure 10

When Dolby Pro Logic II Music or Dolby Pro Logic IIx Music is selected as the listening mode, three special settings are available to tailor the sound field to your listening room environment and your individual taste and preferences. (When other Dolby Surround modes are selected, dotted lines will indicate that these settings are not active.)

- Center Width: This setting adjusts the balance of the vocal information in the front soundstage between the center and front left/right speakers. The lower settings spread the center channel sound more broadly into the left and right channels. A higher number (up to "7") produces a tighter center channel presentatioin.
- Dimension: This setting alters the perceived depth of the surround field by creating a shallower presentation that appears to move sounds toward the front of the room, or a deeper presentation that appears to move the center of the sound field toward the back of the room. The setting of "0" is a neutral default, with the range of adjustment shown as "R-3" for a deeper, rear-oriented sound to "F-3" for a shallower, front-oriented sound.
- Panorama: Switch this setting on or off to add an enveloping wrap-around presentation that increases the perception of sound along the sides of the room.

To change these parameters, press the ▲/▼ **Navigation Buttons** ⑭ Ⓕ while the DOLBY SURROUND menu is on the screen until the → cursor is pointing to the line on the menu with the parameter you wish to change. Then, press the ◀/▶ **Navigation Buttons** ⑭ Ⓕ to alter the setting to your taste.

Note that when the Dolby Digital mode is selected there are additional settings available for the Night mode that are associated with the surround mode only, not with the input. That's why these settings must be made only once, not with each input in use.

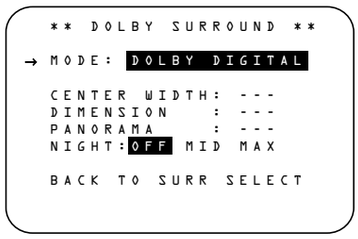


Figure 11

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 from the menu press the **OSD** Button Ⓔ so that the MASTER menu appears. Then press the ▼ button ⑭ Ⓕ to access the SURROUND SETUP and press the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Ⓠ to select the SURROUND SETUP menu. Press **Set** Ⓠ to select the DOLBY SURR SETUP menu (see fig. 10).

To adjust the Night mode setting, make certain that the ▶ cursor is on the NIGHT line of the DOLBY menu. Next, press ◀/▶ **Buttons** ⑭ Ⓕ to choose between the following settings.

OFF: When **OFF** is highlighted, the Night mode will not function.

MID: When **MID** is in the highlighted video, a mild compression will be applied.

MAX: When **MAX** is in the highlighted video, 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.

Note that the Night mode may be adjusted directly any time that Dolby Digital surround mode is selected by pressing the **Night** button ⑫. When the button is pressed, the words D-RANGE followed by the current setting (MID, MAX, OFF) will appear in the lower third of the video screen and in the **Main Information Display** 29. Press the ▲/▼ buttons ⑭ Ⓕ within five seconds to select the desired setting, then press the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Ⓠ to confirm the setting.

When all settings on the DOLBY SURROUND menu have been competed, press the ▲/▼ **Navigation Button** ⑭ Ⓕ until the cursor is next to BACK TO SURROUND SETUP and press the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Ⓠ on the ZR 10 remote. You may then make any additional changes to the available options from that screen, or use ▲/▼ **Navigation Button** ⑭ Ⓕ to move the cursor to the BACK TO SURROUND CONFIG menu and press the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Ⓠ on the ZR 10 remote again to back up one menu.

At the main SURROUND SETUP menu, you may change the SOURCE to make adjustments to another input, or when all input sources have been configured, use ▲/▼ **Navigation Button** ⑭ Ⓕ to move the cursor to the BACK TO MASTER MENU and press the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Ⓠ on the ZR 10 remote to return to the main menu so that you may move to the next step in configuring your AVR 745.

Using EzSet/EQ II

The AVR 745 uses Harman Kardon's EzSet/EQ II technology to automatically configure your system to deliver the best possible performance based on your specific speaker selection, where the speakers are placed in the room and the acoustic influences in your listening room. By using a series of test signals and the processing power of the Texas Instruments DA 610 digital signal processor, EzSet/EQ II eliminates the need for manual adjustment of speaker "size", crossover, delay and output level settings while it adds the power of a multi-band parametric equalizer to smooth out the frequency settings for optimal sound reproduction.

In addition to making system setup quick and easy, EzSet/EQ II is more precise than manual settings. With EzSet/EQ II you are able to calibrate your system in a fraction of the time it would take to enter the settings manually, and with results that rival those achieved with expensive test equipment and time consuming procedures. The end result is a system calibration profile that enables your new receiver to deliver the best possible sound no matter what type of speakers you have or what the dimensions of your listening room are.

EzSet/EQ II includes a number of improvements to the original version, including the ability to set up to three different sets of EQ measurements and the capability to handle dual subwoofers. The menu and setup system not only delivers improved precision for all measurements, but it also guides you through the step-by-step process of EQ Design. With EzSet/EQ II, you can now "test drive" the settings by listening to the results of the EzSet/EQ II process before entering the settings into the system memory.

We recommend that you take advantage of the precision of EzSet/EQ II to calibrate your system, but if desired you may also make any of the configuration settings manually, or trim the settings provided by EzSet/EQ II by following the instructions on pages 31-35.

Before starting the EzSet/EQ II process, make certain that you have connected all speakers for your system and that you have both the EzSet/EQ II microphone and the extender rod handy. If you have a standard camera tripod, attach the extender rod to the tripod, and then screw the microphone to the top of the rod. Place the tripod at your primary listening position, at least one meter from the nearest speaker and adjust it so that microphone is at least one meter above ear level. If you do not have a tripod, simply screw the extender rod into the bottom of the EzSet/EQ II microphone.

Next, plug the microphone into the **EzSet/EQ II Microphone Jack** 31 located behind the **Front Panel Control Door**. The microphone cable is approximately 6 meters long, which should accommodate most listening room situations. If required, you may use an optional extension cable, available at most electronics stores, for use in larger rooms. However, we recommend that you make every effort to avoid using extension cords for the microphone cable as they may adversely affect the test results.

Finally, before going further, make certain that the program volume is at -25dB. If there is a volume or "level" control on your subwoofer, make certain that it is set to at least the midpoint, if not a bit higher

To start the EQ Design process, first navigate to the EZSET/EQ MAIN menu (Fig. 12) by pressing the **OSD Button** E on the ZR10 remote or the **Menu Button** 11 on the TC 30. Press the ▲/▼ **Navigation Button** 14 F until the cursor is pointing to EzSet/EQ II in the master menu. Press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q to bring the new menu to the screen.

Figure 12

There are four choices in the EZSET/EQ MAIN menu, three of which are relevant at this time. Use the ▲/▼ **Navigation Button** 14 F to move the cursor next to the line that contains the type of setup you wish to perform, and then press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q on the ZR 10 remote to start that process.

- In most cases, you will want to use the Automatic mode, which calibrates the system for speaker presence, speaker "size", speaker crossover, channel output level, speaker-to-listener delay time and room equalization. To choose this mode simply press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q, as the cursor is already pointing to Automatic when the menu appears on the screen.

Then press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q again when the AUTOMATIC EZSET/EQ II menu appears, to continue to Step 1.

- If you wish to set the speaker size and crossover, channel delay or channel output levels manually and then have EzSet/EQ II set the room equalization, with the EZSET/EQ MAIN menu (Figure 12) on the screen, press the ▲/▼ **Navigation Button** 14 F to move the cursor to the EZSET/EQ MANUAL SETUP line and then press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q on the ZR 10 remote. Follow the instructions on pages 36 to 41 for the items you wish to set manually. During that process, a message may appear reminding you to run EzSet/EQ II, which you may ignore at this time since you will return to the EzSet/EQ II menu at the conclusion of your manual adjustments.

After completing all manual settings, press the ▲/▼ **Navigation Button** 14 F to move the cursor to the BACK TO EZSET/EQ MAIN line and then press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q on the ZR 10 remote. When that menu (Figure 12) returns to the screen, press the ▲/▼ **Navigation Button** 14 F again to move the cursor to the MANUAL EQ DESIGN line and then press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q on the ZR 10 remote. A message will appear, reminding you to manually set the system parameters, but since you have just done that, make certain that the cursor is at the CONTINUE line and press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q on the ZR 10 remote. Follow the steps shown below to complete the EzSet Design process.

- If you wish to enter the settings for speaker configuration, channel output adjustment and delay times manually, press the ▲/▼ **Navigation Button** 14 F to move the cursor to the EZET/EQ MANUAL SETUP line and then press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q on the ZR 10 remote. This will take you to the MANUAL SETUP menu, where additional submenus contain the configuration adjustments. Skip to page 36 for details on manual setup.
- The EZSET/EQ PRESET SELECT line is used to recall one of the three EQ Designs that may be stored with different settings. For more information on using the Preset Selections, see page 41 or 51.

EQ Design is done in a series of steps, with the Far Field measurements first, followed by the Near Field measurements and, finally, the Subwoofer measurements. In each case, the process is the same: the on-screen menus will direct you to place the microphone in a specific location, and when that portion of the process is started, test tones will be sent to the speaker or speakers being measured. The system will then pause slightly as the results of the measurement are calculated and stored in system memory.

If the step was successful, an on-screen message will report the test results and direct you to the next step. If the step did not produce acceptable results, an error message will appear, suggesting the adjustments needed to correct the problem and start a re-test.

During each EQ Design step, you have the option to perform the tests for that specific portion of the process, or you may skip the settings and move to another step or return to the EZSET/EQ MAIN menu (Figure 12).

When the complete EQ Design process is complete, you will be given an opportunity to "test drive" the settings by listening to a source with the room equalization filters applied. In order to take advantage of this feature, before beginning the EQ Design, make certain that a source is playing with program material you are familiar with. If necessary, exit the menu system at this time to select and start the playback, and then return to EzSet/EQ II. The source will mute during the EQ Design, but will return when it is time for the "test drive."

Step 1. The EZSET DESIGN STEP 1 menuscreen (Figure 13) will appear with instructions to place the microphone, if you have not already done so. This screen is also the place to set the master volume level. As noted on the screen, use the **Volume Control** 27 40 to adjust the volume level to –25dB, as shown on the line that appears at the bottom of the menu when the volume is adjusted. Press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q when the volume is set to the proper level.

```
*  EZSET DESIGN STEP 1  *

Place mic at ear
level near preferred
listening position, at least
3ft/0.9m from any
hard surface.
Set volume to -25dB
→CONTINUE TO FAR FIELD
SKIP FAR FIELD DESIGN
BACK TO EZSET/EQ MAIN
```

Figure 13

The final menu screen before the EzSet/EQ process starts is a warning screen (Figure 14) that serves as a reminder to keep the room as quiet as possible while the system is in use. Extraneous noise of any kind may adversely affect the accuracy of the system's results. Do not talk while the test tones are circulating, and if possible, turn off any ventilation systems if the noise form the air flow is loud enough for you to hear. Should an outside noise such as a phone ringing occur during the test process, we recommend that you rerun EzSet/EQ II. If you do not wish to start the test process at this time, press the ▲/▼ **Navigation Button** 14 F to return to either the EzSet/EQ II menu or the Master Menu, and press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q. To begin the EzSet/EQ II Near Field measurements, press the ◄/► **Navigation Button** 14 F so that ON is highlighted in reverse video, and press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q.

NOTE: Once the EzSet/EQ II process starts, the volume control and Standby/Off switches are temporarily disabled while the tests are in progress. Do not adjust the volume or turn the unit off until you see the on-screen message change to indicate that EzSet/EQ II is finished.

```
WARNING !!!

During measurements
Please keep silence.
Test signals will be
heard on all speakers.

→ START: OFF ON
BACK TO EZSET/EQ MAIN
```

Figure 14

At this point you will begin to hear a series of test tones circulate among all the speakers in your system. While this is happening, the AVR 745 is reading the signal to determine which speaker positions are active, what type of speaker is present at each active position, what the distance is from the listening position to each speaker, and to begin to build a profile of the impact of the room's acoustics on the quality of audio reproduction. When the test is completed you will hear the tones stop, and the system will pause fors long as a minute while the processor makes its calculations. Do not be alarmed if the "WARNING" message remains on the screen after tones stop until a results message is displayed.

NOTE: While these tests detect whether a speaker is connected to a particular output, they cannot determine whether the speaker is in the correct position. (For example, it can tell whether a speaker is connected to the Surround Right output, but it cannot tell whether the speaker is on the right or left side of your listening room.) For that reason, we strongly recommend that you try to listen as the tone circulates, matching the name shown for each channel to the location of the speaker. If a tone is heard from a speaker position that does not match the on-screen message, make a note of the incorrect speaker connections. When the test process stops you will see a message indicating the they Far Field measurements are complete, but since there is a connection error press the ▼ **Navigation Button** 14 F so that the on-screen cursor in Fig. 15 is pointing to BACK TO EZSET/EQ MAIN MENU and press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q. At this point, exit all menus and turn the receiver off. Check all speaker wire connections and then rerun EzSet/EQ II.

When the Far Field tests are complete a message screen will appear to confirm if the procedure was successful or not. In most cases there will not be any problems and you will see the message shown in Figure 15 on your screen. If the speaker positions shown match the actual speaker layout in your system, confirm that the cursor is pointing to CONTINUE TO NEAR FIELD and press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q to take the Near Field measurements in Step 2.

```
* DESIGN STEP 1 RESULTS*
     STEP 1 successful
Detected speaker config
FL   : YES      SBR: YES
CEN  : YES      SBL: YES
FR   : YES      SL : YES
SR   : YES

→CONTINUE TO NEAR FIELD
SKIP NEAR FIELD DESIGN
BACK TO EZSET/EQ MAIN
```

Figure 15

If the measurements are not successful due to a missing or malfunctioning speaker, the FAR FIELD EQ ERROR message will appear as shown in Figure 16. EzSet/EQ is programmed to look for speaker pairs at the front left/front right, surround left/surround right and surround back left/surround back right positions. If the test results indicate that one, but not both of the speakers in any of these pairs is present, the menu will show NO next to the speaker position where the tests did not report back that a speaker is present. Should this message appear, make note of the suspect speaker location, exit all menus and turn the receiver off. Check all speaker wire connections and then rerun EzSet/EQ.

```
* EQ DESIGN STEP 1 ERROR*
Detected speaker config
FL   : YES      SBR: YES
CEN  : YES      SBL: YES
FR   : YES      SL : YES
SR   : NO
Verify spkr cons, mic
Position. Raise vol 5dB.

→REPEAT TEST
BACK TO EZSET/EQ MAIN
```

Figure 16

```
EQ DESIGN OVERLOAD

Overload found. Check
microphone placement.
Reduce volume by 6dB
and run EZSET/EQ again.

→ CONTINUE
```

Figure 17

Step 2. When the Far Field measurements are completed, the system will ask you to take three Near Field measurements, one at each front speaker position. These measurements enable EzSet/EQ to produce the most accurate settings for both high and low frequency equalization. The Near Field measurements are similar to the Far Field tests, except that the system will "listen" to only one speaker at a time, rather than sending the test signals to all speakers in rotation.

If the EQ DESIGN OVERLOAD message appears, first press the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Q on the ZR 10 remote. This will take you back to the EQ DESIGN SETP 1 ERROR menu. Make certain that the cursor is pointing to REPEAT TEST and press the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Q on the ZR 10 remote again. At the EZSET DESIGN STEP 1 menu, lower the volume by at least 6dB and follow the steps described above to run the EzSet/EQ II system again. Depending on the amount of the overload, you may need to repeat the process more than once to achieve satisfactory results.

```
  * NEAR FIELD MENU *
  Please select a speaker:
→ 1-LEFT FRONT      : NO
  2-CENTER FRONT    : NO
  3-RIGHT FRONT     : NO
  4-LEFT SURR       : NO
  5-RIGHT SURR      : NO
  6-LEFT BACK SURR  : ---
  7-RIGHT BACK SURR: ---
  SKIP NEAR FIELD DESIGN
  BACK TO EZSET/EQ MAIN
```

Figure 18

When it first appears, the NEAR FIELD MENU (Figure 18) will show a list of all the possible speakers and NO next to each speaker position where the Far Field measurements detected a speaker. The Near Field measurements should be made for each of those speakers to create a successful EQ Design. To select a speaker position for measurement, press the ▲/▼ **Navigation Button** ⑭ F to move the cursor next to the desired speaker position and then press the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Q on the ZR 10 remote. Before the test begins, an informational message will appear (Figure 19).

```
    EZSET DESIGN STEP 2
Put mic 2ft/0.6m from
selected speaker,
pointing at it, in a
direct path between
the listening position
and the speaker.

→ CONTINUE
  BACK TO EZSET/EQ MAIN
```

Figure 19

Follow the instructions and place the microphone about halfway between the speaker and the listening position where the microphone was placed during the Far Field measurements. With the cursor pointing to CONTINUE, press the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Q on the ZR 10 remote control.

When the WARNING message appears, press the ▶ **Navigation Button** ⑭ F to start the test. A short tone will be heard from the speaker being tested, and after a short pause the on-screen menu will show a message to inform you of whether the test was successful or not.

- If the test was successful and there are more speaker positions for which a Near Field measurement is required, press the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Q on the ZR 10 remote to return to the NEAR FIELD MENU. Speaker positions where the Near Field measurement has been completed will show DONE to the right of the position name. Press the ▲/▼ **Navigation Button** ⑭ F to select a position where NO still appears and repeat the steps shown above until a Near Field measurement has been taken at all speaker positions.
- If the test was successful and all Near Field measurements have been completed, the on-screen message will direct you to the Subwoofer measurements. Make certain that the cursor is pointing to CONTINUE TO SUB DESIGN and press the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Q on the ZR 10 remote (unless you wish to choose another option to skip the subwoofer measurements and either complete the EQ Design or return to the EZSET/EQ MAIN menu.
- If there was an error during the test, the Design Step 2 Error message will appear. Follow the on-screen instructions to check speaker connections (if no sound was heard from the speaker during the test), check the microphone placement to make certain it is no further than half the distance from the speaker to the listening position and pointing directly at the speaker, or increase the volume by 5dB. After taking the corrective steps, make sure the cursor is pointing to REPEAT TEST and press the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Q on the ZR 10 remote. Select the speaker again and repeat the steps as needed until a successful measurement is made.

Steps 3 and 4: The third and fourth steps in the EzSet/EQ II Design process are the measurement for the subwoofers, if present. Although the subwoofers are generally considered one speaker position, since the AVR 745 may be used with two subwoofers, two separate measurement steps must be combined for a complete EQ Design.

When the SUBWOOFER DESIGN message appears, make certain that the cursor is pointing to CONTINUE TO SUB DESIGN and press the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Q on the ZR 10 remote control. The EZSET DESIGN STEP 3 (Figure 20) message will appear.

```
  EZSET DESIGN STEP 3

  Put mic at ear level,
  3ft/0.9m to the left
  of the preferred
  listening position.

→ CONTINUE
  BACK TO EZSET/EQ MAIN
```

Figure 20

Follow the instructions (using the extender rod if necessary), to make sure that the microphone is at ear level and to the left of where the microphone was placed during the Far Field measurements. Press the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Q on the ZR 10 remote to continue.

When the WARNING message appears on screen, press the ◀/▶ **Navigation Button** ⑭ F to start the test. The test tone will be sent to the subwoofer(s) and the system will then pause slightly to perform the needed calculations. When the calculations are complete, the EZSET DESIGN STEP 4 message will appear.

The instructions here are identical to those in Step 3 except that the microphone should be placed to the right of where it was during Far Field measurements. Press the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Q on the ZR 10 remote to continue.

When the subwoofer tests in Steps 3 and 4 are complete, a message (Figure 21) will appear after a brief pause to display the results.

```
* DESIGN STEP 3/4 RESULTS *
   EZSET successful
 Detected speaker config:

 SUBWOOFER 1:YES
 SUBWOOFER 2:NO

→ CONTINUE
 REPEAT SUBWOOFER TEST
 BACK TO EZSET/EQ MAIN
```

Figure 21

- If the tests were successful, the message will show the number of subwoofers, as shown in Figure 21. You may either press the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Ⓠ on the ZR 10 remote to continue to the next step and conclude the EzSet Design process, or press the ▲/▼ **Navigation Button** ⑭Ⓕ and then the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Ⓠ on the ZR 10 remote to either repeat the subwoofer test or return to the main EzSet/EQ menu. In most cases you should select "Continue."
- If the tests were not successful, a message similar to Figure 21 will appear, except that the top line will flash `DESIGN STEP 3/4 ERROR`. Follow the suggestions in the message to verify that the subwoofer(s) is properly connected and that the microphone is in the proper position, and increase the volume level by 5dB. Then, press the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Ⓠ on the ZR 10 remote to repeat the test as often as needed until a successful result is achieved.

Step 5: When all measurements are successfully completed, the final step in the EzSet Design process is to save the settings into the AVR 745's memory. You may program up to three different EQ settings to accommodate differences in placement of the microphone to reflect alternate listening positions, but we recommend that you create two settings and leave one memory in the "bypass" mode so that you have the ability to compare the two equalized settings against a "straight through" setting that has no equalization applied.

At the conclusion of the measurements for an EQ Design, make certain that the `EZSET/EQ DESIGN DONE` menu (Figure 22) is on your screen. It will appear when you are done with the Subwoofer design, or when you "skip" through the Near Field and/or Subwoofer steps.

```
*  EZSET DESIGN DONE  *

   To test drive your
   Design, please connect
   audio source, adjust
   volume and play.

→ CONTINUE
  BACK TO EZSET/EQ MAIN
```

Figure 22

The "test drive" feature allows you to listen to the source that was playing before the EzSet/EQ Design process was initiated, and it is a good way to make sure that you are pleased with the results. The "Warning" refers to the fact that the volume level may have been raised during the Design process, so it is always a good idea to lower the volume a bit. You may always raise it once the playback starts.

With the cursor pointing to `CONTINUE`, press the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Ⓠ on the ZR 10 remote, and playback will resume while the on-screen menu changes to the `DESIGN PREVIEW` page (Figure 23).

```
*    DESIGN PREVIEW    *

     EQ design has been
     completed.

  Do you like your current
  listening experience?

  → YES
    NO
```

Figure 23

- If you are pleased with the sound, press the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Ⓠ on the ZR 10 remote to move to the next screen and store the settings.
- If the sound is not to your liking, press the ▲/▼ **Navigation Button** ⑭Ⓕ so that the cursor is next to `NO` and then the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Ⓠ on the ZR 10 remote. Follow the on-screen prompts in the menus to return to the `EZSET/EQ MAIN` menu and repeat the EQ Design process.
- If this is your first attempt at running EzSet/EQ II, we recommend that you save the settings, even if you are not sure whether you like them, then rerun the EQ Design process again. Since the AVR 745 is able to store multiple EQ Design settings, this will give you the opportunity to compare two different designs to the bypass mode with no equalization applied. You may then select the preset you like best.

If you proceed to store the settings, the next menu will let you select which memory position will be used (Figure 24).

```
*  PRESET SAVE SELECTION  *

→ PRESET 1: DESIGN
  PRESET 2: BYPASS
  PRESET 3: BYPASS
```

Figure 24

When the `PRESET SAVE SELECTION` screen appears for the first time, BYPASS will appear next to all memory preset position. This indicates that no settings are stored in any position. Press the ▲/▼ **Navigation Button** ⑭Ⓕ to move the cursor next to the preset where you wish to save the settings and then press the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Ⓠ on the ZR 10 remote. If you have previously stored an EQ Design and wish to enter new settings to that position, a warning message will appear, reminding you that the existing settings for that preset will be overwritten. If that message appears, press the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Ⓠ on the ZR 10 remote to continue, or press the ▲/▼ **Navigation Button** ⑭Ⓕ to move the cursor next to `NO` and then the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Ⓠ on the ZR 10 remote to return to the `PRESET SAVE SELECTION` screen so that you may select another memory preset.

While an EQ Design is being stored, a message will appear to remind you that the memory storage is in process. When the settings are stored, you will be returned to the `EZSET/EQ MAIN` menu. Once a setting is stored, the next time you complete an EQ Design and are at the `PRESET SAVE SELECTION` page, the word `DESIGN` will appear next to any preset where you have previously stored data.

At this point, you may either follow the prompts in the menu to exit back to another menu, create another EQ Design, or use the manual setup menus to fine-tune an EQ Design.

Thanks to EzSet/EQ II, the settings for speaker "size," speaker crossover, channel output and individual channel delay time have been automatically set and require no further adjustment. In addition, EzSet/EQ II also performs a complete room equalization that tailors the system's performance for the best possible sound with your combination of speakers, speaker placement and room acoustics. The next few pages in this manual detail the procedure for manually entering system data, but unless you want to view the setting information and make an adjustment, you are now ready to enjoy the finest in home theater and music reproduction. Go to page 42 for complete information on operating your AVR 745.

Manual Setup

In most cases it is simpler, easier and more accurate to let EzSet/EQ take care of entering the system parameters for speaker "size", speaker crossover, channel output and individual channel delay time. However, if you feel that your listening room or system components are best suited to manual entry of these settings, the AVR 745 also allows you to enter or trim any of these traditional system parameters. Even if you do make the settings manually, we recommend that you run the EzSet/EQ tests first so that a baseline setting is established, and then make your adjustments from there. Note that once EzSet/EQ has been run you do not need to adjust all system settings, only those that you want to adjust.

To view or change the current EQ Design settings, make certain that the EZSET/EQ MAIN menu (Figure 12) is on the screen. Press the ▲/▼ **Navigation Button** 14 F to move the cursor next to EZSET/EQ MANUAL SETUP and then press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q on the ZR 10 remote. The EZSET/EQ MANUAL SETUP menu (Figure 25) will appear on the screen.

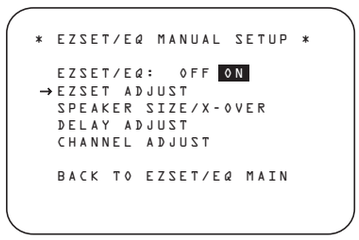


Figure 25

If you have already run the EzSet/EQ II calibration system, the first line of the menu enables you to hear the difference between the settings established by EzSet/EQ II. The default setting is ON, which plays the incoming source with the EzSet/EQ II settings. To hear the system in a Bypass mode, with none of the equalization filters in the circuit path, press the ◀/▶ **Navigation Button** 14 F so that OFF is highlighted. Note that once changed, this setting will remain until you change it again in this menu.
While you may want to use this menu option to hear the difference that EzSet/EQ II makes, we recommend that you leave the setting on to take advantage of the benefits of EzSet/EQ II's advanced room correction technology.

The EZSET ADJUST line on the menu enables you to set the system's Tilt, or high-frequency boost. To make this adjustment, first make sure that EZSET EQ line is set to ON, as this item is not available when EzSet/EQ II is not in the signal path. When the cursor is on the EZSET ADJUST line, press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q, and then press the ◀/▶ **Navigation Button** 14 F to enter the desired setting.

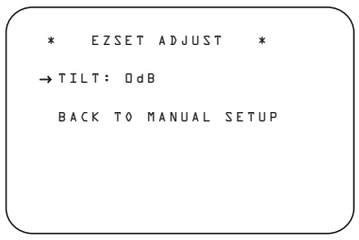


Figure 26

When you have completed your adjustment, press the ▶ **Navigation Button** 14 F to move the cursor down to the BACK TO MANUAL SETUP line and press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q.

Note on Manual Setup Menus: Each of the four major manual setup menus (Speaker Size, Speaker Crossover, Delay Adjust and Channel Adjust) includes a line that reads EZSET SETTINGS. When the default setting of OFF is shown you are able to make any required adjustments that are available on that menu. However, you may change the setting to ON at any time to recall the settings established when EzSet/EQ II was last run. It is also important to note that when the EzSet/EQ II settings are in use, the AVR will not allow any changes to be made. To trim the settings press the ◀/▶ **Navigation Button** 14 F until the cursor is on the EZSET SETTINGS line on the menu in use and press the ◀/▶ **Navigation Button** 14 F to change the setting to OFF. This will allow you to make changes to the settings on that menu.

Speaker Size Menu

Although most listeners will prefer to take advantage of the accuracy and speed of EzSet/EQ II to make all of the necessary speaker adjustments, advanced users may wish to experiment with how different combinations of settings sound in their home theater environment or to use settings other than those calculated by EzSet/EQ II, to accommodate personal listening preferences.

The menu system used in your AVR 745 differs somewhat from conventional speaker setup menus in that it consolidates the speaker "size" and crossover into one convenient menu. Even if you are familiar with making these adjustments, it is strongly recommended that you read the following section of this manual.

On the SPEAKER SIZE menu (Figure 27) you have the option to change the type of speaker configured for each of the four position groups, to change the crossover setting for any one of those speakers, to adjust the setting point for the low-pass filter that determines which frequencies are sent to the subwoofer for low-frequency effects (LFE) signals, to change the subwoofer bass redirection mode when the Front Left/Right speakers are set to Large and to change the setting for the subwoofer size. If, as recommended, you have first run the EzSet/EQ II system, as shown on pages 31-35, the settings established by EzSet/EQ II will be displayed as a starting point for any manual adjustments. You may reestablish those settings at any time during an adjustment on this menu by pressing the ▲/▼ **Navigation Button** 14 F until the cursor is on the EZSET SETTINGS line of the menu and then pressing the ◀/▶ **Navigation Button** 14 F so that ON is highlighted in reverse video. Note, however, that once this is done, any manual adjustments made will be lost and must be reentered.

Speaker Size

At each of the four speaker group positions, you have the ability to select the speaker "size" and, when a "Small" speaker is selected, the frequency below which low-frequency information is sent to the subwoofer, as opposed to the speakers for the channel being adjusted. For that reason, before making the adjustments on the FL/FR, CENTER, SL/SR and SBL/SBR menu lines, it is important to know the frequency range for the speaker. This information is typically found in the "Specifications" section of the speaker's owner's manual. If you cannot find the specification for the lowest frequency the speaker can handle, start with the settings entered by running EzSet/EQ II and then try one setting above or below the existing entry. We do not recommend changing the crossover point more than that due to the possible impact that will have on the speaker's performance. If you do not have access to the owner's manual for a particular speaker, you should be able to obtain the needed information from the Web site or customer service department of the speaker's manufacturer.

To view or change the current speaker size settings, make certain that the EZSET/EQ MAIN menu (Figure 12) is on the screen. Press the ▲/▼ **Navigation Button** 14 F to move the cursor next to SPEAKER SIZE and then press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q on the ZR 10 remote control. The SPEAKER SIZE menu (Figure 27) will appear on the screen.

On the SPEAKER SIZE menu (Figure 27) you will see a display of either the settings that were established when EzSet/EQ II was run, or the factory default settings if you have not yet run the automated system.

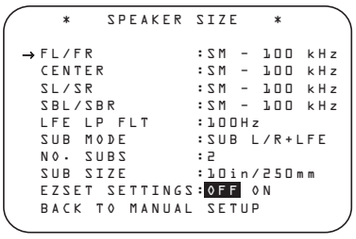


Figure 27

To change the setting for any of the four speaker positions, press the ▲/▼ **Navigation Button** ⑭Ⓕ until the cursor points to the line where you wish to make the change. Press the ◀/▶ **Navigation Button** ⑭Ⓕ to change the setting, but note that when you do this for the first time in the menu, a warning message (Figure 28) will appear in the on-screen display reminding you to rerun EzSet/EQ II after you are finished with any speaker configuration changes. This is necessary to make any level output adjustments needed after the setting changes so that the new configuration will be properly integrated.

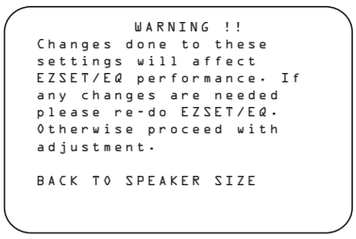


Figure 28

The warning message will remain for four seconds and then the SPEAKER SIZE menu will return to the screen. At this point you may change the settings to the "size" or crossover for any of the four speaker positions using the **Navigation Buttons** ⑭Ⓕ as shown above. The information below details the settings available for each of the speaker configurations.

At each of the four speaker position lines, you have the option to set the speaker size and crossover. Note that the "size" does not refer to the speaker's actual physical size, but rather to the ability of the speaker to reproduce low-frequency information. If your speakers at any position are traditional full-range models capable of handling the full audio spectrum, select LARGE. These speakers are called "large" since the low-frequency drivers required to play bass without strain or distortion are typically eight to fifteen inches in diameter, in turn making the speaker cabinet larger than those with small (or no) low-frequency drivers. When the speakers at a particular position are smaller frequency-limited speakers that do not have the ability to properly reproduce low-frequency sounds, select SMALL.

At all speaker positions except for the front left/right speakers, you may also select NONE. This setting tells the system that no speakers are present at that position, allowing the AVR to select the correct surround modes that are compatible with the number of speakers installed. For example, in order to use the Dolby Digital EX, Dolby Pro Logic IIx, DTS-ES, Logic 7/7- channel and "7 Stereo" modes, you must have either LARGE or SMALL speakers entered as the setting for the BACK SURR channels.

When LARGE is selected for any channel, a full-range signal will be sent to the speaker outputs for that channel. For all speaker positions except the front left/right, when LARGE is chosen, no derived sound will be sent to the subwoofer output, although in all cases the special low-frequency effects (LFE) signals available on 5.1 or 6.1 digital programs will always be sent to the subwoofer output.

When SMALL is selected for any channel, you may also enter a setting for the crossover frequency at which sound is divided between the frequency above which sound is sent to the channel's speakers and below which sound is sent to the subwoofer. When configuring a "small" speaker, choose the setting that has the frequency closest to that of the lowest frequency the speakers in question are capable of handling. If one of the six available crossover points does not match, select the one that is above, but closest to, the speaker's low-frequency limit.

When there are no speakers available at a specific position, select NONE. When this option is chosen for the Center or Side Surround speakers, the sound that would normally be sent to these channels will be split between the front left and right speakers. Note that when your system does not include Center or Surround speakers, the use of Dolby Virtual Speaker as a surround mode may provide a sound field that simulates the presence of these speakers. (See page 42 for more information on the Dolby Virtual Speaker mode.)

Note that when NONE is selected for the Back Surround speakers, the 6.1/7.1 channel surround modes are not available. When this is the case for your system you may wish to take advantage of the availability of the unused amplifier channel pair to power a second set of speakers in another room. See page 55 for more information on amplifier configuration.)

Once any desired changes have been made to the speaker size and/or crossover, press the ▲/▼ **Navigation Button** ⑭Ⓕ to move the cursor to any other line on this menu to make a setting change, or go to the BACK TO MANUAL SETUP menu and then press the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Ⓠ to continue with overall configuration.

LFE Low-Pass-Filter Setting

The LFE LP FLT line selects the frequency setting below which sounds that may be available from a special low-frequency effects (LFE) track are sent to the subwoofer. In most cases, this setting will be set accurately by EzSet/EQ but, should you wish to make a change from that setting or the 120Hz frequency that is most commonly used in the creation of LFE channels by motion picture sound mixers, after making sure that the SPEAKER SIZE menu (Figure 27) is on the screen, press the ▲/▼ **Navigation Button** ⑭Ⓕ so that the cursor is pointing to LFE LP FLT. Press the ◀/▶ **Navigation Button** ⑭Ⓕ to begin the selection process, and note that the warning message (Figure 28) will appear reminding you to rerun EzSet/EQ II after all changes have been made.

When the SPEAKER SIZE menu returns to the screen, press the ◀/▶ **Navigation Button** ⑭Ⓕ to make your selection. When the desired setting appears, press the ▲/▼ **Navigation Button** ⑭Ⓕ to move the cursor to any other line on this menu where you wish to make a setting change, or go to the BACK TO MANUAL SETUP menu and then press the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Ⓠ to continue with overall configuration.

Sub Mode Setting

When the Front Left/Right speakers are configured as "Large" and a subwoofer is detected by EzSet/EQ II or manually configured as being available, additional options are available to further customize bass redirection. To change these settings, first make sure that the SPEAKER SIZE menu (Figure 27) is on the screen, and then press the ▲/▼ **Navigation Button** ⑭Ⓕ so that the cursor is pointing to SUB MODE. Press the ◀/▶ **Navigation Button** ⑭Ⓕ to begin the selection process, and note that the warning message (Figure 28) will appear reminding you to rerun EzSet/EQ II after all changes have been made.

The following options are available:

- The default setting for Large front left/right speakers when a subwoofer is present is SUB L/R + LFE. In this mode, all sounds below the crossover point set on the LFE LP FLT line will be sent to BOTH the subwoofer and the front left/right speakers.
- To send only the LFE channel information to the subwoofer, but have all other ("derived") low-frequency sounds sent to the front left/right speakers, select the SUB (LFE) setting.

System Configuration

- To have low-frequency information sent to the subwoofer only when Large speakers are selected, choose SUB (L/R). This option is only available when the unit is set to SURROUND OFF so that a pure analog audio path is provided.
- When no subwoofer is present and Large speakers are configured for the front left/right position, select NONE. This will route all low-frequency information to the front left/right speakers.

When the SPEAKER SIZE menu returns to the screen, replacing the warning message, press the ◀/▶ **Navigation Button** 14 F to make your selection. When the desired setting appears, press the ▲/▼ **Navigation Button** 14 F to move the cursor to any other line on this menu where you wish to make a setting change, or go to the BACK TO MANUAL SETUP menu and then press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q to continue with overall configuration.

Subwoofer Configuration

The AVR 745 is among the very few A/V receivers or surround processors that are capable of feeding two subwoofers, as well as the standard configuration of a single subwoofer. Although one subwoofer is capable of delivering powerful bass, the use of two subwoofers in conjunction with EzSet/EQ II expands the bass response over a wider listening area.

The default setting for the AVR 745 is a single subwoofer, but if you are using two subwoofers, it is important to change the setting on the NO. SUBS line. To do that, press the ▲/▼ **Navigation Button** 14 F as needed so that the cursor is pointing to NO. SUBS, and then press the ◀/▶ **Navigation Button** 14 F so that the number shown changes from 1 to 2.

Subwoofer Size

The final setting on the SPEAKER SIZE menu enables you to change the setting for the subwoofer size. In the event that EzSet/EQ II did not accurately enter the correct size, or if you wish to experiment with a different setting, first make sure that the SPEAKER SIZE menu (Figure 27) is on the screen; then press the ▲/▼ **Navigation Button** 14 F so that the cursor is pointing to SUB SIZE and then press the ◀/▶ **Navigation Button** 14 F to begin the selection process. Note that a warning message will appear for 4 seconds to remind you to rerun EzSet/EQ II after all changes have been made.

Select a setting that best matches the diameter of your subwoofer's driver, or which provides the appropriate high-pass filter setting for your system. In each case, the frequency of the high-pass filter determines the frequencies below which no information is sent to the subwoofer:

- The setting for an 8-inch/200mm driver activates a 38Hz subwoofer high-pass filter.
- The setting for a 10-inch/250mm driver activates a 30Hz subwoofer high-pass filter.
- The setting for a 12-inch/305mm driver activates a 20Hz subwoofer high-pass filter.
- The setting for a 15-inch/380mm driver activates a 15Hz subwoofer high-pass filter.

When all changes to Speaker-related settings have been made, press the ▲/▼ **Navigation Button** 14 F until the cursor is on the BACK TO MANUAL SETUP menu and then pressing the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q so that you may make any other adjustments to the system parameters. It is also important to remember to rerun the EzSet/EQ II system if any changes have been made to the settings on this menu, following the instructions shown on page 36 for using the Manual mode.

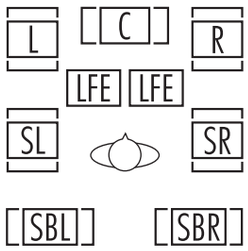
The speaker configuration settings may also be adjusted directly and without going into the OSD menu system at any time using the TC 30 remote control. To adjust the speaker settings, first press the **Devices Button** 5 on the TC 30, and then press the **Screen Button** 7 at the top of the left vertical row, to the right of the AVR image on the remote's screen. When the images in the LCD change, press the **Screen Button** 7 next to the box with the word SPEAKER. Immediately press the ◀/▶ **Navigation Button** 14 F until the desired speaker position's name appears in the **Lower Display Line** 29, and in the semi-OSD message, if the video in use is a 576i source.

Within five seconds of stopping at the desired speaker position, press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q. Use the ◀/▶ **Navigation Button** 14 F to select the desired setting and then press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q again to enter the setting into the system memory.

To assist in making these settings, the icons in the **Speaker/Channel Input Indicators** 24 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.

Note: These icons are available only when making setup changes without the use of the full OSD mode.

As an example, in the Figure below, all speakers are set for "large," and a subwoofer is set.



Delay Settings

Due 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.

To re-synchronize the front, center and surround channels at first measure and note the distance from the listening/viewing position to the front, center, surround and surround back (if any) speakers in meters.

If you have already calibrated your system using EzSet/EQ II the delay settings shown will reflect the results of the measurements made by EzSet/EQ II. No further changes are needed unless you wish to change an item to reflect your taste or a nonstandard system configuration. To change the settings, follow the instructions below to enter the distance between the speaker's location and your main listening position. The measurements need not be accurate to the inch, as the system is designed to accommodate typical listening rather than a specific "sweet spot" position.

In addition to adjusting the delay time for each individual speaker position, the AVR is among the few A/V receivers that allows you to adjust the delay for the combined output of all speakers as a group. This feature is called A/V Sync Delay; it allows you to compensate for delays to the video image that may be caused by the processing in products such as digital video displays, video scalers, digital cable or satellite systems, or personal video recorders. With proper adjustment of the setting for A/V Sync Delay, you can eliminate the loss of lip sync that may be caused by digital video applications.

The Delay setting for all speakers configured for your system will be available only (with 5.1 or with 6.1/7.1 configuration) when any Dolby surround mode is selected (except Dolby-3-Stereo). In addition they are selectable with these modes only, with all other modes the delay times are fixed. Note that the Delay settings are "Global" for all inputs, using those Dolby modes, and need not to be repeated with any input.

To view or change the current delay settings, make sure the EZSET/EQ MAIN menu (Figure 12) is on the screen. Press the ▲/▼ **Navigation Button** 14 F to move the cursor to DELAY ADJUST and then press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q on the ZR 10. The DELAY ADJUST menu (Figure 29) will appear on the screen.

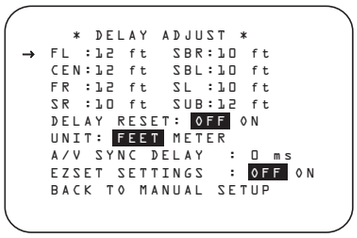


Figure 29

Next move the → cursor to the UNIT line and select the unit for distances you prefer to enter, feet or meter. Then move the → cursor to the FL line where the first adjustment is made. Now press the ◄/► **Buttons** 14 F until the distance from the front left speaker to the preferred listening position is entered. Next press the ▼ **Button** 14 F once to move to the next line.

If you wish to reset all delay settings to the factory defaults, as shown in Figure 29, press the ▲/▼ **Navigation Button** 14 F until the cursor is pointing to the DELAY RESET line. Next, press the ◄/► **Navigation Button** 14 F so that ON is highlighted in reverse video. The settings will reset, and you may now continue to make any needed changes following the instructions shown below. Once you make the first change to the default settings, the setting on the DELAY RESET line will return to OFF, indicating that the factory defaults are no longer in effect.

Now the → cursor will be at the CEN line so that the delay for the center speaker may be set. Press the ◄/► **Buttons** 14 F until the distance from the main listening position to the center speaker is entered. Repeat the procedure for all active speaker positions by pressing the ▼ **Button** 14 F again and use the ◄/► **Buttons** 14 F to change the setting.

If you have already run EzSet/EQ II, return to the settings established by the automated system by pressing the ▲/▼ **Navigation Button** 14 F until the cursor is pointing to the EZSET SETTINGS line. Next, press the ◄/► **Navigation Button** 14 F so that ON is highlighted in reverse video. The settings will be resent to the values calculated by EzSet/EQ II, and the menu will be locked so that the settings may not be changed. To go back into the menu and make any manual changes to one or more channels, you must first return the cursor to the EZSET SETTINGS line and press the ◄/► **Navigation Button** 14 F so that OFF is highlighted in reverse video. This will unlock the menu to allow changes.

When the delay time for all speaker positions has been set you may return to the master menu by pressing the ▲/▼ **Navigation Button** 14 F until the → cursor is pointing to BACK TO MANUAL SETUP and then pressing the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q. However, if you have a digital video source or a digital video display that causes lack of lip sync you may use the A/V Sync adjust feature to delay the audio signal as it is sent to all channels (as opposed to the individual settings) so that the picture and sound are brought back together. We recommend that this adjustment be made using the direct access controls on the remote, as shown below. That enables you to see the image while making the adjustment; however, you may also adjust it here using the menu system.

To adjust the A/V Sync delay, press the ▲/▼ **Navigation Button** 14 F so that the → cursor is pointing to the A/V SYNC DELAY line on the menu and then press the ◄/► **Navigation Button** 14 F to delay the sound sufficiently so that it matches the on-screen video.

The delay settings may also be adjusted directly and without going into the OSD menu system at any time using the TC 30 remote control and while viewing an on-screen image. This is particularly helpful in the case of the A/V sync delay, since it is important to be able to view the impact of the A/V sync delay adjustment with on-screen images.

To adjust the delay settings, first try to have a program on the video display that has close-ups and dialogue. If you feel that the audio is ahead of the picture, look closely at the actors' lips when they stop speaking, and notice whether their lips move for a short duration after the dialogue has stopped. When using the delay adjustments, change the setting so that the movement of the actors' lips is in sync with the sound, so that the sound stops when their lips stop. This is a good way to get the image and sound locked together.

The controls for A/V sync delay are activated by first pressing the **Devices Button** 5 on the TC 30, and then pressing the **Screen Button** 7 at the top of the left vertical row, to the right of the AVR image in the remote's screen. When the images in the LCD change, press the **Screen Button** 7 to the left of the box with the word DELAY.

Within five seconds, when the A/V SYNC DELAY message appears in the **Lower Display Line** 29, press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q and then use the ◄/► **Navigation Button** 14 F to bring the image and sound into sync. When you have completed the adjustments, press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q again to enter the setting into the system memory.

When a 480i or 576i image is being viewed, you will see the A/V sync time message appear as a semi-OSD on-screen message, as well as in the front-panel display. Semi-OSD messages are not available when 480p or higher resolution video is in use.

To change the delay setting for an individual speaker setting directly, rather than the A/V sync "group delay," follow these same instructions, but when the A/V SYNC DELAY message appears, press the ◄/► **Navigation Button** 14 F until the desired speaker position name appears, and then press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q to start the selection, the ◄/► **Navigation Button** 14 F to change the delay settings, and finally the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q to store the setting.

Note that the A/V Sync delay setting is unique to each video input source, so you may enter a different set-ting to compensate for the differences between any product attached to the Video 1, 2, 3 or 4 inputs.

When the delay settings are complete, press the ▼ **Button** 14 F once so that the cursor is next to the BACK TO MANUAL SETUP menu line and press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q to return to the MANUAL SETUP menu.

Output Level Adjustment

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

In most cases, you will not need to make any adjustments to the output level, as the settings made by running EzSet/EQ are as accurate as those made manually. However, you are able to use the CHANNEL ADJUST menu to trim the settings to suit your personal preferences or to configure the system so that the output settings are different from one input source to another. The ability to make individual output level adjustments on a per-input basis is useful for listeners who may prefer different settings for the subwoofer or an individual channel group such as the front speakers when playing musical selections via the CD input as opposed to the movie soundtracks more frequently used with the DVD input. This menu also allows you to adjust the output levels using external sources such as a test disc or other program material that you use as a standard, rather than the system's test tone.

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 ambience, 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.

Before beginning the output level adjustment process, make certain that all speaker connections have been properly made. The system volume should be turned down at first.

To view or change the current Channel Output settings, make certain that the EZSET/EQ MAIN menu (Figure 12) is on the screen. Press the ▲/▼ **Navigation Button** 14 F to move the cursor next to CHANNEL ADJUST and then press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q on the ZR 10 remote control. The CHANNEL ADJUST menu (Figure 30) will appear on the screen.

```
    *  CHANNEL ADJUST  *
  FL  : 0dB  SBR : 0dB
→ CEN : 0dB  SBL : 0dB
  FR  : 0dB  SL  : 0dB
  SR  : 0dB  SW1 : 0dB
             SW2 : 0dB
  TEST TONE: AUTO OFF MAN
  LEVEL RESET: OFF ON
  CH ADJUST: GLOBAL
  EZSET SETTINGS: OFF ON
  BACK TO MANUAL SETUP
```

Figure 30

To provide the maximum flexibility, channel output level adjustments may be made either with or without the internal test tone, and when the tone is in use, it may be programmed to automatically circulate among the active channels or to only move from one channel to the next on your command. When the CHANNEL ADJUST menu appears, we recommend that you first run the test tone once in the automatic mode to verify that the speakers have been properly connected. To do this, press the ▲/▼ **Navigation Button** 14 F again until the cursor is on the TEST TONE line and then press the ◀/▶ **Navigation Button** 14 F until AUTO is in highlighted video. The test tone will then circulate among all channels for five seconds at each position.

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

NOTE: Remember 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** 29. If the sound comes from a speaker location that does NOT match the position indicated in the display, turn the AVR off using the **Main Power Switch** 1 and check the speaker wiring or connections to external power amplifiers 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** 14 F on the remote to bring all speakers to the same volume level. 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. The on-screen cursor → and the test noise can also be moved directly to the speaker to be adjusted by pressing the ▲/▼ buttons 14 F on the remote.

Continue to adjust the individual channels until the volume level sounds the same from each speaker. Note that adjustments should be made with the ◀/▶ **Buttons** 14 F on the remote only, NOT the main volume controls.

If you are using a sound-pressure level (SPL) meter for precise level adjustment with the test tone, open the main **Volume Control** 40 to -15dB and set the individual output level for each channel so that the meter reads 75dB, C-Weighted Slow. After all settings are made turn the main volume down.

You may also make these same adjustments with complete manual control over the channel being adjusted by pressing the▲/▼ **Navigation Button** 14 F until the → cursor is pointing to the TEST TONE line on the menu and then using the ◀/▶ **Navigation Button** 14 F to select MAN in the highlighted video. In the MAN mode, the test tone will also start immediately, but the tone will only be moved to another channel by pressing the ▲/▼ **Navigation Button** 14 F. When the manual sequencing mode is active, the tone is turned off by pressing the ▲/▼ **Navigation Button** 14 F until the → cursor is pointing to the TEST TONE line and the ◀/▶ **Navigation Button** 14 F is then pressed to select OFF in the highlighted video.

The final option for tone adjustment using the menu system is to not use the internal test tone at all. To do this, simply use the ▲/▼ **Navigation Button** 14 F to change the channel and then use the ▲/▼ **Navigation Button** 14 F to change the output level. When making channel output adjustments without the internal test tone we strongly recommend that you use a test disc in the "repeat" mode on your DVD or CD player so that the signal being used is constant throughout the adjustment process.

NOTE: The subwoofer output level is not adjustable using the test tone. To change the subwoofer level, follow the steps for Output Level Trim Adjustment on page 51.

When all channels have an equal volume level, the adjustment is complete. Now turn the **Volume** 40 down to about -40dB, otherwise the listening level may be too high as soon as the source's music starts to play. To exit this menu, press the ▲/▼ buttons 14 F until the on-screen → cursor is next to the BACK TO MANUAL SETUP line, and then press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q to return to the MANUAL SETUP.

The output level settings may also be adjusted directly (without going into the OSD menu system) at any time, using the TC 30 remote control. To adjust the speaker settings, first press the **Devices Button** 5 on the TC 30, and then press the **Screen Button** 7 at the top of the left vertical row, to the left of the AVR image on the remote's screen. When the images in the LCD change, press the **Screen Button** 7 next to the box with the word TEST.

As soon as the button is pressed, the test tone will begin to circulate, as indicated earlier. The correct channel from which the test noise should be heard will be shown in the lower third of the video screen and in the **Lower Display Line** 29. While the test noise is circulating, the proper channel position will also be indicated in the **Speaker/Channel Input Indicators** 24 by a blinking letter within the correct channel.

To adjust the output level, press the ◄/► **Navigation Button** 14 F until the desired level is shown in the display or on the screen. Once the buttons are released, the test noise will begin to circulate again in five seconds. When all channels have the same output level, press the **Screen Button** 7 next to TEST again to complete the process.

IMPORTANT NOTE: The Output level adjustment made will be effective for all inputs, but only for the actual surround mode selected. To be effective for any other mode select that mode (with any input) and repeat the level adjustment described above. This will also allow you to compensate level differences between speakers, that may be different with each surround mode, or to increase or decrease the level of certain speakers intentionally, depending on the surround mode selected.

Note: Output level adjustment is not available for the Surround Off mode, as no surround speakers are used (so level differences between the speakers in the room cannot occur). But to compensate level differences between stereo and other surround modes (independently from the input selected) the outputs can be adjusted with the Level Trim Adjustment procedure, see page 51, also for the Surround Off (Stereo) modes.

In addition to the controls for selecting channels and the test tone operation, the settings on this menu also allow you to reset the level settings to either the factory default of 0dB or to re-establish the settings that were entered by running EzSet/EQ II.

To reset all channel levels to 0dB press ▲/▼ **Navigation Button** 14 F so that the cursor is pointing to the LEVEL RESET line and then press the ▲/▼ **Navigation Button** 14 F once so ON appears in highlighted video.

To return to the settings established by EzSet/EQ II, even if you have made manual changes to the output trims using the steps shown above, press ▲/▼ **Navigation Button** 14 F so that the cursor is pointing to the EZSET SETTINGS line and then press the ▲/▼ **Navigation Button** 14 F once so ON appears in highlighted video. Remember that after turning the EzSet/EQ II settings back on you must turn return to this menu line and change the setting to OFF if you wish to make any manual trim adjustments.

The final setting in this menu enables you to have the output levels remain the same for all inputs or to be adjusted differently for each (or any) input. While most listeners prefer to keep the same output levels for all sources, you may wish to raise or lower some channels, particularly the subwoofer output for a specific source such as a CD that is primarily used for music playback.

To enter individual settings for a specific channel, first make sure that you have either run EzSet/EQ and/or made any desired manual trim adjustments to set a baseline for all channels. After that is done, press the **OSD Button** E to exit the menu system and then select the input for which you wish to enter different level settings by using either the **Input Source Selectors** 15 on the front panel or the buttons on the remote that are used to select an input source B C D R. Next, return to the CHANNEL OUTPUT submenu using the steps outlined above.

At the CHANNEL OUTPUT menu press ▲/▼ **Navigation Button** 14 F until the cursor is pointing to the LEVEL TRIM line and then press the ▲/▼ **Navigation Button** 14 F once so that INDEPENDENT appears in highlighted video. When this setting is active you may change the channel output levels for any input without changing the settings previously established for another.

When all changes to the Channel Output levels and the associated level trim settings have been made press the ▲/▼ **Navigation Button** 14 F until the cursor is on the BACK TO MANUAL SETUP menu and then pressing the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q so that you may make any other adjustments to the system parameters. If the changes just made complete the manual adjustments needed, press the **OSD Button** E to exit the menu system and resume normal system operation.

Additional Input Adjustments

After one input has been adjusted for Surround mode, digital input (if any), speaker type, and output levels, go back to the IN/OUT SETUP line on the MASTER MENU (Figure 1) and enter the settings for each input that you will use. In most cases, only the digital input and surround mode will be different from one input to the next, while the speaker type, crossover frequency, Night mode and output level settings will usually be the same and may be quickly entered by entering the same data used for the original input.

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 pages 53 to 54 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 in this section.

EzSet/EQ II Preset Selection

If you have stored more than one EQ Design using EzSet/EQ II, you may select the Design you wish to use from the EZSET/EQ PRESET SELECT line of the EZSET/EQ MAIN menu (Figure 12). Follow the instructions on page 32 to view the EZSET/EQ MAIN menu, and then press the ▲/▼ **Navigation Button** 14 F to move the cursor to the EZSET/EQ PRESET SELECT line. Press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q on the ZR 10 remote to bring the next menu to the screen, and then press the ▲/▼ **Navigation Button** 14 F to move the cursor to the preset number for the Design you wish to use. When your selection is made, press the **OK/Enter Button** 15 on the TC 30 or the **Set button** Q on the ZR 10 to store the selection. Then move the cursor to BACK TO EZSET/EQ MAIN using the ▲/▼ **Navigation Button** 14 F and press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q on the ZR 10 remote to exit the menu system.

You may also select an EQ Design directly, or turn the EQ filters off by following the instructions on page 51.

Note that any settings changed at any time, also when the discrete buttons are used only, will be stored in memory in the AVR, also if it´s turned off completely, unless it will be reset (see page 59).

Having completed the setup and configuration process for your AVR, you are about to experience the finest in music and home-theater listening. Enjoy!

Surround Mode Chart

MODE	FEATURES
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.
DOLBY DIGITAL EX	Available when the receiver is configured for 6.1/7.1 channel operation, Dolby Digital EX is the latest version of Dolby Digital. When used with movies or other programs that have special encoding, Dolby Digital EX reproduces specially encoded soundtracks so that a full 6.1/7.1 soundfield is available. When the receiver is set for 6.1/7.1 operation and a Dolby Digital signal is present, the EX mode is automatically selected. Even if specific EX encoding is not available to provide the additional channel, the special algorithms will derive a 6.1/7.1 output.
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.
DTS-ES 6.1 Matrix DTS-ES 6.1 Discrete	When the speaker configuration is set for 6.1/7.1 operation, playback of a DTS-encoded program source will automatically trigger the selection of one of the two DTS-ES modes. Newer discs with special DTS-ES discrete encoding will be decoded to provide six discrete, full-bandwidth channels plus a separate low-frequency channel. All other DTS discs will be decoded using the DTS-ES Matrix mode, which creates a 6.1-channel sound field from the original 5.1-channel soundtrack.
DOLBY PRO LOGIC II MOVIE MUSIC DOLBY PRO LOGIC GAME	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. Game mode ensures that special effects are routed to the surround channels, while delivering their full impact using the subwoofer, thus fully immersing the game player in the universe of the video game.
DOLBY PRO LOGIC IIx MUSIC MOVIE GAME	Dolby Pro Logic IIx is the latest extension of Dolby Pro Logic II technology that creates a discrete 6.1 and 7.1 sound field from matrix surround or two-channel stereo sources in systems configured for surround back speakers. Both Movie and Music versions of Pro Logic IIx are available. Movie, Music and Game versions of Pro Logic IIx are available. Game mode ensures that special effects are routed to the surround channels, while delivering their full impact using the subwoofer, thus fully immersing the game player in the universe of the video game.
Logic 7 Cinema Logic 7 Music	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. Logic 7 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.

Surround Mode Chart

MODE	FEATURES
DTS Neo:6 Cinema DTS Neo:6 Music	These two modes are available when any analog source is playing to create a six-channel surround presentation from conventional Matrix-encoded and traditional Stereo sources. Select the Cinema version of Neo:6 when a program with any type of analog Matrix surround encoding is present. Select the Music version of Neo:6 for optimal processing when a nonencoded, two-channel stereo program is being played.
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.
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.
HALL 1 HALL 2	The two Hall modes create sound fields that resemble a small (HALL1) or medium sized (HALL 2) concert hall, with stereo and even pure mono sources.
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 areclose together.
5-Channel Stereo 7-Channel Stereo	This mode takes advantage of multiple speakers to place a stereo signal at both the front and back of a room. Depending on whether the AVR has been configured for either 5.1 or 6.1/7.1 operation, one of these modes, but not both, is available at any time. Ideal for playing music in situations such as a party, this mode 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.
SURROUND OFF (STEREO)	This mode turns off all surround processing and presents the pure left- and right-channel presentation of two-channel stereo programs.
Dolby Headphone	Dolby Headphone enables ordinary stereo headphones to portray the sound of a five-speaker surround-playback system.

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:

Before using the AVR 745, we strongly recommend that you program the TC 30 remote, following the instructions provided in both the separate TC 30 Installation Guide and the wizards available when the TC 30 is connected to the Internet through your computer. While the TC 30 is preprogrammed to operate the AVR 745 and Harman Kardon DVD players right out of the box, programming the TC 30 for all the components in your system and setting it up for the activities that best match the way you use your home entertainment system will greatly add to the enjoyment of your total home entertainment system.

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 amber color of the **Power Indicator** 3. Once the unit is in Standby, you may begin a listening session by pressing the **System Power Control** 2 or the **Source** button 15 on the front panel or the **AVR Selector** B. 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 B C D or the **Source** button 15 on the front panel.

• To turn the AVR 745 on using the TC 30 remote:

• Press the **Screen Button** 7 next to one of the Activities shown on the LCD screen. The preprogrammed Activities include the remote control codes that not only turn on the AVR 745, but also switch it to the input associated with the Activity and turn on a compatible Harman Kardon DVD player when it is part of the Activity. If you have programmed the TC 30 for your own Activities, other devices will turn on and operate as specified in the Activity design.

• Press the **Devices Button** 5 and then press the **Screen Button** 7 to the left of AVR. When the options on the LCD screen change, press the **Screen Button** 7 to the right of ON to turn the unit on or the one next to OFF to place it in the Standby mode.

• When using the ZR 10 remote, press the **AVR Selector** B to turn the unit on and select the last source that was used. Press any of the **Input Selectors** D, or source-specific buttons such as the **Tuner Selector** C or **The Bridge/DMP Selector Button** R to both turn the AVR 745 on and select that specific source.

Whenever the AVR is turned on, you will see all of the front-panel indicators light up for a few seconds. This is normal, and it is part of the unit's power-on self-test procedure.

Note: When an Input Selector or source-specific button on the ZR 10 remote B C D R is used to turn the AVR 745 on, press the AVR Selector B to use the remote for control of the AVR 745.

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** 3 A on the remote. Power will be shut off to any equipment plugged into the rear panel **Switched AC Outlets** 17 and the **Power Indicator** 3 will turn orange.

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.

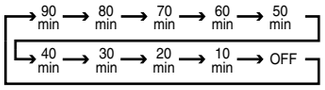
When you will be away from home for an extended period of time it is always a good idea to completely turn the unit off with the front panel **Main Power Switch** 1.

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 set the AVR 745 to turn off after a predetermined time period, press the **Devices Button** 5, followed by the **Screen Button** 7 at the top of the row of buttons on the left side of the TC 30, to the left of the A/V receiver image on the LCD screen. Next, press the **Page Left/Right Buttons** 9 to view PAGE 2 of the AVR functions.

• To put the AVR in the Sleep mode, press the **Screen Button** 7 to the right of the word SLEEP in the LCD. Each press of the button will decrease the time before the AVR shuts down in the following sequence.



Once you have set the desired Sleep Time, the front-panel display will automatically dim to half-brightness. The display will return to full-brightness when any button on the front panel or a remote is pressed, and then return again to half-brightness. To check on the time remaining until the unit shuts down, follow the instructions shown above to access the **Screen Button** 7 for Sleep and press it once.

To cancel the Sleep function, follow the instructions shown above to access the **Screen Button** 7 for Sleep and press it first until the information display returns to normal brightness and then again as many times as needed until the words SLEEP OFF appear in the **Lower Display Line** 29.

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.

Source Selection

• To select a source, press any of the **Source Selector** buttons on the remote B C D R.

NOTE: After pressing one of the **Input Selector** buttons C D to turn the unit on, press the **AVR Selector** B to have the remote control the AVR functions.

• The input source may also be changed by pressing the front-panel **Input Source Selector** button 15. Each press of the button will move the input selection through the list of available inputs.

• Two options are available for selecting an input source using the TC 30 remote.

• Pressing the **Activities Button** 4 will display the list of preprogrammed activities. Press the **Screen Button** 7 next to any activity to turn the unit on, select the input source shown, and perform any other steps that have been programmed into the activity.

• To directly select a source, first press the **Devices Button** 5 and then press the **Screen Button** 7 to the left of AV RECEIVER at the top of the list of options on the **LCD Screen** 8. To select an audio-only input source (Tuner, CD, 6/8-Channel Direct, DMP/The Bridge or Tape), press the **Screen Button** 7 to the left of AUDIO INPUTS. When the screen display changes, press the **Screen Button** 7 next to the desired input. To select an audio/video input source (Video 1/2/3/4, DVD or HDMI 1/2) press **Screen Button** 7 to the right of A/V INPUTS. When the screen display changes, press the **Screen Button** 7 next to the desired input.

• To select an input using the ZR 10 remote, press one of the **Input Selectors** Ⓓ, or the source-specific buttons for **Tuner** Ⓒ or **The Bridge** Ⓡ.

• As the input is changed, the AVR will automatically switch to the digital input (if selected), surround mode component video input, A/V Sync Delay and Night Mode configurations that were in effect the last time that input was used. If the LEVEL TRIM line on the CHANNEL ADJUST menu (Fig. 30) was set to INDEPENDENT, as shown on page 40, the settings for channel output levels will also change to the preset values.

• The front-panel **Video 4 Inputs** 21, **Optical Digital 4 Input** 18 or the **Coaxial Digital 4 Input** 20 may be used to connect a device such as a video game or camcorder to your home entertainment system on a temporary basis. When they are configured as outputs (see page 51) you can also connect an audio or video recorder (composite or S-Video) for recording the source selected.

• As the input source is changed, the new input name will appear momentarily as an on-screen display in the lower third of the video display. The input name will also appear in the **Main Information Display** 29.

• 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** 26 (except from its own Video 1/ source) and **Video Monitor Output** 12. This permits simultaneous viewing and listening to different sources.

• When a Video source is selected, its audio signal will be fed to the speakers and the video signal for that input will be routed to the appropriate **Monitor Output Jack** 12 and will be viewable on a TV monitor connected to the AVR. If a component video source is connected to the **DVD** 13 or **Video 1 or 2** 20 22 **Component Inputs**, it will be routed to the **Component Video Outputs** 21. 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 15).

6-Channel/8-Channel Direct Input

• There are two input choices available for use with sources such as a DVD-Audio or SACD player that are connected to the **8-Channel Direct Inputs** 10. Select the appropriate input according to the way your system and source equipment is configured:

• The 6 CH DIRECT input should be used when the SBR and SBL inputs are NOT in use and the input source device has its own internal bass management system. This input passes the input from the source directly through to the volume control without any analog to digital conversion and it mutes the unused input jacks to prevent unwanted noise from interfering with system performance.

• The 6 CH DVD AUDIO input should be used when the SBR and SBL inputs are NOT in use and the input source device does NOT have its own internal bass management system. When this input is in use the analog source is converted to digital so that you may use the same Quadruple Crossover bass management options for the direct input as you do with all other inputs. This input also mutes the unused input jacks to prevent unwanted noise from interfering with system performance.

• The 8 CH DIRECT INPUT should be used when an input is connected to all eight 8-Channel Direct Inputs 9 and when the input source device has its own internal bass management system. This input passes the input from the source directly through to the volume control without any analog to digital conversion.

• The 8 CH DVD AUDIO input should be used when an input is connected to all eight 8-Channel Direct Inputs 9 and the input source device does NOT have its own internal bass management system. When this input is in use the analog source is converted to digital so that you may use the same Quadruple Crossover bass management options for the direct input as you do with all other inputs.

Note that when the 6-Channel or 8-Channel Input is in use, you may not select a surround mode, as the external decoder determines the processing in use. In addition, there is no signal at the record outputs or bass management when the 6-Channel or 8-Channel Direct Input is in use and the tone or balance controls will not function.

Controls and Use of Headphones

• Adjust the volume to a comfortable level using the front panel **Volume Control** 27 or remote **Volume Up/Down** 13 Ⓘ buttons.

• To temporarily silence all speaker outputs press the **Mute** button 12 Ⓚ. This will interrupt the output to all speakers and the headphone jack, but it will not affect any recording or dubbing that may be in progress. When the system is muted, the word MUTE will blink in the **Main Information Display** 29. Press the **Mute** button 12 Ⓚ again to return to normal operation.

• The unit's tone controls may be taken out of the signal path by pressing the **Devices Button** 5 on the TC 30 remote and then pressing the **Screen Button** 7 to the left of TONE MODE at the bottom of the list of options on the bottom left side of the **LCD Screen** 8. The first press of either button will show a message in the on-screen display (except when 720p or 1080i sources are in use) and **Lower Display Line** 29 with the current status of the tone controls. The system default is TONE IN, which indicates that the bass and treble controls are active. Press the ▲/▼ **Navigation Button** 14 Ⓕ on the TC30 remote or the ◀/▶ **Buttons** 7 14 on the front panel to change the setting to TONE OUT, which is "flat" response without the tone controls being active.

• When the tone controls are active, the amount of bass and treble boost/cut may be adjusted by first pressing the **Devices Button** 5 on the TC 30 remote and then pressing the **Screen Button** 7 to the left of TONE MODE at the bottom of the list of options on the bottom left side of the **LCD Screen** 8 two or three times until the desired setting (BASS MODE or TREBLE MODE) appears in the on-screen display and the **Lower Display Line** 29. Next, use the ▲/▼ **Navigation Button** 14 Ⓕ on the remote or the ◀/▶ **Button** on the front panel 7 14 to change the setting as desired. The unit will return to normal operation within five seconds after the setting is changed.

• 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 speakers will automatically mute and a two-channel stereo signal will be sent to the headphones. The **Lower Display Line** 29 will read DOLBY H: BP, indicating that the headphone output is in the Bypass mode, and to confirm that no processing is being used.

• When the headphones are in use, you may take advantage of the Dolby Headphone modes to bring added spaciousness to headphone listening. Press the **Surround Mode Group Selector** 5 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.

Selection of a surround mode is based on personal taste, as well as the type of program source material being used. For example, CDs, motion pictures 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, with any DTS NEO:6 mode or with Harman Kardon´s exclusive Logic 7 Movie Mode, to create a full range 5.1 channel or (with Logic 7 and DTS NEO:6) even 7.1 channel surround signal from surround encoded programs, with a stereophonic left and right rear signal, just as it was recorded (e.g. sound being recorded from left rear side will be heard from that side only, for more details see chart on page 42).

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 47).

To create wide, enveloping sound field environments and defined pans and flyovers with all analog stereo recordings select the Dolby Pro Logic II Music or Emulation mode 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 Pro Logic II Cinema, Logic 7 Cinema or DTS Neo:6 Cinema, 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 Pro Logic IIx, DTS NEO:6 Music or Logic 7 Music or Enhanced 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 5/7CH 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 new surround mode from the front panel, first press the **Surround Mode Group Selector Button** 5 until the desired major surround mode group such as Dolby, DTS or Logic 7 is selected. Next, press the **Surround Mode Selector Button** 9 to choose the specific individual surround mode.

To select a surround mode using the TC 30 remote, first press the **Devices Button** ❺, followed by the **Screen Button** ❼ at the top of the row of buttons on the left side of the TC 30, to the left of the A/V receiver image on the LCD screen. After the list of options displayed on the **LCD Screen** ❽ changes, press the **Screen Button** ❼ to the right of SURR MENU. The options list will change again, this time showing the major display category modes. The first press of a button will show the current mode from that group if it is already in use, or the first available mode if you are currently using another mode. To cycle through the available modes in that group, press the button again until the desired mode appears in the **Lower Display Line** 29, the on-screen display and the front-panel **Surround Mode Indicators** 23.

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.

When the 6-Channel/8-Channel direct inputs are in use there is no surround processing, as these inputs take the analog output signals from an optional, external DVD-Audio or SACD player, or another source device and carry them straight through to the volume control.

To listen to a program in traditional two-channel stereo, using the front left and front right speakers only (plus the subwoofers, if installed and configured), first follow the instructions shown above so that the AVR: SURROUND MENU page of the TC 30 remote is on the **LCD Screen** ❽, and then press the **Screen Button** ❼ to the right of the Stereo option until SURROUND OFF appears in the **Lower Display Line** 29. From the front panel, press the **Surround Mode Group Selector** 5 until the Stereo modes appear in the on-screen display and **Lower Display Line** 29. Next, press the **Surround Mode Selector Button** 9 until SURROUND OFF appears in the on-screen display and **Lower Display Line** 29.

Digital Audio Playback

Digital audio is a major advancement over older analog surround processing systems such as Dolby Pro Logic. It delivers five or six discrete channels: left front, center, right front, left surround and right surround and with DTS ES (see below) even surround back (with identical signals for left and right). 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," "6.1" or "7.1". 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 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 31 32 18 20 of the AVR. No demodulator is required for use with DVD players or DTS-encoded laser discs.

In order to provide maximum playback compatibility with DVDs, the AVR 745 receiver will always default first to the playback mode embedded in a disc's digital "flag" information. For Dolby Digital discs, the following playback modes are initially selected after the AVR locks to the incoming digital audio data stream to identify the selected:

- When a 5.1 audio stream is detected, the Dolby Digital 5.1 format will be selected, regardless of the number of speakers in your system, in compliance with Dolby Laboratories licensing requirements.
- When a disc with the Dolby Digital EX format flag is played, your system will automatically switch to the EX mode when seven main channel speakers are available.
- When a disc with Dolby Digital data, but only 2.0 audio is detected, the default mode is Dolby Digital with Pro Logic II post-processing when you have a 5.1 speaker system, or Dolby Digital with Pro Logic IIx post-processing when you have a 7.1 speaker system.
- Depending on the number of speaker channels available in your system, once the AVR locks to the digital signal, you may select any surround mode or post-processing option that is available, based on the incoming data stream's possible restrictions and the number of speakers in your system. For example, when a 5.1 or 2.0 audio stream is in use, you may select alternate postprocessing such as Logic 7/7-Channel Movie Mode post-processing to create the rear surrounds in 7.1 speaker systems.

DTS
DTS is another digital audio system that is capable of delivering 5.1, 6.1 or 7.1 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 digital output to either the **Optical** or **Coaxial** input on the rear panel 31 32 or front panel 18 20.

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.

When the AVR 745 is connected to a blue-laser-based high-definition optical disc player via an HDMI, coaxial or optical digital connection, the soundtrack from the player is also available in the standard DTS format so that it may be decoded by the AVR.

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).

Connections may be made to either the **Optical** or **Coaxial** inputs 31 32 on the rear panel or the front panel **Digital Inputs** 18 20.

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 25 and then use the ▲/▼ buttons 14 F on the remote, or the **Selector** buttons 7 14 on the front panel, until the desired choice appears in the **Lower Display Line** 29, then press the **Set** button 15 Q to confirm the choice.

In most cases this will be 48 KHZ, though in the case of specially mastered, high-resolution audio discs you will see a 96 KHZ indication.

The PCM 48 KHZ indication will also appear when modes or inputs are changed for analog sources. In those cases the system is telling you the sampling frequency used internally at the output of the analog-to-digital converters that change the incoming signal from a VCR, tape deck, the tuner, or other ana-log source to digital.

During PCM playback the unit automatically will turn to the default surround mode or to the LOGIC 7 mode but you also may select any surround mode 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 31 32 18 20. 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 Audio inputs** 6 on the rear panel when you connect the source's digital outputs).

If you have not already configured an input for a digital source using the on-screen menus, as shown on page 23, first select the input using the remote or front-panel controls, as outlined in this manual. Next, press the **Devices Button** 5, followed by the **Screen Button** 7 at the top of the row of buttons on the left side of the TC 30, to the left of the A/V receiver image on the LCD screen. After the list of options displayed in the **LCD Screen** 8 changes, press the **Screen Button** 7 to the left of SETUP MENU. After the options change, press the **Screen Button** 7 to the right of DIGITAL INPUT and then press the ◀/▶ **Navigation Buttons** 14 F on the TC 30 remote or the ◀/▶ **Navigation Button** 7 14 on the front panel to choose any of the OPTICAL or COAXIAL inputs, as they appear in the **Upper Display Line** 29 or on-screen display. When the digital source is playing, the AVR 745 will automatically detect which type of digital data stream is being decoded and display that information in the **Upper Display Line** 29.

When both a digital and an analog connection are made between a source device and the AVR, the digital input is the default. If the digital stream is not present or is interrupted, the unit will automatically switch over to the analog inputs for the selected source.

If you wish to disable the auto-polling feature, you may do so by following the instructions shown for the IN/OUT SETUP menu (Figure 2), as shown on page 23.

When the digital source is playing, the AVR will automatically detect whether it is a multichannel Dolby Digital or DTS source or a HDCD, MP3 or conventional PCM signal, which is the standard output from CD players.

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

Digital Bitstream 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** 29 for about five seconds before the display returns to the normal surround mode indication.

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 "3" tells you that separate, discrete left surround, center surround and right surround signals are present. This is available only on discs with DTS-ES digital audio.
- 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.
- The information in the right side of the display will tell you if the digital audio data contains a special flag signal that will automatically activate the appropriate 6.1 or 7.1 mode. This will be shown as EX-ON or EX-OFF for Dolby Digital bitstreams and ES-ON or ES-OFF for DTS bitstreams.

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.

USB Playback

The AVR 745 is among the very few A/V receivers capable of direct connection to a computer for audio playback. Once the AVR is connected, audio streams and playback are possible through your AVR, with all the power and performance of the high-current amplifier, your own speakers, and the enhanced multichannel playback made possible through the use of Logic 7, Dolby Pro Logic II/IIx or DTS Neo:6 processing.

The AVR 745's USB connectivity may be used with PC-compatible computers running either Microsoft® Windows® 2000 with Service Pack 4 or higher installed, or Windows XP® or Windows XP Media Center Edition with Service Pack 1 or higher installed. Connect one of the available USB jacks on your computer or a USB hub to the **USB Jack** 18 on the AVR using a cable with a standard USB plug on one side and a USB "Mini B" plug on the other side. You may use an optional cable available at most electronics and computer stores for this purpose, or you may use the cable supplied for use with the TC 30 remote, if it is not being used to program the remote.

In addition, you will need to have a media player installed on the computer. The AVR 745 has been tested for operation with Windows Media Player® Version 8.0 and above, but it is also compatible with many other popular players such as iTunes®, WinAmp® and Real Player®. In most cases, it is best to always make certain that you have the latest version of the player installed to ensure the best compatibility.

When the connection between a computer and the AVR is made for the first time, or if the USB connection is plugged into a different USB jack on a computer or hub that has not been previously connected to the AVR, you will see a series of pop-up messages from Windows to indicate that the computer is configuring itself for the new device. Since the AVR provides a number of different functions, you may see the "Found New Hardware" message up to four times, one each for "A/V Receiver," "Compatible Device," "Audio Receiver" and "Human Interface Device." When all messages have appeared and then cleared the screen, you are almost ready to begin.

Before selecting the USB input, first make certain that one of the media players listed above has been opened on the computer. Then you may select the USB input in any of the following ways:

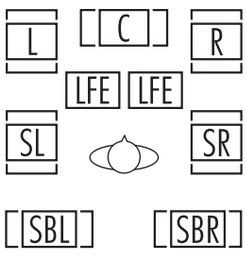
- To select USB as a source from the front panel, press the Input **Source Selector Button** 15 until USB appears as the input name in the Upper **Display Line** 29 and in the semi-OSD display, if available. The **USB Input Source Indicator** 28 will also light up on the front panel.

- Two options are available for selecting an input source using the TC 30 remote.
  - Press the **Activities Button** 4 to display the list of preprogrammed activities and then press the **Screen Button** 7 to the left of LISTEN TO USB. This will both select the USB input and change the remote codes so that the buttons will control the media player on your computer.
  - To directly select the USB input as a source, first press the **Devices Button** 5 and then press the **Screen Bnutton** 7 to the left of AV Receiver. When the next page of options appears in the **LCD Screen** 8, press the **Screen Button** 7 to the left of USB.
- To select USB as an input using the ZR 10 remote, press the **USB Input Selector** D.

When the USB input is selected and the AVR 745 is connected to a compatible computer with one of the media players mentioned above open, you may then use the TC 30 to start and stop playback, as well as move to the next track using either the commands that appear in the **LCD Screen** 8 in conjunction with presses of the **Screen Buttons** 7, or the **Transport Controls** 10. Activity of the Transport buttons may vary from one media player to another, but at the very least you will be able to use the Play and Stop buttons. You may also control the media player on a connected computer using the **Transport Controls** P on the ZR 10 remote.

Once playback is started, the audio from a USB source is treated the same as any other two-channel audio source, and you may apply any of the appropriate surround processing modes. When playing back audio from a computer via the USB connection, the internal speakers in a laptop computer are often muted.

Speaker/Channel Indicators
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/or whether the digital signal is interrupted.



These indicators are the L/C/R/LFE/SL/SR/SBL/SBR letters that are inside the center boxes of the **Speaker/Channel Input Indicators** 24 in the front panel **Main Information Display** 29. 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.

Digital signals, however, may have one, two, five, six or seven 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 DVDs 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 only the "L" and "R" indicators.

NOTE: Many DVD discs are recorded with both "5.1" and "2.0" versions of the same soundtrack. 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. 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.

Important Note: When a digital surround source (Dolby Digital, DTS) is played, the letters SBL/SBR for the Surround Back channels will appear only when a DTS ES DISCRETE 6.1 source is played. Then this surround mode will be indicated in the front display and on-screen display. With all other recordings the icons for the surround back speakers may light (when those speakers have been configured) to indicate that a signal will be fed to them (Matrix decoded with NEO:6, LOGIC 7 or 7 CH Stereo), but no letters inside will light as the unit will not receive an input signal for the surround back channels.

The letters used by the **Speaker/Channel Input Indicators** 24 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 intelligibilty 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 the Dolby Digital mode is selected.

The Night mode may be engaged at any time when a Dolby Digital source is playing by pressing the **Devices Button** 5 on the TC 30, followed by the **Screen Button** 7 at the top of the row of buttons on the left side of the TC 30, to the left of the AV RECEIVER image on the LCD screen. After the list of options displayed on the **LCD Screen** 8 changes, press the **Page Left/Right Button** 9 to display the next page of options, and press the **Screen Button** 7 to the left of the word NIGHT. Each press of the button will change the Night mode setting, as shown in the lower third of the on-screen display (except when 720p or 1080i sources are in use). To turn the Night mode off, press the button as described until D-RANGE OFF is shown.

The Night mode may also be selected to always be on at either level of compression using the options in the DOLBY SURROUND menu. See page 31 for information on using the menus to set this option.

IMPORTANT NOTES ON DIGITAL PLAYBACK:
- 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** 24 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.
- 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.

• Note that not all digitally encoded programs and not all audio tracks on a DVD contain full 5.1 or 6.1 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, indicate it in the **Channel Input Indicators** 24 and adjust to accommodate it.

• 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/7CH Stereo or Logic 7, except with specific Dolby Digital 2.0 recordings that can be played with the Pro Logic II modes too (see page 42).

• When a digital source is playing, it is possible to make an analog recording using the **Tape** 4 or **Video 1** 37 record outputs, even if the source is connected to any digital input of the AVR only, as long as "Surround Off" mode is selected (possible with a PCM source only). But the analog two channel signal, even of a Dolby Digital (not DTS) 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. Additionally, the digital signals will be passed through to the **Digital Audio Outputs** 11.

Using The Bridge

The AVR 745 is equipped for use with Harman Kardon's optional The Bridge iPod docking station.

When The Bridge is connected to the AVR and an iPod properly docked, you may use the TC 30 or ZR 10 remote to control the iPod for audio playback using either the TC 30 or ZR 10 remote, while using the front-panel display and on-screen semi-OSD messages to help you locate tracks or view information about the track being played. In addition, connecting an iPod to the AVR 745 through The Bridge also charges the iPod's battery. Using the DMP AUTO POWER menu option, as described on page 54, you may even have the AVR 745 automatically turn on with your iPod as a playback source whenever the iPod is turned on.

You may select The Bridge as an input by pressing the **Devices Button** 5 on the TC 30 and then pressing the **Screen Button** 7 next to LISTEN TO THE BRIDGE. The **LCD Screen** 8 will change to display options that allow you to control the iPod by pressing the **Screen Button** 7 next to the function you would like to use. You may also use the ZR 10 to control the iPod using the controls outlined in the instructions that are furnished with The Bridge.

When The Bridge is connected and a compatible iPod properly docked, the iPod's menu will be replaced with "harman/kardon" at the top of the iPod's screen and the front panel display and semi-OSD message will show messages that will guide you through the menu and content selection. If the **Lower Display Line** 29 shows an UNPLUGGED... message, please check to see that the correct iPod adapter is used in The Bridge and that the iPod is properly seated.

The AVR's front-panel controls may also be used to access a limited number of iPod functions. Press the **AM/FM** 11 to play or pause the current track. The **Tuning Selector** 10 may be used to search in reverse (left side of button) or forward (right side of button) through the tracks. Press the **Tuner Band Selector** 11 to call up the iPod's menu. Press the **Preset Station Selectors** 13 to scroll and the **Set Button** 12 to select. For complete information on using the remote or front-panel controls to operate an iPod, see the instructions that are included with The Bridge.

Video Adjustments and Operation

The AVR 745's video system uses the power of DCDi by Faroudja processing in combination with HDMI 1.1 connectivity to allow for connection to virtually any video display with the best possible picture. If the Faroudja processing has not been activated for any source in the IN/OUT SETUP menu (Figure 2), you may return to that menu and make the changes shown on page 23 to set a new choice for VIDEO PROCESSING, or you may turn the processing on or off using one of these two options:

• From the front panel, press the ◀/▶ **Navigation Buttons** 14 F and observe the choices shown in the **Lower Display Line** 29 or in the semi-OSD message until the desired option appears.

• To change the setting with the TC 30 remote, first press the **Devices Button** 5 and then press the **Screen Button** 7 to the left of AV RECEIVER. When the next page of options appears in the **LCD Screen** 8, press the **Screen Button** 7 to the right of VIDEO ON/OFF to change the setting until the desired processing mode name is shown in the **Lower Display Line** 29 or in the Semi-OSD message.

It is important to note that in some cases you may choose a combination of video processing mode and output settings that is not compatible with the circuitry of your video display. When this happens, an error message will appear in the video display. Follow the on-screen instructions to move back to one of the video menus, and as needed, navigate to the IN/OUT SETUP menu (Figure 2) to make the setting change.

Once you're familiar with the operation of the AVR 745, you may wish to experiment with the various source, output, aspect ratio, picture control and display-type settings available in the IN/OUT SETUP (Figure 2), VIDEO MONITOR (Figure 4) and VIDEO SETUP (Figures 5, 6a, 6b) menus, as described on pages 23–26. This will allow you to customize the appearance of your system to the unique characteristics of your specific combination of sources and video display.

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** ❹ or **Video 1 Outputs** ㉖㊲ in the record mode.

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

Front Panel In/Outputs

In addition to the rear panel digital outputs, the AVR offers Harman Kardon's exclusive configurable front panel output jack feature. For easy connection of portable devices, you may switch the front panel **Digital Coax 4 jack** 20 or the **Video 4** jack 21 from an input to an output by following these steps:

1. Press the **Devices Button** ❺ on the TC 30 remote and then press the **Screen Button** ❼ next to AV Receiver and then press the **Menu Button** ⓫ or press the **OSD Button** Ⓔ to view the MASTER MENU (Figure 1).

2. Press the **OK/Enter Button** ⓯ on the TC 30 or the **Set Button** Ⓠ to enter the IN/OUT SETUP menu (Figure 2).

3. Press the ▼ **Navigation Button** ⓮Ⓕ so that the on-screen cursor is next to VIDEO 4 or COAXIAL 4.

4. Press the **OK/Enter Button** ⓯ on the TC 30 or the **Set Button** Ⓠ and then press the ◀/▶ **Navigation Button** ⓮Ⓕ so that the word OUT is highlighted.

5. Press the **OK/Enter Button** ⓯ on the TC 30 or the **Set Button** Ⓠ to enter the change.

6. Press the **Menu Button** ⓫ or press the **OSD Button** Ⓔ to exit the menus and return to normal operation.

Note that once the setting is made, the appropriate **Input/Output Status Indicator** 19 will turn red, indicating that the selected analog or digital jacks are now an output, instead of in the default setting as an input. Once changed to an output, the setting will remain as long as the AVR is turned on, unless the setting is changed in the OSD menu system, as described above. Note, however, that once the AVR is turned off, the setting is cancelled. When the unit is turned on again, the front panel jacks will return to their normal default setting as an input. If you wish to use the jacks as an output at a future time, the setting must be changed again using the OSD menu system, as described above.

NOTES:

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

• To make an analog recording from a digital source is possible, but only from a PCM source (not Dolby Digital or DTS) and correctly only with "Surround Off" mode (with any Surround mode only the L/R front signals will be fed to the record outputs).

Output Level Adjustment

Normal output level adjustment for the AVR is established using EzSet/EQ II, as outlined on page 31. In some cases, however, it may be desirable to adjust the output levels using program material such as a test disc, or a selection you are familiar with. Additionally, the output level for the subwoofer and those for the Stereo modes can only be adjusted using this procedure. Note that all adjustments made with any input will be effective with all inputs selected, just as it is the case with the adjustment using the test tone.

To adjust the output levels using program material, first select the surround mode for which you want to trim the speakers (see NOTE below), start your program material source and set the reference volume for the front left and front right channels using the **Volume Control** ㊵❶.

Press the **Devices Button** ❺ on the TC 30 remote and then press the **Screen Button** ❼ next to AV RECEIVER. Next, press the **Screen Button** ❼ next to SETUP MENU and after the choices in the **LCD Screen** ❽ change, press the **Screen Button** ❼ next to CHANNEL and FRONT LEVEL will appear in the **Lower Display Line** 29. To change the level, first press the **OK/Enter Button** ⓯ on the TC 30 or the **Set Button** Ⓠ, and then use the ▲/▼ **Navigation Button** ⓮Ⓕ 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 **OK/Enter Button** ⓯ on the TC 30 or the **Set Button** Ⓠ and then press the ▲/▼ **Navigation Button** ⓮Ⓕ to select the next output-channel location that you wish to adjust. To adjust the subwoofer level, press the ▲/▼ **Navigation Button** ⓮Ⓕ until WOOFER LEVEL appears in the Lower Display Line 29 or on-screen display.

Repeat the procedure as needed until all channels requiring adjustment have been set. When all adjustments have been made and no further adjustments are made for five seconds, the AVR will return to normal operation.

EzSet/EQ II Operation

A major advantage of EzSet/EQ II over competitive systems is its ability to store up to three different EQ Designs. This allows you to preset different combinations of speakers or manually set adjustments, or perhaps create different EQ Designs with the microphone in different locations to optimize the system for either your favorite listening position, or for a different setting when more people are in the listening room. You may also turn off the EzSet/EQ II system entirely so that you may compare the sound of your system with the system in a particular EQ Design, or with it out of the system.

To access the settings for selecting an EQ Design preset, press the **Devices Button** 5 on the TC 30 followed by the **Screen Button** 7 at the top of the row of buttons on the left side of the TC 30, to the left of AV RECEIVER on the LCD screen. After the list of options displayed in the **LCD Screen** 8 changes, press the Page **Left/Right Button** 9 to go to the second page of AV RECEIVER settings. When that page of settings appears, you may do the following:

- Press the **Screen Button** 7 to the left of EQ ON/OFF to bring the EQ settings into the signal path, or to put the system in the Bypass mode, which removes the equalization filters.
- Press the **Screen Button** 7 to the left of EQ PRESETS to cycle through the EQ Designs stored in each of the three memory positions, as shown in the instructions on page 38.

Subwoofer Control

If you have a 7.2 system with two subwoofers present, you may occasionally wish to turn one of the subwoofers off to accommodate your preferences with a particular movie or musical program, or to demonstrate the change made by using one subwoofer or two. To do this, press the **Devices Button** 5 on the TC 30 followed by the **Screen Button** 7 at the top of the row of buttons on the left side of the TC 30, to the left of AV RECEIVER on the LCD screen. After the list of options displayed on the **LCD Screen** 8 changes, press the ◀/▶ 8 to go to the second page of AV RECEIVER settings. When that page of settings appears, press the **Screen Button** 7 to the left of SUB 2 ON/OFF to turn the feed to the second subwoofer on or off.

Dim Function

Since the AVR will often be used when movies or other video programming is viewed under low-light conditions, you may wish to lower the brightness of the front-panel displays and indicators so that they do not distract from the video presentation. You may dim the displays using the menu system, as shown on page 53, or you may control the brightness directly from the remote.

Press the **Devices Button** 5 on the TC 30 remote and then press the **Screen Button** 7 next to AV RECEIVER. Next, press the **LCD Screen** 8 and after the choices in the **LCD Screen** 8 change, press the **Screen Button** 7 next to DIM. Note that when the displays are dimmed or turned off, the blue lighting around the **Standby/On Switch** 3 will continue to stay lit as a reminder that the AVR is still turned on.

The accent lighting for the **Volume Control** 27 will remain at its normal level, rather than dim when the panel displays are at half brightness.

Note that all changes to the front-panel brightness level are temporary; the displays will return to full brightness after the AVR is turned off and then on again. To return the displays to full-brightness without turning the unit off, return the TC 30 to the AVR Device screen, and press the **Screen Button** 7 next to DIM as needed until the displays are on.

In addition to lowering the brightness of the displays or turning them off completely, you may wish to have them appear whenever a button on the remote or front panel is pushed, and then gradually fade out after a set time period. You may do this by making the appropriate settings in the VFD FADE TIME OUT line of the ADVANCED SELECT menu, as shown on page 41.

Memory Backup

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

The AVR is equipped with a number of advanced features that add extra flexibility to the unit's operation. While it is not necessary to use these features to operate the unit, they provide additional options that you may wish to use.

To change a setting from its factory default, you will use the ADVANCED SELECT menu. First press the TC 30's **Device Button** 5, then press the **Screen Button** 7 next to AV RECEIVER in the display and then press the **Menu Button** 11. With the ZR 10 remote, press the **OSD Button** E to call up the MAIN MENU (Figure 1). Next, press the ▲/▼ **Navigation Buttons** 14 F so that the cursor is next to ADVANCED; then press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q on the ZR 10. When the ADVANCED SELECT menu (Figure 31) appears, follow the instructions shown below to make any needed configuration adjustments.

```
    * ADVANCED SELECT *

→   VFD FADE TIME OUT: OFF
    VFD BRIGHTNESS: FULL
    VOLUME DEFAULT: OFF ON
    DEFAULT VOL SET: -25dB
    SEMI OSD TIME OUT: 2s
    FULL OSD TIME OUT: 20s
    DMP AUTO POWER: OFF ON
    HDMI VIDEO AUTO: OFF ON
    BACK TO MASTER MENU
```

Figure 31

Front-Panel-Display Fade

In normal operation, the front-panel displays and indicators remain on at full brightness, although you may also dim them or turn them off as shown on page 51. As an additional option, you may also set the AVR so that the displays are on whenever a button is pressed on the front panel or remote, but then fade out after a set period of time.

With the ADVANCED SELECT menu on your video display, press the ▲/▼ **Navigation Button** 14 F so that the → cursor is pointed to the VFD FADE TIME OUT line. Next, press the ◀/▶ **Navigation Button** 14 F so that the amount of time that you wish the displays to fade out after a button is pressed is shown.

Once this time is set and the unit returned to normal operation, the displays will remain on for the time period selected whenever a button is pressed on the front panel or remote. After that time they will gradually fade out, with the exception of the lighting surrounding the **Standby/On Switch** 3, which remains on to remind you that the AVR is turned on. Note that if the displays have been turned completely off using the Dim Button, as shown on page 51, the Fade function will not operate.

If you wish to make adjustments to other items on the ADVANCED SELECT menu, press the ▲/▼ **Navigation Button** 14 F to place the → cursor next to the desired item, or place the → cursor next to the BACK TO MASTER MENU line and press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q on the ZR 10 to make an adjustment to another menu. If you have completed all adjustments, press the **Menu Button** 11 or the **OSD Button** E to exit the menu system.

Display Brightness

The AVR's front panel **Main Information Display** 29 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.

To change the brightness setting, at the ADVANCED SELECT menu, make certain that the on-screen → cursor is next to the VFD line, and press the ▶ Button 14 F until the desired brightness level is highlighted in the video display. When FULL is highlighted, the display is at its normal brightness. When HALF is highlighted, the display is at half the normal brightness level. When OFF is highlighted, all of the indicators in the **Main Information Display** 29 will go dark. Note, however, that the **Power Indicator** 3, will always remain lit to remind you that the unit is turned on.

If you wish to make other adjustments in the menu, press the ▲/▼ Buttons 14 F until the on-screen → cursor is next to the desired setting or the BACK TO MASTER MENU line and press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q on the ZR 10. If you have no other adjustments to make, press the **Menu Button** 11 or the **OSD Button** E to exit the menu system.

Turn On Volume Level

As is the case with most audio/video receivers, when the AVR is turned on, it will always return to the volume setting in effect when the unit was turned off. However, you may prefer to always have the AVR turn on at a specific setting, regardless of what was last in use when the unit was turned off. To change the default condition so that the same volume level is always used at turn-on, you will need to make an adjustment in the ADVANCED SELECT menu.

At the ADVANCED SELECT menu make certain that the on-screen → cursor is next to the VOLUME DEFAULT line by pressing the ▲/▼ buttons 14 F as needed. Next, press the → button 14 F so that the word ON is highlighted in the video display. Next, press the ▼ button 14 F once so that the on-screen → cursor is next to the DEFAULT VOL SET line. To set the desired turn-on volume, press the ◀/▶ buttons 14 F or hold them pressed until the desired volume level is shown on the DEFAULT VOL SET line. Note that this setting may NOT be made with the regular volume controls.

NOTE: Since the setting for the turn-on volume cannot be heard while the setting is being made, you may wish to determine the setting before making the adjustment. To do this, listen to any source and adjust the volume to the desired level using the regular volume controls 40 I. When the desired volume level to be used at turn-on is reached, make a note of the setting as it appears in the lower third of the video screen or in the **Main Information Display** 29.
A typical volume level will appear as a negative number such as -25dB. When making the adjustment, use the ◀/▶ buttons 14 F to enter this setting.

Unlike some of the other adjustments in this menu, the turn-on volume default will remain in effect even when the unit is turned off completely, unless it is changed or turned off in this menu.

If you wish to make other adjustments in the menu, press the ▲/▼ Buttons 14 F until the on-screen → cursor is next to the desired setting or the BACK TO MASTER MENU line and press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q on the ZR 10. If you have no other adjustments to make, press the **Menu Button** 11 or the **OSD Button** E to exit the menu system.

Semi-OSD Settings

The semi-OSD system places one line messages at the lower third of the video display screen whenever the Volume, Input Source, Surround mode or tuner frequency of any of the configuration settings are changed. The semi-OSD system is helpful in that enables you to have feedback on any control changes or remote commands using the video display when it is difficult to view the front-panel displays. However, you may occasionally prefer to turn these displays off for a particular listening session. You may also want to adjust the length of time the displays remain on the screen. Both of those options are possible with the AVR.

To change the length of time that the semi-OSD displays remain on the screen, go to the ADVANCED SELECT Menu as outlined earlier, and press the ▲/▼ buttons 14 F as needed, until the on-screen → cursor is next to the SEMI-OSD TIME OUT line. Next, press the ◀/▶ Buttons 14 F until the desired time in seconds is displayed. Note that unlike most of the other options in this menu, this is a permanent setting change, and the time-out entry will remain in effect until it is changed, even when the unit is turned off.

- To turn the semi-OSD system off so that it does not appear at any time, press the ◀/▶ **Navigation Buttons** 14 F so that OFF is shown on the right side of the line.

If you wish to make other adjustments in the menu, press the ▲/▼ Buttons 14 F until the on-screen → cursor is next to the desired setting or the BACK TO MASTER MENU line and press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q on the ZR 10. If you have no other adjustments to make, press the **Menu Button** 11 or the **OSD Button** E to exit the menu system.

Full-OSD Time Out Adjustment

The FULL OSD menu system is used to simplify the setup and adjustment of the AVR using a series of on-screen menus. The factory default setting for these menus leaves them on the screen for 20 seconds after a period of inactivity before they disappear from the screen or Time Out. This Time Out is a safety measure to prevent the menu text from burning into the CRTs in your monitor or projector, which might happen if they were left on indefinitely. However, some viewers may prefer a slightly longer or shorter period before the Time Out display.

At the ADVANCED SELECT menu make certain that the on-screen → cursor is next to the FULL OSD TIME OUT line by pressing the ▲/▼ Buttons 14 F as needed. Next, press the ◀/▶ buttons 14 F until the desired time is displayed in seconds. Note that unlike most of the other options in this menu, this is a permanent setting change, and the time-out entry will remain in effect until it is changed, even when the unit is turned off.

If you wish to make other adjustments in the menu, press the ▲/▼ Buttons 14 F until the on-screen → cursor is next to the desired setting or the BACK TO MASTER MENU line and press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q on the ZR 10. If you have no other adjustments to make, press the **Menu Button** 11 or the **OSD Button** E to exit the menu system.

DMP/ The Bridge Auto Power

When using Harman Kardon's optional The Bridge iPod docking station, the normal operation is to have the iPod selected as the input source only when it is specifically chosen. However, you may set the AVR so that whenever the iPod is turned on, the AVR will also turn on automatically and set The Bridge as the input.

To change the setting, first make certain that the ADVANCED SELECT menu (Figure 31) is on the screen, and then press the ▲/▼ **Navigation Buttons** 14 F until the cursor is pointing to DMP AUTO POWER. Press the ▲/▼ **Navigation Buttons** 14 F so that ON is highlighted to have the AVR turn on in sync with an iPod, or OFF for standard operation.

HDMI Video Auto Function

In normal operation when the AVR 745 is connected to an HDMI-equipped video display, the display will almost always use a signal called EDID (extended display identification data), which communicates a variety of information that helps the AVR to properly format the output video signal to conform with the capabilities of the display. In most cases, the goal is for the AVR or any other source device using EDID to tell all other devices in the signal chain which resolutions and aspect ratios are available. The AVR default setting is to allow for this automatic operation.

In some cases, you may wish to override the default settings, perhaps to send a lower resolution output from the AVR to the display, so that you may demonstrate the difference between the various output resolutions offered by the AVR 745. The HDMI VIDEO AUTO line enables you to do this, by formatting the video output the resolution set in the video configuration menus, or when the Faroudja video processing is set to Bypass, to the resolution of the incoming video signal.

To turn off the automatic HDMI configuration so that the display's EDID signal is ignored, press the ▲/▼ **Navigation Buttons** 14 F while the ADVANCED SELECT menu is on screen until the cursor is pointing to HDMI VIDEO AUTO. Press the ◀/▶ **Navigation Buttons** 14 F to select OFF, or select ON to return the AVR to normal operation.

When all needed adjustments to the ADVANCED SELECT menu have been made, press the ▲/▼ **Navigation Buttons** 14 F until the cursor is pointing to BACK TO MASTER MENU to make changes to other menus, or press the **Menu Button** 11 or the **OSD Button** E to exit the menu system and return to normal operation.

Multiroom Operation

The AVR is fully equipped to operate as the control center for a complete multiroom system that is capable of sending one audio/video source to a second zone in the house while separate source is listened to in the main room. In addition to providing for control over the selection of the remote source and its volume, the AVR offers a comprehensive range of options for powering the speakers in the second zone.

• Using the line-level **Output Jacks** ⑧⑱, the selected source may be fed to optional, external power amplifiers that may be matched to the specifics of the installation.

• When the main room system is configured for 5.1 operation, the Surround Back Left/Right amplifier channels may be used to power the remote zone so that no additional amplifiers are required.

• Using built-in A-BUS/*READY*® technology, optional A-BUS modules may be connected to the AVR via a single Category Five wire, so that remote zone speakers may be powered directly from the module or keypad without the need for additional power, IR sensor or volume control wires to be run to the second zone.

In addition, the AVR includes a remote IR sensor input so that remote control commands from the ZR 10 remote included with the unit may be transmitted to the unit, while standard IR input/output jacks allow the remote zone's commands to be sent to compatible IR-controlled source devices.

Installation
Although simple remote room systems may be installed by the average do-it-yourself hobbyist, the complexity of your multizone/multiroom system involves running wires inside of walls where the services of a specially trained installer may be required. Regardless of who does the work, please remember that local building codes may govern in-wall electrical work, including proper specification of any wiring used and the way in which it is connected. You are responsible for making certain that all Multiroom installation work is done properly and in compliance with all applicable codes and regulations.

For standard installations, follow the instructions shown on page 18 for the connection of speaker wire and IR remote wiring to the AVR.

For installations where the Surround Back Left/Right amplifier channels are used to power the remote zone, make certain that the system is configured for that type of operation, as shown on page 55.

For installations where A-BUS modules are used, follow the instructions provided with the A-BUS remote modules or keypads.
Additional information will also be made available through the Harman Kardon Web Site at www.harmankardon.com.

RS-232 Control
The AVR is rare among A/V receivers in that it provides the capability for full biderectional remote control from compatible computers or specialized remote control systems. RS-232 programming requires specialized programming knowledge and for that reason we recommend that it only be done by qualified installers.

NOTE: The RS-232 port on this product is for use by authorized service personnel ONLY.

For more information on using the RS-232 port for remote control, visit the Harman Kardon Web site at www.harmankardon.com or contact our customer service department.

Multiroom Setup
Once the audio and IR link connections have been made, the AVR needs to be configured for multiroom operation using the steps below.

To change a setting from its factory default, you will use the MULTI-ROOM SETUP menu. With the TC 30, first press the **Devices Button** ⑤ on the TC 30 remote and then press the **Screen Button** ⑦ next to AV RECEIVER and press the **Menu Button** ⑪. With the ZR 10 remote, press the **OSD Button** Ⓔ to call up the MAIN MENU (Figure 1). Next, press the ▲/▼ **Navigation Buttons** ⑭Ⓕ so that the cursor is next to MULTI-ROOM, then press the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Ⓠ on the ZR 10. When the MULTI-ROOM SETUP menu (Figure 32) appears, follow the instructions shown below to make any needed configuration adjustments.

Figure 32

When the MULTI-ROOM menu appears, the on-screen → cursor will be at the MULTI-ROOM line. Since this line is used to turn the system on and off, do not make an adjustment here unless you wish to turn the system on at this time. To turn the system on, press the ▶ button ⑭Ⓕ so that ON is highlighted. If you do not wish to turn the system on at this time or to proceed to the next step, press the ▼ Button ⑭Ⓕ once so that the → on-screen cursor is next to the MULTI IN line.

At the MULTI IN line, press the ◀/▶ buttons ⑭Ⓕ until the desired Audio/Video input to the multi-room system appears in the highlighted video. In addition to direct selection of any active input source, you may also select the DSP DOWNMIX mode, which outputs a two-channel down-mixed version of multi-channel digital sources. When the selection has been made, press the ▼ button ⑭Ⓕ once so that the → on-screen cursor is next to the MULTI VOL line.

At the MULTI VOL line, press the ◀/▶ buttons ⑭Ⓕ or hold them pressed until the desired volume level for the multi-room system is entered. DO NOT use the regular volume control knobs for this setting. When all settings for the multiroom setup have been made, press the ▼ buttons ⑭Ⓕ once so that the on-screen → cursor is next to the BACK TO MASTER MENU line and press the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Ⓠ on the ZR 10. If you have no other adjustments to make, press the **Menu Button** ⑪ or the **OSD Button** Ⓔ to exit the menu system.

Surround Amplifier Channel Assignment
The AVR is equipped with seven full-power amplifier channels to allow for complete 7.1-channel operation without the need for additional external amplifiers. However, in some installations you may wish to use the traditional 5.1-channel configuration for the main listening room, which allows the surround back left/right amplifier channels to be used to power speakers placed in a remote zone location.

If you wish to use the Surround Back channel amplifiers to power the remote zone, you must change a setting in the MULTIROOM SETUP menu. Next, press the ▼ Button ⑭Ⓕ until the → cursor is next to the SB AMPS line.

To change the setting so that the Surround Back amplifiers are fed by the source selected through the Multiroom system, press the ◀/▶ **Buttons** ⑭Ⓕ so that MULTI is highlighted in reverse video and press the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Ⓠ on the ZR 10.

Multiroom Operation

Remember that once this setting is made you will not be able to take advantage of any of the 6.1/7.1- channel decoding or processing modes, and no Surround Back speakers must be selected in the speaker setup procedure outlined earlier. In addition the speakers used for the remote zone must be connected to the **Surround Back/ Multiroom Speaker Outputs** ㊴. The volume for these speakers is set by the multiroom system, as explained on page 55 of this manual.

Infrared Output Selection

The AVR 745 enables you to select which IR input will be used to feed the **Full Carrier IR Output** ㊸. The factory default setting is the IR signal that is fed to the **Multiroom IR Input** ㉕, but you may select other options.

To change this setting, first make sure the MULTI-ROOM SETUP menu is on the screen, and then press the ▲/▼ **Navigation Buttons** ⑭ Ⓕ so that the cursor is next to CARRIER OUT; then press the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Ⓠ on the ZR 10. Press the ▲/▼ **Navigation Buttons** ⑭ Ⓕ to select one of these options:

- ZR 1Ω feeds the signal present at the **Multiroom IR Input** ㉕ to the **Full Carrier IR Output** ㊸.
- A-BUS feeds the signal carried back from an optional A-Bus module connected to the AVR to the **Full Carrier IR Output** ㊸.
- FRONT feeds the signal received through the front-panel **Remote Sensor Window** 30 to the **Full Carrier IR Output** ㊸.

When all needed adjustments to the MULTI-ROOM SETUP menu have been made, press the ▲/▼ **Navigation Buttons** ⑭ Ⓕ until the cursor is pointing to BACK TO MASTER MENU to make changes to other menus, or press the **Menu Button** ⑪ or the **OSD Button** Ⓔ to exit the menu system and return to normal operation.

Multiroom Operation

When operating the AVR from a remote room location where an IR sensor link has been connected to the AVR's rear panel **Multiroom IR Input** ㉕, you may use either the Main remote control or the ZR 10 remote buttons Ⓑ Ⓒ Ⓓ. Press the **AVR Selector** Ⓑ to turn the unit on to the last source, or any of the other Selector buttons to turn on to a specific source.

With the remote pointing toward an IR sensor or A-Bus module in the remote room, you may turn on the second zone system by pressing the **AVR Selector Button** Ⓑ on the ZR 10 remote to turn the system on with the last used source for the multiroom system active, or you may press one of the **Input Selectors** Ⓓ or the **Tuner Selector** Ⓒ or The Bridge™ **Selector** Ⓡ to turn the multiroom system on directly to a specific source. To turn the multiroom system on using the TC 30 remote, press the **Devices Button** ⑤ on the TC 30 remote and then press the **Screen Button** ⑦ next to AV RECEIVER. When the choices on the **LCD Screen** ⑧ change, press the **Page Left/Right Buttons** ⑨ once and then press the **Screen Button** ⑦ next to MULTI-ROOM.

When the multiroom system is turned on, you may use the same buttons on either remote that would normally be used to control an AVR function such as volume, source selection, tuner control or the operation of an iPod docked to The Bridge. If any of the input devices are connected to the **IR Output** ㉓ or **Full Carrier IR Output** ㊸, by either a hard-wire connection or through an optional IR "blaster," you may use the **Transport Controls** Ⓟ on the ZR 10 to operate compatible Harman Kardon products or the appropriate controls that have been programmed for any source device into the TC 30.

To turn the system off from the remote room, press the **Power-Off** button Ⓐ on the ZR 10. Remember that the AVR may be turned on or off from the remote room regardless of the system's operation or status in the main room.

NOTE: When the tuner is selected as the source for the remote zone, any change to the frequency or preset will also change the station being listened to in the main room, if the tuner is in use there. Similarly, if someone in the main room changes the station, the change will also impact the remote room.

To turn the multiroom system on from the room where the AVR 745 is located, press the **Devices Button** ⑤ on the TC 30 remote and then press the **Screen Button** ⑦ next to AV RECEIVER. When the choices on the **LCD Screen** ⑧ change, press the **Page Left/Right Buttons** ⑨ once and then press the **Screen Button** ⑦ next to MULTI-ROOM. If the AVR is in the Standby mode (not turned "on"), the multiroom system will automatically be turned on. If the AVR is on, a MULTI-ROOM ON/OFF message will appear in the **Lower Display Line** 29. Press the **OK/Enter Button** ⑮ and then press the ▲/▼ **Navigation Buttons** ⑭ Ⓕ to turn the system on.

To turn the multi-room system off from the room where the AVR 745 is located, press the **Devices Button** ⑤ on the TC 30 remote and then press the **Screen Button** ⑦ next to AV RECEIVER. When the choices on the **LCD Screen** ⑧ change, press the **Page Left/Right Buttons** ⑨ once and then press the **Screen Button** ⑦ next to MULTI-ROOM. A MULTI-ROOM ON/OFF message will appear in the **Lower Display Line** 29. Press the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Ⓠ to turn the system off.

When the multiroom system is turned on, the input selected using the Multiroom Menu will be fed to the **Multiroom Audio/Video Output** jacks ⑧㊽ on the rear panel as well as the **A-BUS Jack** ⑨.

The volume will be as set in the same menu, although it may also be adjusted using an optional IR sensor and the Zone II remote in the remote location or on the optional audio power amplifier connected to the **Multiroom Output** jacks ⑧.

Although changes to the input source or remote room volume will normally be made using an IR sensor in the remote room that is connected to the AVR, it is also possible to change those settings from the main listening room. This is useful for situations where some or all of the remote rooms do not have an IR sensor, or to take control over the remote room without actually being in that room.

In addition to using the MULTI-ROOM menu, as shown on the previous page, you may change the source or volume in the remote zone using the remote.

Using the TC 30 remote, press the **Devices Button** ⑤ on the TC 30 remote and then press the **Screen Button** ⑦ next to AV RECEIVER. When the choices on the **LCD Screen** ⑧ change, press the **Page Left/Right Buttons** ⑨ once and then press the **Screen Button** ⑦ next to MULTI-ROOM. Press the ▲/▼ **Navigation Buttons** ⑭ Ⓕ to select either MULTI INPUT or MULTI LEVEL.

To change the remote room's input source, when MULTI INPUT appears, press the **OK/Enter Button** ⑮ on the TC 30 or the **Set Button** Ⓠ on the ZR 10, and then press the ▲/▼ **Navigation Button** ⑭ Ⓕ until the desired input appears in the on-screen display and in the **Lower Display Line** 29. Remember that only analog or PCM input sources may be selected for use with the Multiroom system. Dolby Digital or DTS sources are not available to the Multiroom system.

Tuner Operation

To change the remote room's volume, when MULTILEVEL appears, press the **OK/Enter Button** 15 on the TC 30 or the **Set Button** Q on the ZR 10, and press the ▲/▼ **Navigation Button** 14 F to change the volume setting. Note that this volume adjustment controls the level for the output to the **Multiroom Audio Outputs** 8 and for any speakers connected to the Surround **Back/Multiroom Speaker Outputs** 39 when the Surround Back amplifier channels are configured for Multiroom use, as shown on page 55. This adjustment does NOT change the volume level for any room where an ABUS module is used, as that setting is only adjustable using the A-BUS module's volume control or built-in IR sensor.

Once the multiroom system is turned on, it will remain on even if the AVR is placed in the Standby mode in the main room by pressing the **Power Off Button** 1 or the **System Power Control** 2 on the front panel.

To turn the Multiroom system off from a remote room using the ZR 10 remote, press the P**ower Off Button** A. To turn the Multiroom system off from the remote room using the TC 30, press the **Devices Button** 5 on the TC 30 remote and then press the **Screen Button** 7 next to AV Receiver. When the choices on the **LCD Screen** 8 change, press the **Page Left/Right Buttons** 9 once and then press the **Screen Button** 7 next to MULTIROOM. Press the **OK/Enter Button** 15 and then the ▲/▼ **Navigation Buttons** 14 F.

Basic 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.

- From the front panel, press the Input **AM/FM Button** 11 until the desired tuner frequency band (AM, FM) appears. To change stations within a frequency band, press the **Tuning Selection** 10.
- From the TC 30 remote, press the **Devices Button** 5 and then press the **Screen Button** 7 to the left of AUDIO INPUTS. When the next page of options appears on the **LCD Screen** 8, press the **Screen Button** 7 to the left of TUNER. The tuner will become the active input and the options on the LCD screen will become those needed for tuner operation. Press the **Screen Button** 7 next to any option to use it. For example, press the **Screen Button** 7 next to FM-AM to change the frequency band. To tune up or down through the current frequency band, press the **Screen Button** 7 next to TUNING UP or TUNING DOWN. When the tuner is the active device on the TC 30, the Channel Up/Down buttons are used to change station presets.
- To activate the IR command set used for listening to FM radio, press the **Activities Button** 4 and then press the **Screen Button** 7 to the right of LISTEN TO FM RADIO.
- To select the tuner from the ZR 10 remote, press the **Tuner Selector** C.
- To change the tuning mode, press the **Tune-M Button** O or the TC 30 **Screen Button** 7 next to TUNE M.

When the button is pressed so that AUTO appears in the **Main Information Display** 29 each press of the **Tuning Selectors** 10 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** 29 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** 29.

- Stations may also be tuned automatically or by entering the frequency. To enter a station's frequency directly, first select the AM or FM band as shown above. Next, press the **Direct Button** M or the **Screen Button** 7 next to DIRECT. Within 5 seconds of when DIRECT IN scrolls in the **Upper Display Line** 29, enter the station frequency by pressing the **Numeric Keys** 18 G. 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 L 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 19 on the remote or holding the **Band Selector** O 11 on the front panel so that MANUAL appears momentarily in the **Main Information Display** 29 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** N on the ZR 10 remote; the station's frequency will flash or press the **Screen Button** 7 next to MEMORY.

2. Within five seconds, press the **Numeric Keys** G 18 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** 29.

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** G 18 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 13 on the front panel. The **Prev/Next Transport Controls** P on the ZR 10 remote, or the **Channel Up/Down Buttons** 17 on the TC 30 remote control when the tuner is the active input device.

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** 29.

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 16 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.

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

- 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** 29 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: Infomation
- SPORT: Sports
- EDUCATE: Educational
- DRAMA: Drama
- CULTURE: Culture
- SCIENCE: Sciencek
- 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 16 until the current PTY is shown in the **Main Information Display** 29.

2. While the PTY is shown, press the **Preset Up/Down** button 17 P or hold them pressed to scroll through the list of available PTY types, as shown above starting with the PTY currently received. To simply search for the next station transmitting any RDS data, use the **Preset Up/Down** button 17 P until RDS ONLY appears in the display.

3. Press any of the **Tuning Up/Down** buttons 10 P, 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: 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 next appropriate station, even if it is not broadcasting traffic information when the search is made.

Troubleshooting Guide

SYMPTOM	CAUSE	SOLUTION
Unit does not function when **Main Power Switch** 1 is pushed	• No AC Power	• 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	• Intermittent input connections • **Mute** is on • Volume control is down	• Make certain that all input and speaker connections are secure • Press **Mute** button 12 K • Turn up volume control
Units turns on, but Front-Panel Display does not light	• Display brightness is turned off	• Follow the instructions in the Display Brightness section on page 53 so that the display is set to VFD FULL
No sound from any speaker; light around **Power switch** 2 is red	• Amplifier is in protection mode due to possible short • Amplifier is in protection mode due to internal problems	• 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	• Incorrect surround mode • Input is mono • Incorrect configuration • Stereo or Mono program material	• Select a mode other than Stereo • There is no surround information from mono sources (except with Theater and Hall surround modes) • Check speaker mode configuration • Some surround modes may not create rear-channel information from nonencoded programs
Unit does not respond to remote commands	• Weak batteries in remote • Wrong device selected • **Remote sensor** 30 is obscured	• Change remote batteries • Press the **AVR Selector** B • Make certain front-panel sensor is visible to remote or connect remote sensor
Intermittent buzzing in tuner	• Local interference	• Move unit or antenna away from computers, fluorescent lights, motors or other electrical appliances
Letters flash in the **Channel Indicator Display** 24 and Digital Audio stops	• Digital audio feed paused	• 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 the **Surround Mode** 5 and the **RDS** 16 buttons simultaneously for three seconds.

The unit will turn on automatically and display the RESET message in the **Main Information Display** 29. 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.

APPENDIX

System Defaults

The two tables in this section show the factory default settings for the Video Inputs, Video Sources and Video Display Aspect Ratios. These tables give you the complete picture on the AVR 745's initial settings. You may then decide whether any item needs to be changed so that it is more appropriate for your specific installation. Any of the settings shown may be changed as shown in the pages of the System Configuration section of this manual (pages 20 to 32).

Table 1: Video Input Defaults

INPUT	AUDIO INPUT	VIDEO INPUT	COMPONENT VIDEO INPUT	TRIGGER 2 SETTING	RECORD OUTPUT	AUTO-POLL	INPUT SOURCE TYPE
Video 1	ANALOG	AUTO	COMPONENT 1	ON	ANALOG	ON	VCR
Video 2	ANALOG	AUTO	COMPONENT 2	ON	ANALOG	OFF	CABLE DIGITAL
Video 3	OPTICAL 1	AUTO	COMPONENT 1	ON	ANALOG	ON	CABLE ANALOG
Video 4	OPTICAL 4	AUTO	COMPONENT 2	ON	ANALOG	ON	SATELLITE DIGITAL
DVD	COAX 1	AUTO	COMPONENT 3	ON	ANALOG	OFF	DVD
HDMI 1	HDMI 1	HDMI 1	---	ON	DSP DOWNMIX	OFF	*
HDMI 2	HDMI 2	HDMI 2	---	ON	DSP DOWNMIX	OFF	*
Tuner	ANALOG	AUTO	COMPONENT 1	ON	ANALOG	---	*
CD	ANALOG	AUTO	COMPONENT 3	ON	ANALOG	OFF	*
Tape	ANALOG	AUTO	COMPONENT 1	ON	ANALOG	OFF	*
DMP/The Bridge	ANALOG	HDMI 1	COMPONENT 1	ON	ANALOG	---	*
6/8 CH Direct	ANALOG	HDMI 1	COMPONENT 1	ON	ANALOG	---	*
USB	---	HDMI 1	COMPONENT 3	ON	DSP DOWNMIX	---	*

*: User should change setting to match input type.

Table 2: Video Source Defaults

FEATURE	DVD	VCR	CABLE DIG	SAT DIG	SAT ANALOG	CABLE ANALOG	CAMERA DIG	CAMERA ANALOG
Noise Reduction	OFF	ON	OFF	OFF	ON	ON	OFF	ON
X-Color Suppressor	ON	ON	ON	ON	ON	ON	ON	ON
DCDi Interpolation	ON	ON	ON	ON	ON	ON	ON	ON
Film Mode Detect	ON	ON	ON	ON	ON	ON	ON	ON
Film Mode Edit Detect	ON	ON	ON	ON	ON	ON	ON	ON
Composite Video Enhancement	ON	ON	ON	ON	ON	ON	ON	ON
VCR Sync Time Enhancement	ON	ON	ON	ON	ON	ON	ON	ON

System Default and Personal Settings Worksheets

The worksheets in this section show the system defaults for the global settings on your AVR 745. Once your system is configured manually, or through the use of EzSet/EQ II, where applicable, we recommend that you use the "Your System Settings" column to record your personal preferences so that they may be restored in the event the AVR's memory is lost due to an extended power outage, system upgrade, processor reset, or other major service to your unit. Additional copies of this worksheet may be downloaded from the Harman Kardon web site at www.harmankardon.com

Worksheet A: Video Monitor and Aspect Ratio Defaults and Settings

Feautre/Display Type	System Default	Your System Setting
Display Interface	Analog	
HDMI Audio Out	Off	
CRT	4:3	
Front Projection	4:3	
Rear Projection	4:3	
Plasma (PDP)	16:9	
DLP™	16:9	
LCD	16:9	

Worksheet B: Surround Configuration Defaults and Settings

Feature	System Default	Your System Settings
Logic 7 Global	On	
Default Surround	Original	
Dolby Pro Logic II Music Center Width	3	
Dolby Pro Logic II Music Dimension	0	
Dolby Pro Logic II Panorama	Off	
Dolby Pro Logic IIx Music Center Width	3	
Dolby Pro Logic IIx Music Dimension	0	
Dolby Pro Logic IIx Panorama	Off	
Night Mode	Off	

Worksheet C: Delay Defaults and Setting

Feature	System Default	Your System Settings
Front Left	12.0 Feet	
Center	12.0 Feet	
Front Right	12.0 Feet	
Surround Right	12.0 Feet	
Surround Back Right	12.0 Feet	
Surround Back Left	12.0 Feet	
Surround Left	12.0 Feet	
Subwoofers	12.0 Feet	

Worksheet D: System Defaults and Settings

Feature	System Default	Your System Settings
Front L/R Speaker Size & X-Over	Small – 100 Hz	
Center Speaker Size & X-Over	Small – 100 Hz	
Surround L/R Speaker Size & X-Over	Small – 100 Hz	
Surround Back Speaker Size & X-Over	None	
LFE LP Filter	100 Hz	
Sub Mode	Sub L/R+LFE	
Number of Subs	1	
Channel Adjust	Global	
Sub Size	10 in/250 mm	
VFD Fade Time Out	Off	
VFD Brightness	Full	
Volume Default	Off	
Volume Default Set	-25dB	
Semi OSD Time Out	5 Sec	
Full OSD Time Out	20 Sec	
DMP Auto Power	Off	
HDMI Video Auto	On	
Surround Back Amps	Main	
Carrier Out	Zone II	

Worksheet E: Input Settings

FEATURE	DVD	Video 1	Video 2	Video 3	Video 4	HDMI 1	HDMI 2	CD	Tape	Tuner	The Bridge	USB	6/8 Ch Direct
Input Title													
Surround Mode													
Audio In Port													
Audio Auto Poll													
Video In Port													
Component Video Input													
Video Processing													
A/V Sync Delay													
Trigger 2													
Record Output													
Auto Poll													
Input Source Type													
Display Type													
Video Input Port													
Enhance Level													
Input Aspect Ratio													
Noise Reduction													
X-Color Supressor													
DCDi Interpolation													
Film Mode Edit Detect													
Fleshtone Noise Reduction													
Composite Video Enhancement													
Output Aspect Ratio													
Brightness													
Contrast													
Saturation													
ADC Sampling													
Tone In/Out													
Bass													
Treble													

Technical Specifications

Audio Section

Stereo Mode
Continuous Average Power (FTC)

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

5/7 Channel Surround Modes
Power Per Individual Channel

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

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

Surround (L & R Side, L & R Back) channels:
85 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–130kHz
High Instantaneous Current Capability (HCC)	±60 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: 70/68dB (DIN)
Distortion	Mono/Stereo: 0.15/0.2%
Stereo Separation	40dB @ 1kHz
Selectivity	±400kHz: 70dB
Image Rejection	80dB
IF Rejection	90dB

AM Tuner Section

Frequency Range	520–1710kHz
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 (Composite and S-Video)	10Hz–8MHz (–3dB)
Video Frequency Response (Component)	10Hz-50MHz (-3dB)

HDMI Version 1.1

General

Power Requirement	AC 220-240V/50Hz
Power Consumption	120W idle, 1400W maximum (7 channels driven)
Dimensions (Max)	
Width	440mm
Height	165mm
Depth	435mm
Weight	19.9 kg

Supplied Accessories

The following accessory items are supplied with the AVR 745. If any of these items are missing, please contact Harman Kardon customer service at www.harmankardon.com.

- TC 30 remote control
- Battery for the TC 30
- USB cable for the TC 30
- TC 30 charging cradle
- Charger for the TC 30
- TC 30 software CD-ROM
- TC 30 installation guide
- ZR 10 remote control
- Two AAA batteries for ZR 10
- IEzSet/EQ™ microphone
- Extender rod for microphone
- AM loop antenna
- FM wire antenna

Depth measurement includes knobs, buttons and terminal connections. Height measurement includes feet and chassis. All features and specifications are subject to change without notice.

**Without input anti slewing and output isolation networks.

harman/kardon®

A Harman International Company
250 Crossways Park Drive, Woodbury, New York 11797
www.harmankardon.com
Harman Consumer Group, Inc.:
2, route de Tours, 72500 Château-du-Loir, France

Part No.: ZKD2801HA00-R