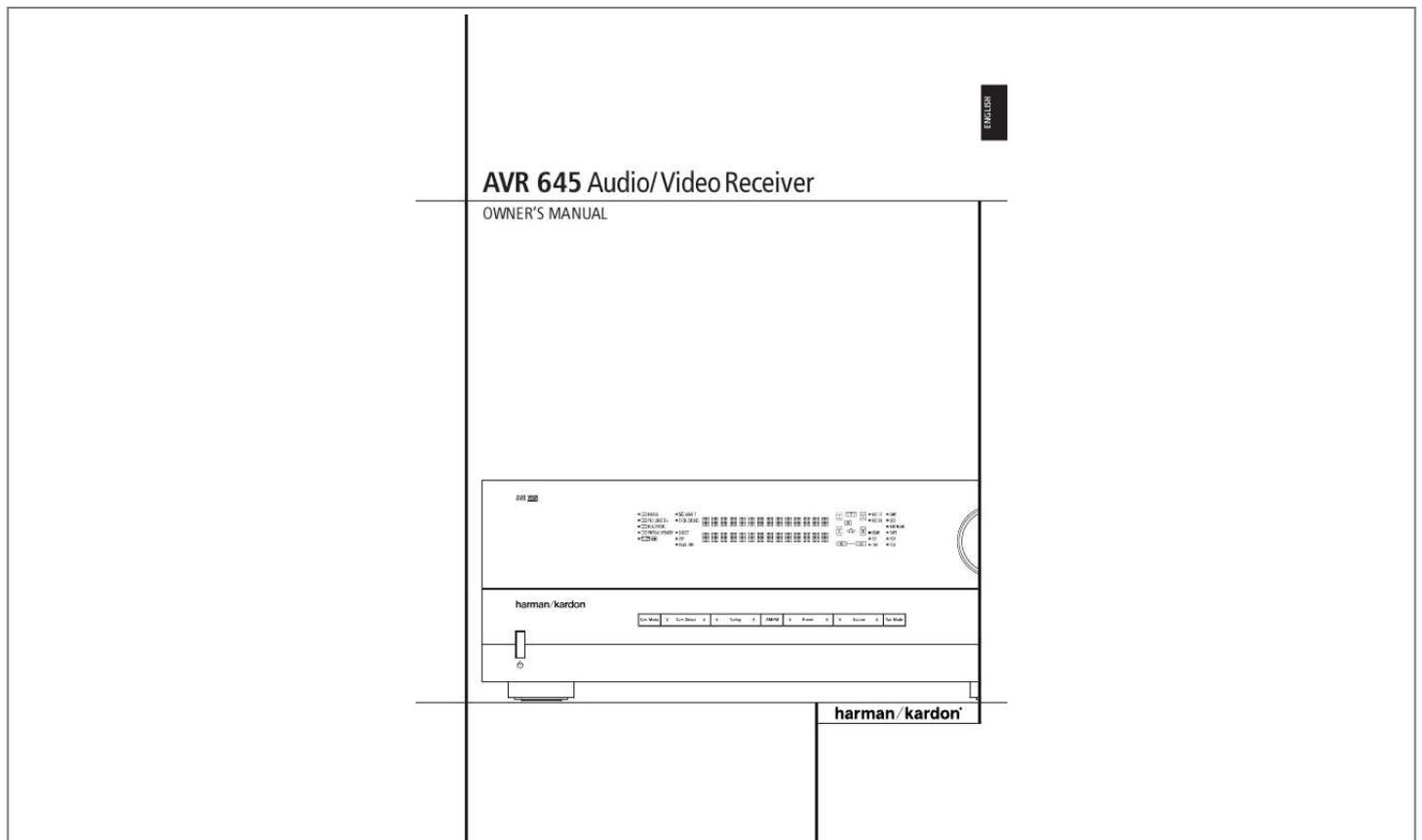




Your PDF Guides

You can read the recommendations in the user guide, the technical guide or the installation guide for HARMAN KARDON AVR 645. You'll find the answers to all your questions on the HARMAN KARDON AVR 645 in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

User manual HARMAN KARDON AVR 645
User guide HARMAN KARDON AVR 645
Operating instructions HARMAN KARDON AVR 645
Instructions for use HARMAN KARDON AVR 645
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Manual abstract:

2 TABLE OF CONTENTS Introduction Thank you for choosing Harman Kardon! With the purchase of a Harman Kardon AVR 645 you are about to begin many years of listening enjoyment. The AVR 645 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, the AVR 645 seamlessly integrates every component in your entertainment system to deliver the best possible sound and images. @@@@ They are your best local sources of information. Description and Features The AVR 645 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 645 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 645 takes the "video" part of its name seriously. Along with two HDMI inputs and three 100MHz analog component video inputs, the AVR 645 converts incoming analog signals to an HDMI output or converts composite and S-video to component for single wire connections. Tying audio and video together, the AVR 645 provides AV 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, preampout 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 645's flexibility and power extend beyond your main home theater or listening room. The AVR includes a sophisticated multizone control system that allows you to select one source for use in the main room and a different one (Audio) 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 645'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 HDMITM 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 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 A/V Sync delay adjustable for each input delivers perfect lip sync with digital programs or video displays INTRODUCTION 3 ENGLISH Introduction / Safety Information Important Safety Information READ THIS BEFORE OPERATING YOUR UNIT. Do not install this equipment in a confined space such as a case or similar away from direct sunlight, heat sources, vibration, dust, moisture, and/or cold. Avoid installing this unit where foreign object may fall onto this unit and/or this unit may be exposed to liquid dripping or splashing. On the top of this unit, do not place: Burning objects (i.e.

candles), as they may cause fire, damage to this unit, and/or personal injury. Containers with liquid in them, as they may fall and liquid may cause electrical shock to the user and/or damage to this unit. Do not cover this unit with a newspaper, tablecloth, curtain, etc. in order not to obstruct heat radiation. If the temperature inside this unit rises, it may cause fire, damage to this unit, and/or personal injury. Install this unit near the AC outlet and where the AC power plug can be reached easily. This unit is not disconnected from the AC power source as long as it is connected to the wall outlet, even if this unit itself is turned off. This state is called the standby mode. In this state, this unit is designed to consume a very small quantity of power. WARNING TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

Verify Line Voltage Before Use Your AVR 645 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.



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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 extremelodes 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 ~, 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.

ò Surround Mode Indicators Û Speaker/Channel Input Indicators Ũ Digital Select Button Û Channel Select Button i Volume Control ^ Input Indicators ~ Main Information Display ~ Remote Sensor Window EzSet/EQ Microphone Jacks 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 33. 7 < Button: When an adjustment is being made using the Channel Select Û or Digital Select Ũ 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 I N appear in the Main Information Display ~, 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 ~, 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 41). FRONT PANEL CONTROLS 5 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 38 for more information about surround modes).

) 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 ~ (see page 51 for more information on tuning stations). ! 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 51 for more information on the tuner). @ 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 ~ into the AVR's memory.

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 51 for more information on tuner programming.) \$ > Button: When an adjustment is being made using the Channel Select Û or Digital Select Ũ buttons, this button may be pressed to scroll through the available options. % Input Source Selector: Press this button to change the input by scrolling through the list of input sources. ^ RDS Selectrent 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. ~ Main Information Display: This display delivers messages and status indications to help you operate the receiver. ~ 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. EzSet/EQ Microphone Jack: Before starting the EzSet/EQ automated setup process, plug the microphone into this jack. The microphone does not need to be plugged in at other times. 6 FRONT PANEL CONTROLS Rear Panel Connections ENGLISH 0 AM Antenna 1 FM

Antenna 2 Tape Inputs 3 Tape Outputs 4 Main Subwoofer Output 5 DVD Audio Inputs 6 CD Inputs 7 Multiroom Audio Outputs 8 A-BUS Connector 9 8-Channel Direct Inputs A Digital Audio Outputs B Video Monitor Outputs C DVD Video Inputs D Front Speaker Outputs E Center Speaker Outputs F Surround Speaker Outputs G Switched AC Accessory Outlet H USB Connector I AC Power Cord Jack J Video 2 Component Video Inputs K Component Video Outputs L Video 1 Component Video Inputs M Remote IR Output N Remote IR Input O Multiroom IR Input P Video 1 Video Outputs Q Video 1 Video Inputs R HDMI Output S Video 3 Video Inputs T Video 2 Video Inputs U Optical Digital Inputs V Coaxial Digital Inputs W HDMI Inputs X Video 2 Audio Inputs Y Video 3 Audio Inputs Z Video 1 Audio Inputs a Video 1 Audio Outputs b Preamp Outputs c Surround Back/Multiroom Speaker Outputs d RS-232 Port e Fan Vents f DVD/Video 3 Component Video Inputs g Remote IR Carrier Output h Trigger 1 Output i The Bridge TheBridge Digital Media Player (DMP) Input TM 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 0 AM Antenna: Connect the AM loop antenna supplied with the receiver to these terminals.



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If an external AM antenna is used, make connections to the AM and GND terminals in accordance with the instructions supplied with the antenna. 1 FM Antenna: Connect the supplied indoor or an optional external FM antenna to this terminal. 2 Tape Inputs: Connect these jacks to the PLAY/OUT jacks of an audio recorder.

3 Tape Outputs: Connect these jacks to the RECORD/INPUT jacks of an audio recorder. 4 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. 5 DVD Audio Inputs: Connect these jacks to the analog audio jacks on a DVD or other audio or video source. 6 CD Inputs: Connect these jacks to the analog output of a compact disc player or CD changer or any other audio source. 7 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. 8 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 20 for more information on A-BUS. REAR PANEL CONNECTIONS 7 Rear Panel Connections 9 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. A Digital Audio Outputs: Connect these jacks to the matching digital input connector on a digital recorder such as a CD-R or MiniDisc recorder. B 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.

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

D 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 16 for more information on speaker polarity. E 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 16 for more information on speaker polarity.) F 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 16 for more information on speaker polarity.) G 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. H 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 645. This connection is also used to connect a compatible computer to the AVR for firmware upgrades, when available.

See page 43 for more information on playback of computer audio with the AVR. Instructions for upgrades will accompany the upgrade file download package.

I 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. J 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 16 for more information on configuring the component video inputs. K 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 JL is selected the signal will be sent to these jacks.

L 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 16 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 17).

M 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. N 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. O 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.

P Video 1 Video Outputs: Connect these jacks to the RECORD/INPUT composite or S-Video jack on a VCR. Q Video 1 Video Inputs: Connect these jacks to the PLAY/OUT composite or S-Video jacks on a VCR or other video source. R HDMI Output: Connect this jack to the HDMI input on a compatible HDMI-equipped video display. S Video 3 Video Inputs: Connect these jacks to the PLAY/OUT composite or S-Video jacks on any video source.



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T Video 2 Video Inputs: Connect these jacks to the PLAY/OUT composite or S-Video jacks on a second VCR or other video source. U 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. 8 REAR PANEL CONNECTIONS Rear Panel Connections V 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.

W 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. X Video 2 Audio Inputs: Connect these jacks to the PLAY/OUT audio jacks on a second VCR or other audio or video source. Y Video 3 Audio Inputs: Connect these jacks to the PLAY/OUT audio jacks on any audio or video source. Z Video 1 Audio Inputs: Connect these jacks to the PLAY/OUT audio jacks on a VCR or other audio or video source. a Video 1 Audio Outputs: Connect these jacks to the RECORD/INPUT audio jacks on a VCR or any other Audio recorder. b Preamp Outputs: Connect these jacks to an optional, external power amplifier for applications where higher power is desired. c 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 49 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. d RS-232 Port: This jack may be used to control the AVR 645 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 645 when appropriate upgrades are available. e 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. f 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 16 for more information on configuring the component video inputs. g Remote IR Carrier Output: The output of this jack is the full signal received at the Remote Sensor Window or input through the Remote IR Input N including the carrier frequency that is removed from signals at the Remote IR Output M. 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. h 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 645. When this connection is used, the AVR 645 will automatically send a low-voltage signal to the connected device that turns it on when the AVR 645 is on and off when the AVR 645 is placed in the Standby Mode. The connected component must respond to 6-volt presence as the control signal. i Digital Media Player (DMP) Connector: With the AVR 645 turned off, connect one end of the optional Harman Kardon 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 B), and in the Upper and Lower Display Lines ~. You may navigate the iPod and select tracks for playback using the ⏪ < > Buttons EF, the Set Button FQ and Transport Controls PP on your AVR remote.

See page 45 for more information. ENGLISH REAR PANEL CONNECTIONS 9 Main Remote Control Functions 0 1 2 3 4 5 6 7 8 9 A B C D E F G H I J K L M N O P Q R S T U V W X Y Z a b c d e f g h Power Off Button IR Transmitter Window LCD Information Display Power On Button Input Selectors AVR Selector AM/FM Tuner Select 6-Channel/8-Channel Direct Input Test Button Sleep Button Surround Mode Selector Night Mode Channel Select Button Dim Button Navigation Button Set Button Digital Select Numeric Keys Tuner Mode Direct Button Tuning Up/Down OSD Button Dolby Mode Select Button DTS Digital Mode Selector Logic 7 Mode Select Button Transport Controls Light Button Skip Up/Down Buttons Stereo Mode Select Button DTS Neo:6 Mode Select Macro Buttons Disc Skip Button Preset Up/Down Clear Button Memory Button Delay/Prev. Ch. Program Button Speaker Select Multiroom Volume Up/Down EzSet/EQ On/Off Button Channel Up/Down Selector Mute Tone Control Button 3 0 2 1 g 4 5 8 A O J X e I C E G F d P P W V Q R K a c P 7 M N T S H Y b Z f NOTE: The function names shown here are each button's feature when used with the AVR. Most buttons have additional functions when used with other devices. The jack on the upper right side of the remote is reserved for future use. Do not remove the plug provided or connect any device to the jack. D h L B 9 U 6 10 MAIN REMOTE CONTROL FUNCTIONS Main Remote Control Functions IMPORTANT NOTE: The AVR 645's remote may be programmed to control up to seven devices, including the AVR. Before using the remote, it is important to remember to press the Input Selector button 4 that corresponds to the unit you wish to operate.



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In addition, the AVR's remote is shipped from the factory to operate the AVR and most Harman Kardon CD or DVD players and cassette decks. The remote is also capable of operating a wide variety of other products using the control codes that are part of the remote or by learning commands from other remotes. Before using the remote with other products, follow the instructions on pages 53-54 to program the proper codes for the products in your system. It is also important to remember that many of the buttons on the remote take on different functions, depending on the product selected using the Input Selector Button 4. The descriptions shown here primarily detail the functions of the remote when it is used to operate the AVR. 0 Power Off Button: Press this button to place the AVR or a selected device unit in the Standby mode.

Note that when the AVR is switched off this will turn off the main room functions, but if the Multiroom system is activated, it will continue to function. 1 IR Transmitter Window: Point this window towards the AVR when pressing buttons on the remote to make certain that infrared commands are properly received. 2 LCD Information Display: This two-line screen displays various information depending on the commands that have been entered into the remote. 3 Power On Button: Press this button to turn on the power to a device selected by pressing one of the Input Selectors 4 (except Tape). 4 Input Selectors: Pressing one of these buttons will perform three actions at the same time.

First, if the AVR is not turned on, this will power up the unit. Next, it will select the source shown on the button as the input to the AVR. Finally, it will change the remote control so that it controls the device selected. The buttons labeled DVD, DMP and HDMI 1 are each used to select either of two input sources: · The first press of the DVD Button selects the component connected to the DVD inputs. A second press of this button selects the component connected to the CD inputs. · The first press of the button labeled DMP selects The Bridge as the input. A second press of this button selects the device connected to the Tape inputs. · The first press of the HDMI 1 button selects the device that is connected to the HDMI 1 jack. A second press selects the device connected to the HDMI 2 jack. In normal operation, the remote will revert to controlling the AVR when no button is pressed for 6 seconds.

This allows the remote to automatically return to control of important functions such as volume, mute and surround mode selection after you have used the remote to control another device. If you wish to change the length of time that the remote operates another device, or to have the remote remain active for control of the other device (such as a DVD player or set-top box) until you manually return control to the AVR by pressing the AVR Selector 5, follow the instructions on page 40. 5 AVR Selector: Pressing this button will switch the remote so that it will operate the AVR's functions. If the AVR is in the Standby mode, it will also turn the AVR on. 6 AM/FM Tuner Select: Press this button to select the AVR's tuner as the listening choice. Pressing this button when the tuner is in use will select between the AM and FM bands. 7 6-Channel/8 Channel Direct Input: Press this button to select the device connected to the 6-Channel Direct Inputs or the 8-Channel Direct Inputs 9 (the input available will depend on the selection 5.1 or 6.1/7.1 made in the surround mode setting, see page 27 for more information).

8 Test Tone: Press this button to begin the sequence used to calibrate the AVR's output levels. (See page 27 for more information on calibrating the AVR.) 9 Sleep Button: Press this button to place the unit in the Sleep mode. After the time shown in the display, the AVR will automatically go into the Standby mode. Each press of the button changes the time until turn-off in the following order: 90 min 40 min 80 min 30 min 70 min 20 min 60 min 10 min 50 min OFF Hold the button pressed for two seconds to turn off the Sleep mode setting.

Note that this button is also used to change channels on your TV, VCR and Sat receiver when the appropriate source is selected, using the device Input Selectors 4. A Surround Mode Selector: Press this button to select any of the HALL, THEATER surround modes. Note that depending on the type of input, some modes are not always available. (See page 33 for more information about surround modes.) Note that this button is also used to tune channels on your TV, VCR and Sat receiver when the appropriate source is selected using the device Input Selector 4.

B Night Mode: Press this button to activate the Night mode. This mode is available only with Dolby Digital encoded sources, and it preserves dialog (center channel) intelligibility at low volume levels (See page 23 for more information). C Channel Select Button: This button is used to start the process of setting the AVR's output levels with an external source. Once this button is pressed, use the // buttons E again, to change the level setting. (See page 40 for more information.) D Dim Button: Press this button to activate the Dimmer function, which reduces the brightness of the front-panel display, or turns it off entirely. Press the button once to change the display to reduce the brightness by 50%, and press it again within five seconds and the main display will go completely dark. Note that this setting is temporary; regardless of any changes, the display will always return to full brightness when the AVR is turned on. The blue illumination around the Standby/On Button 1 will always remain at full brightness regardless of the setting to remind you that the AVR is still turned on. The blue accent lighting inside the volume control will also remain at full brightness when the panel is at 50%, but go out when the panel lights are fully dimmed.

MAIN REMOTE CONTROL FUNCTIONS 11 ENGLISH Main Remote Control Functions E Navigation Button: This single disc-like button is used to change or scroll through items in the on-screen menus or on the front panel or to make configuration settings such as digital inputs or delay timing. When changing a setting, first press the button for the function or setting to be changed (e.g., press the Digital Select Button G to change a digital input) and then press one of these buttons to scroll through the list of options or to increase or decrease a setting. The sections in this manual describing the individual features and functions contain specific information on using these buttons for each application. F 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. G Digital Select: Press this button to assign one of the digital inputs UV*Ó to a source.



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(See page 43 for more information on using digital inputs.) **H 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. **I 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 ~, pressing the Tuning buttons **K** 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 ~, pressing this button will change to monaural reception making even weak stations audible. (See page 51 for more information.)

J 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 **H** to select a station (See page 51 for more information on the tuner). **K Tuning Up/Down:** When the tuner is in use, these buttons will tune up or down through the selected frequency band. If the Tuner Mode button **I** has been pressed or the Band button **!** on the front panel was held pressed so that **AUTO** appears in the Main Information Display ~, pressing either of the buttons will cause the tuner to seek the next station with acceptable signal strength for quality reception. When the **MANUAL** appears in the Main Information Display ~, pressing these buttons will tune stations in single-step increments.

(See page 52 for more information.) **L OSD Button:** Press this button to activate the On Screen Display (OSD) system used to set up or adjust the AVR's parameters. **M Dolby Mode Selector:** This button is used to select one of the available Dolby Surround processing modes. Each press of this button will select one of the Dolby Pro Logic II modes, Dolby 3 Stereo or Dolby Digital. Note that the Dolby Digital mode is only available with a digital input selected and the other modes only as long as a Dolby Digital source is not playing (except Pro Logic II with Dolby Digital 2.0 recordings, see Note on page 42). See page 28 for the available Dolby surround mode options. **N DTS Digital Mode Selector:** When a DTS source is in use the AVR will select the appropriate mode automatically and no other mode will be available. Pressing this button will display the mode currently selected by the AVR's decoder, depending on the surround material played and the speaker setting (see item 6, page 5). When a DTS source is not in use, this button has no function.

(See page 28, 33 for the available DTS options.) **O Logic 7 Selector:** Press this button to select one of the available Logic 7 surround modes. (See page 38 for the available Logic 7 options.)

P Transport Control Buttons: These buttons do not have any functions for the AVR, but they may be programmed for the forward/reverse play operation of a wide variety of CD or DVD players, and audio or video-cassette recorders. (See page 53 for more information on programming the remote.) **Q Light Button:** Press this button to activate the remote's built-in backlight for better legibility of the buttons in a darkened room. **R Skip Up/Down Buttons:** These buttons do not have a direct function with the AVR, but when used with a compatibly programmed CD or DVD player/changer they will change the tracks on the disc currently being played. **S Stereo Mode Selector:** Press this button to select a stereo playback mode. When the button is pressed so that **DSP SURR OFF** appears in the Main Information Display ~, the AVR will operate in a bypass mode with true fully analog, two-channel left/right stereo mode with no surround processing or bass management as opposed to other modes where digital processing is used. When the button is pressed so that **SURROUND OFF** appears in the Main Information Display ~, you may enjoy a two-channel presentation of the sound along with the benefits of bass management.

When the button is pressed so that **5 C H STEREO** or **7 C H STEREO** appears, the stereo signal is routed to all five speakers, if installed. (See page 39 for more information on stereo playback modes.) **T DTS Neo:6 Mode Selector:** Pressing this selector button cycles the AVR through the various DTS Neo:6 modes, which extract a five or seven-channel surround field from two-channel program material (from PCM source or analog input signal). The first press selects the last DTS Neo:6 surround mode that was in use, and each subsequent press selects the next mode in the following order: **DTS Neo:6 MUSIC** **DTS Neo:6 MOVIES** **U Macro Buttons:** Press these buttons to store or recall a "Macro", which is a pre-programmed sequence of commands stored in the remote.

(See page 56 for more information on storing and recalling macros.)

V Disc Skip Button: This button has no direct function for the AVR 645 but may be used to change the disc in a CD or DVD changer when the remote is programmed for that type of device. **12 MAIN REMOTE CONTROL FUNCTIONS Main Remote Control Functions** **W Preset Up/Down:** When the tuner is in use, press these buttons to scroll through the stations programmed into the AVR's memory. When CD or DVD is selected using the Input Selector button **4**, these buttons may function as Slow Fwd/Rev (DVD) or "+10" (CD, CDR). **X Clear Button:** Press this button to clear incorrect entries when using the remote to directly enter a radio station's frequency. **Y 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 ~, you then have five seconds to enter a preset memory location using the Numeric Keys **H**. (See page 51 for more information.) **Z Delay Select Button:** This button selects adjustments to the A/V Sync Delay and the individual channel displays. The first press of the button displays an **A/V SYNC DELAY** message in the Lower Display Line ~ and in the onscreen display, which means that you may change the amount of time that all channels are delayed together behind the video. This enables you to compensate for the loss of lip sync that may be caused by digital video processing in your display or by television stations. To change the A/V Sync Delay, press the Set Button **F** while the **A/V SYNC DELAY** message is visible and then use the **Navigation Button E** to change the setting so that the sound and the video image are in sync. To change the delay for an individual output channel, press the **Navigation Button E** until the desired channel name is shown, and then press the Set Button **F**. Use the **Navigation Buttons E** to change the delay amount. (See page 35 for more information on delay options.) **a Program Button:** This button is used to begin the process of programming the remote.

Press and hold this button for three seconds to place the remote in the programming mode.



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Once the red LED under the Set Button F lights, release the button. You may then select from the desired option. (See pages 53-61 for more information on configuring the remote.) b Speaker Select: Press this button to begin the process of configuring the AVR's Bass Management System for use with the type of speakers used in your system. Once the button has been pressed, use the /↔ buttons E to select the channel you wish to set up. Press the Set Button F and then select the speaker type (Large, Small or None) appropriate with the speaker in use. (See page 21 for more information.) c Multi-Room: Press this button to activate the Multiroom system or to begin the process of changing the input or volume level for the second zone. (See page 49 for more information on the Multiroom system.

) d Volume Up/Down: Press these buttons to raise or lower the system volume. e EzSet/EQ Button: Press this button to turn the filters used by EzSet/EQ on or off. This allows you to hear the difference in system performance when EzSet/EQ is engaged or out of the signal path. f Channel Up/Down Selector: This button has no function when the AVR is being controlled, but when programmed for use with a VCR, TV, cable box, satellite receiver or other similar product it will change the channel up or down. See pages 53-61 for more information on programming the remote.

g Mute: Press this button to momentarily silence the AVR or TV set being controlled, depending on which device has been selected. When the AVR remote is being programmed to operate another device, this button is pressed with the Input Selector button 4 to begin the programming process. (See page 53 for more information on programming the remote.) h Tone Control Button: This button controls the tone mode settings, enabling adjustment of the bass and treble boost/cut. You may also use it to take the tone controls out of the signal path completely for "flat" response.

The first press of the button displays a TONE I N message in the Lower Display Line ~ and in the on-screen display. To take the controls out of the signal path press either of the /↔ Navigation Buttons E until the display reads TONE OUT. To change the bass or treble settings, press the button again until the desired option appears in the Lower Display Line ~ and in the on-screen display and then press either of the /↔ Navigation Buttons E to enter the desired boost or cut setting. See page 27 for more information on the tone controls. ENGLISH MAIN REMOTE CONTROL FUNCTIONS 13 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 O. A E B K J D We strongly recommend that the ZR 10 remote be used for the initial configuration and setup process for the AVR 645. 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 O, 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. C J F I H P Q O G N M J L 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 B C D E F G H I J K L M Power Off AVR Selector AM/FM Tuner Select Input Selectors OSD Button Navigation Controls Numeric

Keys Disc Skip Volume Up/Down Blank Buttons Mute Clear Button Direct Button N O P Q Memory Button Tuner Mode Button Transport Controls Set Button The Bridge /DMP Selector products in that room. When it is used in a separate room via a sensor connected to the Multi IR Jack f, 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 . (See page 49 for complete information on using the Multiroom system.

) 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 f. When it is used in the same room as the AVR, it will control the functions of the AVR or any compatible Harman Kardon 14 ZONE II REMOTE CONTROL FUNCTIONS 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 O, 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 645 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 O, 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 before 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 51 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 ~, you then have five seconds to enter a preset memory location using the Numeric Keys G.



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(See page 51 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 ~, pressing the Tuning buttons **K** 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 ~, pressing this button will change to monaural reception making even weak stations audible. (See page 51 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. **Digital Media Player (DMP) Selector:** When Harman Kardon's (optional) is connected to Digital Media Player (DMP) Connector **i** and a compatible Apple® iPod® is docked in , pressing this selector will select the iPod as the audio source input device for the AVR 645. In addition, if a video display is connected to one of the Video Monitor Outputs **B**, the iPod's messages will appear on screen, and in the Upper and Lower Display Lines ~. The **/M/</>** Buttons **EF**, the Set Button **FQ** and the Transport Controls **PP** may be used to navigate the iPod and to operate many functions. See page 45, and the manuals for The Bridge and your iPod for more information. **ENGLISH ZONE II REMOTE CONTROL FUNCTIONS 15 Installation and Connections** After unpacking the unit, and placing it on a solid surface capable of supporting its weight, you will need to make the connections to your audio and video equipment.

5. Assemble the AM Loop Antenna supplied with the unit as shown below. Connect it to the AM and GND screw terminals **0**. **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 subwoofer are normally made via a line level audio connection from the Subwoofer Output **4** 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. 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 **9**. **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 **6**. **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 **2**. Connect the analog Record/In jacks on the recorder to the Tape Output jacks **3** 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 **U V *Ó**. **4.** Connect the Coaxial or Optical Digital Outputs **A** on the rear panel of the AVR to the matching digital input connections on a CD-R or MiniDisc recorder. **6.** Connect the supplied FM antenna to the FM (75 ohm) connection **1**. 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 **DEFc** 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 mm². Cable with an area of 1.5 mm² may be used for short runs of less than 4 m. We do not recommend that you use cables with an area less than 1 mm² 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 positive (+) connection. Connect the "negative" or "black" wire to the same terminal on both the receiver and the speaker. **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 **Q T X Z** on the rear panel.



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The Audio and Video Record/In jacks on the VCR should be connected to the Video 1 Out jacks P a on the AVR. 16 INSTALLATION AND CONNECTIONS Installation and Connections 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 S Y jacks. 3. Connect the analog audio and video outputs of a DVD or laser disc player to the DVD jacks 5C. 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 JL. The chart on page 64 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 24.

5. The default video connection for a DVD player is to use the Component Video Input 3 Jacks f on the AVR, but you may change this assignment in the IN/OUT SETUP menu (see page 24). A DVD player's composite and S-video outputs may also be connected to the DVD Video Inputs C. 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 V, but you may also make a connection to either the Coaxial V or Optical U digital inputs, or the Analog DVD Audio Inputs 5.

You may change the assignment in the IN/OUT SETUP menu as described on page 24, or by using the front-panel Digital Input Selector Ū. 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 Ô that are behind the Front-Panel Door. If the source has digital audio outputs, connect them to the Optical 4 Digital Input * or the Coaxial 4 Digital Jack Ó.

Connection Notes: When making connections to the Component Video Inputs JLf or the Coaxial V or Optical U 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 *Ô. A device connected to the Video 4 jacks Ô is selected as the Video 4 input, and connected to the digital jacks *Ô it is selected as "Optical 4" or "Coaxial 4" input. (See page 45 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 R, as described in the next section. · If your video display has component video inputs (Y/Pr/Pb), connect the Component Video Outputs K.

· If your display does not have digital or component video inputs, connect the Video Monitor Output B on the AVR to the matching input on your display. Only one connection is needed, and S-video is the higher quality signal. 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. ENGLISH 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 W 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 9. 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 645 to either the Coaxial V Ó or Optical U* 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 W 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 9. · 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. HDMI Connections HDMITM 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 onewire 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. INSTALLATION AND CONNECTIONS 17 Installation and Connections · 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.



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