

harman/kardon®
Designed to Entertain.™

HS 500

INTEGRATED HOME THEATER SYSTEM
OWNER'S MANUAL



SAFETY INFORMATION

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket or table specified by the manufacturer or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.



14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. Do not expose this apparatus to dripping or splashing and ensure that no objects filled with liquids, such as vases, are placed on the apparatus.
16. To completely disconnect this apparatus from the AC Mains, disconnect the power supply cord plug from the AC receptacle.
17. The mains plug of the power supply cord shall remain readily operable.
18. Do not expose batteries to excessive heat such as sunshine, fire or the like.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

WARNING: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

SAFETY INFORMATION

Important Safety Information

Verify Line Voltage Before Use

Your HS 500 has been designed for use with 120-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 selling 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 center 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 staple accidentally falls inside the unit, disconnect it from the AC power source immediately, and consult an authorized service center.

CATV or Antenna Grounding

If an outside antenna or cable system is connected to this product, be certain that it is grounded so as to provide some protection against voltage surges and static charges. Section 810 of the National Electrical Code, ANSI/NFPA No. 70-1984, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes and requirements of the grounding electrode.

NOTE TO CATV SYSTEM INSTALLER: This reminder is provided to call the CATV (cable TV) system installer's attention to article 820-40 of the NEC, which provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as possible.

Installation Location

- To ensure 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 in 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.
- Due to the weight of the HS 500 and the heat generated by the amplifiers, there is the remote possibility that the rubber padding on the bottom of the unit's feet may leave marks on certain wood or veneer materials. Use caution

when placing the unit on soft woods or other materials that may be damaged by heat or heavy objects. Some surface finishes may be particularly sensitive to absorbing such marks, due to a variety of factors beyond Harman Kardon's control, including the nature of the finish, cleaning materials used, and normal heat and vibration caused by the use of the product, or other factors. We recommend that caution be exercised in choosing an installation location for the component and in normal maintenance practices, as your warranty will not cover this type of damage to furniture.

Cleaning

When the unit gets dirty, wipe it with a clean, soft, dry cloth. If necessary, and only after unplugging the AC power cord, wipe it with a soft cloth dampened with mild soapy water, then a fresh cloth with clean water. Wipe it 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.

Important Information for the User

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. The limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio-frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communication. However, there is no guarantee that harmful interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept interference received, including interference that may cause undesired operation.

NOTE: Changes or modifications may cause this unit to fail to comply with Part 15 of the FCC Rules and may void the user's authority to operate the equipment.

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.

It is important that you remove the protective plastic film from the front-panel lens. Leaving the film in place will affect the performance of your remote control.

STAPLE INVOICE HERE

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WARNING

To prevent fire or shock hazard, do not expose this appliance to rain or moisture.

For Canadian model

This Class B digital apparatus complies with Canadian ICES-003.
For models having a power cord with a polarized plug: CAUTION: To prevent electric shock, match wide blade of plug to wide slot, fully insert.

Modèle pour les Canadien

Cet appareil numérique de la Classe B est conforme à la norme NMB-003 du Canada.
Sur les modèles dont la fiche est polarisée: ATTENTION: Pour éviter les chocs électriques, introduire la lame la plus large de la fiche dans la borne correspondante de la prise et pousser jusqu'au fond.

INTRODUCTION

Please register your product on our Web site at www.harmankardon.com.

Note: You'll need the product's serial number. At the same time, you can choose to be notified about our new products and/or special promotions.

WWW.HARMANKARDON.COM

Thank you for choosing Harman Kardon®!

In the years since Harman Kardon invented the high-fidelity receiver, we have taken to heart the philosophy of bringing the joy of home entertainment to as many people as possible, adding performance and ease-of-use features that enhance the home entertainment experience. With the introduction of the HS series of home theater systems, Harman Kardon offers a complete home theater solution with a wealth of listening and viewing options in one sleek component. Each HS series system also includes a 5.1-channel loudspeaker system, a system remote control and all the cables and accessories you need to enjoy movies and music entertainment in your own home, when used with your television or video display.



HS 500 5.1-Channel DVD Receiver

Audio Section

- 65 Watts x 5, five channels driven at full power at 6 ohms, 20Hz – 20kHz, <0.5% THD (surround modes); 325 watts total
- Digital Path amplifier design
- 192kHz/24-bit D/A conversion
- Sampling upconversion to 96kHz

Surround Modes

- Dolby® Digital
- Dolby Pro Logic® II (Movie and Music)
- Dolby Pro Logic
- DTS® (5.1)
- Stereo (Surround Off)

Audio Inputs

- AM/FM tuner (internal)
- DVD-Audio/Video/CD player (internal)
- TV
- Auxiliary

Digital Audio Inputs

- Coaxial
- Optical
- USB (front-side and rear panels)

To obtain the maximum enjoyment from your new HS system, we urge you to read this manual and refer back to it as you become more familiar with its features and their operation.

If you have any questions about this product, its installation or its operation, please contact your retailer or customer installer, or visit our Web site at www.harmankardon.com.



NOTE: This player is designed and manufactured for compatibility with Region Management Information that is encoded on most DVD discs. This player is designed only for playback of discs with Region Code 1, or for discs that do not contain Region Code information. If there is any other Region Code on a disc, that disc will not play on the DVD.

Outputs

- Subwoofer output
- Analog audio
- Video monitor (composite, S-video, component and HDMI)
- One coaxial digital audio
- Headphone
- Subwoofer trigger

Ease of Use

- Graphic user interface with composite, S-video, component video and HDMI
- Dot-matrix front-panel display
- Color-coded connections
- Programmable, learning six-device main remote control

DVD Player

- Plays 5-inch (12cm) and 3-inch (8cm) discs
- Video formats supported: DVD, DVD-R/RW, DVD+R/RW, VCD, SVCD
- Audio formats supported: DVD-Audio, CD, CD-R/RW, MP3, Windows® Media WMA
- Still-image formats supported: JPEG, Kodak® Picture Disc
- Video upscaling to 720p and 1080i
- Progressive-scan video outputs
- MP3 bit rates: 32kbps – 320kbps
- WMA bit rates: 16kbps – 192kbps
- JPEG resolution supported: 5 megapixels, 5MB file size
- Still-image rotation in 90-degree increments
- Thumbnail still-image menu
- Internal video test signal
- Fast Play: 2x, 4x, 16x, 100x
- Slow Play: 1/2x, 1/4x, 1/8x, 1/16x
- Zoom (DVDs, VCDs and JPEGs): 1x, 2x, 3x, 4x, 5x (two steps only for VCDs)
- Random Play (CDs only)
- Repeat Play: 1 group/title, 1 track/chapter, 1 folder, 1 disc
- A-B Repeat Play (DVDs, CDs and VCDs only)
- Parental control system with user-programmable password

- Disc recognition for up to 100 discs
- Playback control for VCDs
- Aspect-ratio adjustment

Supplied Accessories

The following accessory items are supplied with the HS 500. If any of these items is missing, please contact Harman Kardon customer service at www.harmankardon.com.

- System remote control
- AM loop antenna
- FM wire antenna
- Three AAA batteries
- AC power cord
- HDMI cable

FRONT-PANEL CONTROLS

Standby/On Switch: This is an electrical switch that turns the HS 500 on for playback, or leaves it in standby mode for quick turn-on using this switch or the remote control.

Power Indicator: This LED surrounds the Standby/On Switch. When the HS 500 is plugged into AC power, the LED turns amber to indicate that the HS 500 is in Standby mode (ready to be turned on). When the HS 500 is turned on (by pressing the Standby/On Switch or one of the Source Selectors on the remote), the LED turns blue. If this LED ever turns red, immediately unplug the HS 500. Check the speaker-wire connections to make sure no wires are shorting out by touching each other. If the LED remains red, bring the HS 500 to an authorized Harman Kardon service provider.

Open/Close: Press this button to open or close the disc drawer. When the HS 500 is in standby mode, press this button to turn on the HS 500 and open the drawer. Before pressing this button, always make sure no objects are blocking the drawer. Remember to close the door or turn off the HS 500 when you have finished. The door will only close automatically when the unit is turned off.

Volume Control: Turn this knob to raise or lower the volume, which will be shown on screen as an increasing or decreasing row of bars in the Message Display.

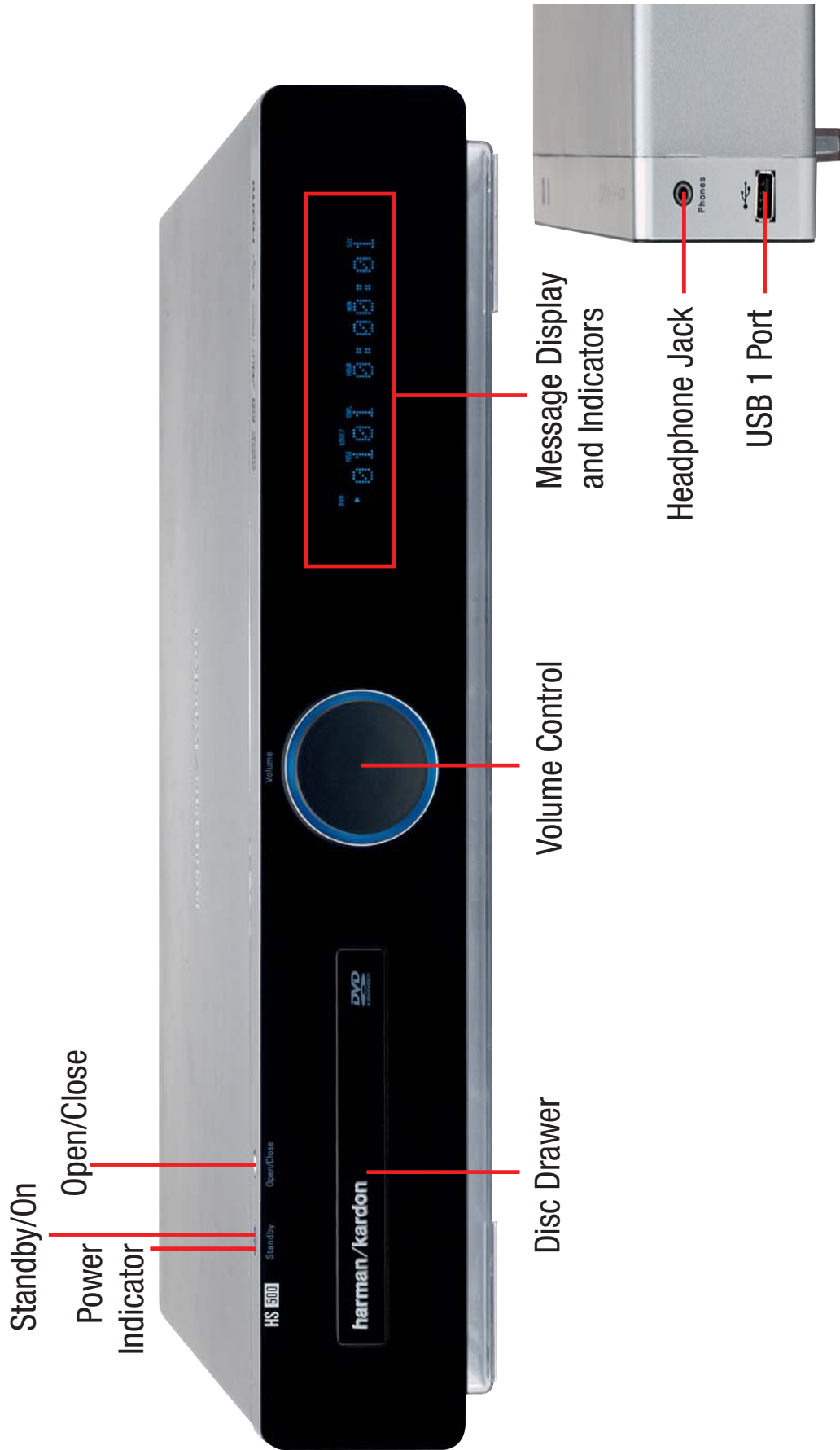
Message Display: Various messages appear in this display in response to commands. In addition, a variety of indicators will light at various times to display the current source, playback mode (if appropriate), video settings or other aspects of the HS 500's status as described throughout this manual.

Disc Drawer: This drawer holds a disc that is played in the HS 500. Press the Open/Close button on top of the HS 500 to access it. Be sure to carefully seat all discs in the recess in the drawer tray. Remember to close the drawer when you are finished, as it will not close automatically without turning off the unit.

Headphone Jack: Insert a 1/8" headphone plug into this jack for private listening. An optional adapter is necessary to use 1/4" or other size headphone plugs.

USB 1 Port: Gently insert a flash drive, card reader, digital camera or other USB device, or a USB standard-A cable connected to a USB device, in this port. Be certain to orient the plug's plastic tongue so that it will insert adjacent to the receptacle's tongue, and seat the plug fully. You may insert or remove the device at any time; there is no installation or ejection procedure. The HS 500 is capable of playing MP3 and Windows Media® WMA audio files, and MPEG 2 and uncompressed AVI files that are stored on the device. The HS 500 can also display still-image files, but only in the JPEG format. *Do not* connect a PC or other USB host/controller to this port, or you may damage both the HS 500 and your device.

FRONT-PANEL CONTROLS



NOTE: To make it easier to follow the instructions throughout the manual that refer to this illustration, a copy of this page may be downloaded from the Product Support section at www.harmankardon.com.

REAR-PANEL CONNECTIONS

AM Antenna Terminals: Assemble the AM loop antenna supplied and make sure to connect the white wire to the "AM" terminal and the black wire to the "GND" terminal.

FM Antenna Terminal: Connect the included FM antenna to its terminal.

Front, Center and Surround Speaker Outputs: Use two-conductor speaker wire to connect each set of terminals to the correct speaker. Remember to observe the correct polarity (positive and negative connections). Always connect the positive lead to the colored terminal on the HS 500 and the red terminal on the speaker. Connect the negative lead to the black terminal on both the HS 500 and the speaker. See the Connections section for more information on connecting your speakers.

Subwoofer Output: Connect a powered subwoofer to this jack.

Subwoofer Trigger Output: A 1/8" mini-plug cable is supplied with the speakers included in the HS 500 system. Connect one end of the cable to this jack, and the other end to the trigger input on the subwoofer to automatically turn on the subwoofer whenever the HS 500 system is turned on. The subwoofer's master power switch must be turned on for the trigger turn-on to operate.

USB 2 Port: Gently insert a flash drive, card reader, digital camera or other USB device, or a USB Standard-A cable connected to a USB device, in this port. Be certain to orient the plug's plastic tongue so that it will insert adjacent to the receptacle's tongue, and seat the plug fully. You may insert or remove the device at any time; there is no installation or ejection procedure. The HS 500 is capable of playing MP3 and Windows Media® WMA audio files, and MPEG 2 and uncompressed AVI video files that are stored on the device. The HS 500 can also display still-image files, but only in the JPEG format. *Do not* connect a PC or other USB host/controller to this port, or you may damage both the HS 500 and your device.

HDMI™ Output: HDMI (High-Definition Multimedia Interface™) is a newer type of connection for transmitting digital audio and video signals between devices. If your video display is HDMI-capable, you may connect the HDMI output to your video display for improved video performance. It is recommended that you disable the HDMI audio function of your video display to benefit from the HS 500's multichannel audio processing.

Remote Infrared (IR) Input and Output: When the remote IR sensor on the front panel is blocked, such as when the HS 500 is placed inside a cabinet, connect an optional IR receiver to the Remote IR Input jack for use with the remote control. The Remote IR Output may be connected to the Remote IR Input of a compatible source device (or other product) to enable remote control through the HS 500. When several source devices are used, connect them in "daisy chain" fashion.

Composite and S-Video Monitor Outputs: If your video display is not equipped with component video inputs, connect one of these monitor outputs to the corresponding inputs on your television or video display in order to view the sources. S-video is preferred when available.

Auxiliary Analog Audio Inputs: These jacks may be used to connect an audio-only source component (e.g., tape deck). Do not connect a turntable to these jacks without a phono preamp.

Analog Audio Outputs: These jacks may be used to connect a CDR or another audio-only recorder.

TV Analog Audio Inputs: Depending on how you receive broadcast television, connect the analog audio outputs of your cable television, satellite or HDTV set-top box to these inputs. Connect the video output of any of these devices directly to your video display or television. If you receive television programming using an antenna and tuner built into the television set, connect the TV's analog audio outputs to these jacks to take advantage of the HS 500's high-quality audio performance.

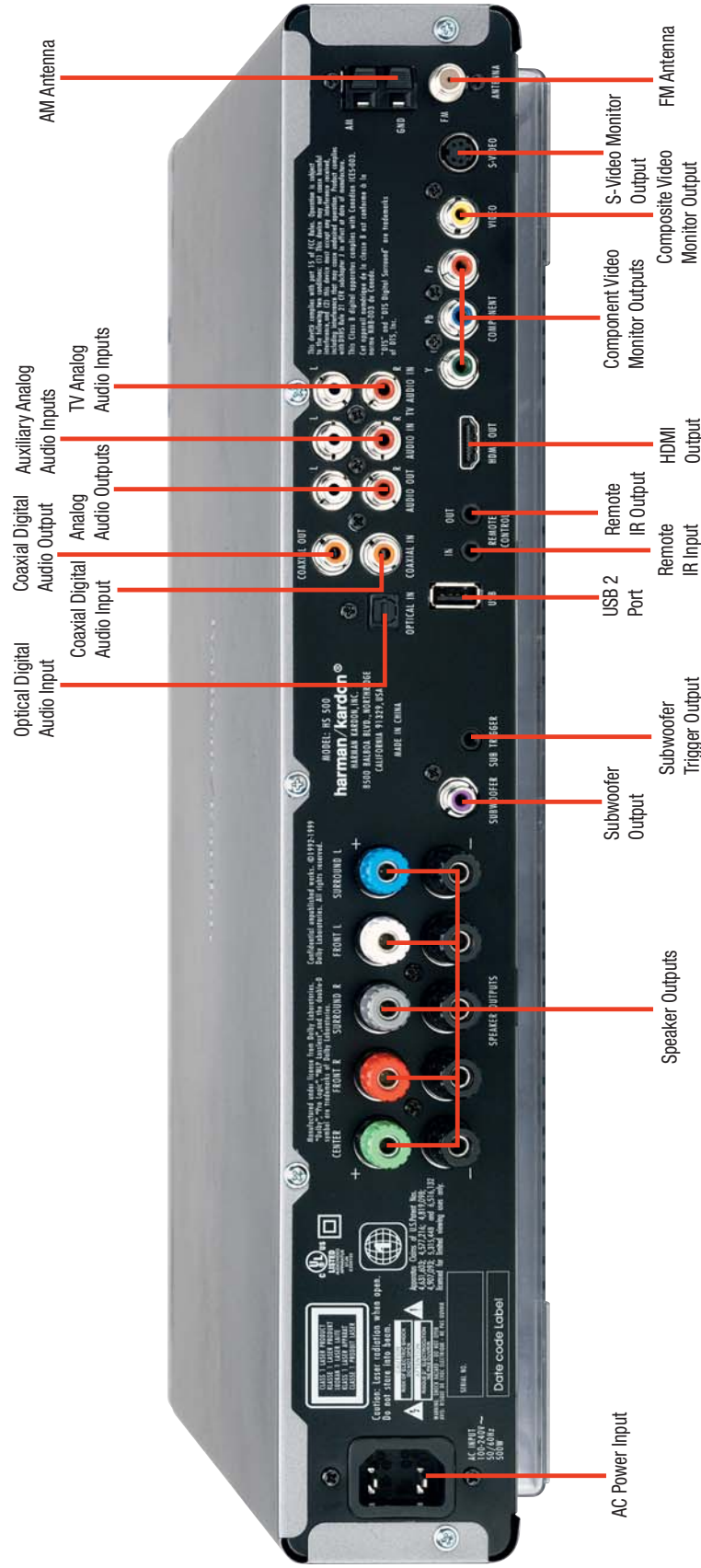
Coaxial and Optical Digital Audio Inputs: If your source has a compatible digital audio output, connect it to one of these jacks. Remember to use only one type of digital audio connection for each source.

Coaxial Digital Audio Output: If you have connected an audio recorder to one of the digital audio inputs, you may connect the coaxial digital audio output to the recorder's input.

Component Video Monitor Outputs: If your television or video display is component-video-capable, you may connect these jacks to the corresponding inputs on your video display.

AC Power Input: After you have made all other connections, plug the AC power cord into this input and into an unswitched outlet.

REAR-PANEL CONNECTIONS



NOTE: To make it easier to follow the instructions throughout the manual that refer to this illustration, a copy of this page may be downloaded from the Product Support section at www.harmankardon.com.

REMOTE CONTROL FUNCTIONS

The HS 500 remote is capable of controlling four devices, including the HS 500 with its internal disc player and tuner, as well as a TV and devices connected to the Auxiliary and Digital Audio Inputs. Each time you wish to use the codes for any component, press the Selector button for that component to change the button functions to the correct codes.

Each Source Selector is used to power on the HS 500, select the source indicated, and switch the remote's mode to operate the source and the HS 500 system, i.e., volume, mute, source selection and on-screen displays. The Source Selectors that operate the HS 500's internal sources, including the DVD player, the tuner and the USB ports, are not programmable. As explained in the Initial Setup section, you may program the TV, Auxiliary and Digital Input Source Selectors to operate any external components you connect to the HS 500.

TV: Selects the source connected to the analog or digital audio input assigned to the TV and switches the remote to operate a television set.

Disc: Selects the HS 500's internal disc player as the source and switches the remote to Disc mode.

Radio: Selects the HS 500's internal tuner as the source and switches the remote to Tuner mode. Additional presses toggle the tuner band between AM and FM.

AUX: Selects the source connected to the Auxiliary analog audio inputs and switches the remote to operate the device.

D-IN: Selects the source connected to the digital audio input assigned to the D-IN source and switches the remote to operate the device.

USB 1: Selects the device connected to the front-panel USB port (on right side of unit) as the source and switches the remote to operate the device using the HS 500's on-screen menu system.

USB 2: Selects the device connected to the rear-panel USB port as the source and switches the remote to operate the device using the HS 500's on-screen menu system.

NOTE: When the remote is switched to USB mode, it does not directly operate the USB device. The device is navigated and controlled indirectly using the HS 500's on-screen menu system.

The Mode button allows you to change the remote's mode to control a different device without selecting that device as a source. This is useful if, for example, you wish to adjust your video display screen (TV mode) while watching a DVD (Disc Mode).

Any given button may have different functions, depending on the remote's mode. Some buttons are labeled with these functions. For example, the Preset Buttons are labeled for use as Picture Up/Down Buttons when viewing JPEGs on a CD or USB device. See Table A8 in the appendix for listings of the different functions for each type of component.

IR Transmitter Lens: As buttons are pressed on the remote, infrared codes are emitted through this lens. Make sure it is pointing toward the component being operated. In Learning mode, the remote

receives codes transmitted by your source component's original remote through this lens. The remote is then capable of storing the new code in the memory for a button you select. See the Installation section for more information.

Program Indicator: This LED lights up or flashes in one of three colors as the remote is programmed or operated.

System Power Off Button: Press this button to turn off the HS 500 or another device.

Screen Power On and Off: Press these buttons to turn your video display on or off.

Source Selectors: Press one of these buttons to select a source device, which is a section of the HS 500 (DVD player or tuner) or an external component where a playback signal originates, e.g., cable TV, satellite or HDTV tuner. This will also turn on the HS 500 and switch the remote to the codes that operate the source device.

TV/Video: This button has no effect on the receiver, but is used to switch video inputs on the TV.

SAP: This button toggles the SAP (Secondary Audio Program) feature on and off. Some television programs are broadcast with a second audio track, such as a translation into another language, and this button allows you to access that audio.

Mode: This button has no effect on the HS 500, but enables you to switch the remote to another mode so that it operates another device without selecting it as the source. Each press of the Mode button changes the remote's mode in this order: TV, DISC, RADIO, AUX, D-IN, USB 1 and USB 2, and then back to TV again. The corresponding Source Selector will light to indicate the mode.

Presets/Picture Up/Down: When the tuner is the source, these buttons scroll through the preset stations. When the DVD player or USB is the source these buttons scroll through still images stored on a disc or USB device.

Disc Info: Press this button to display the Disc Information screen, which contains detailed information about the current disc.

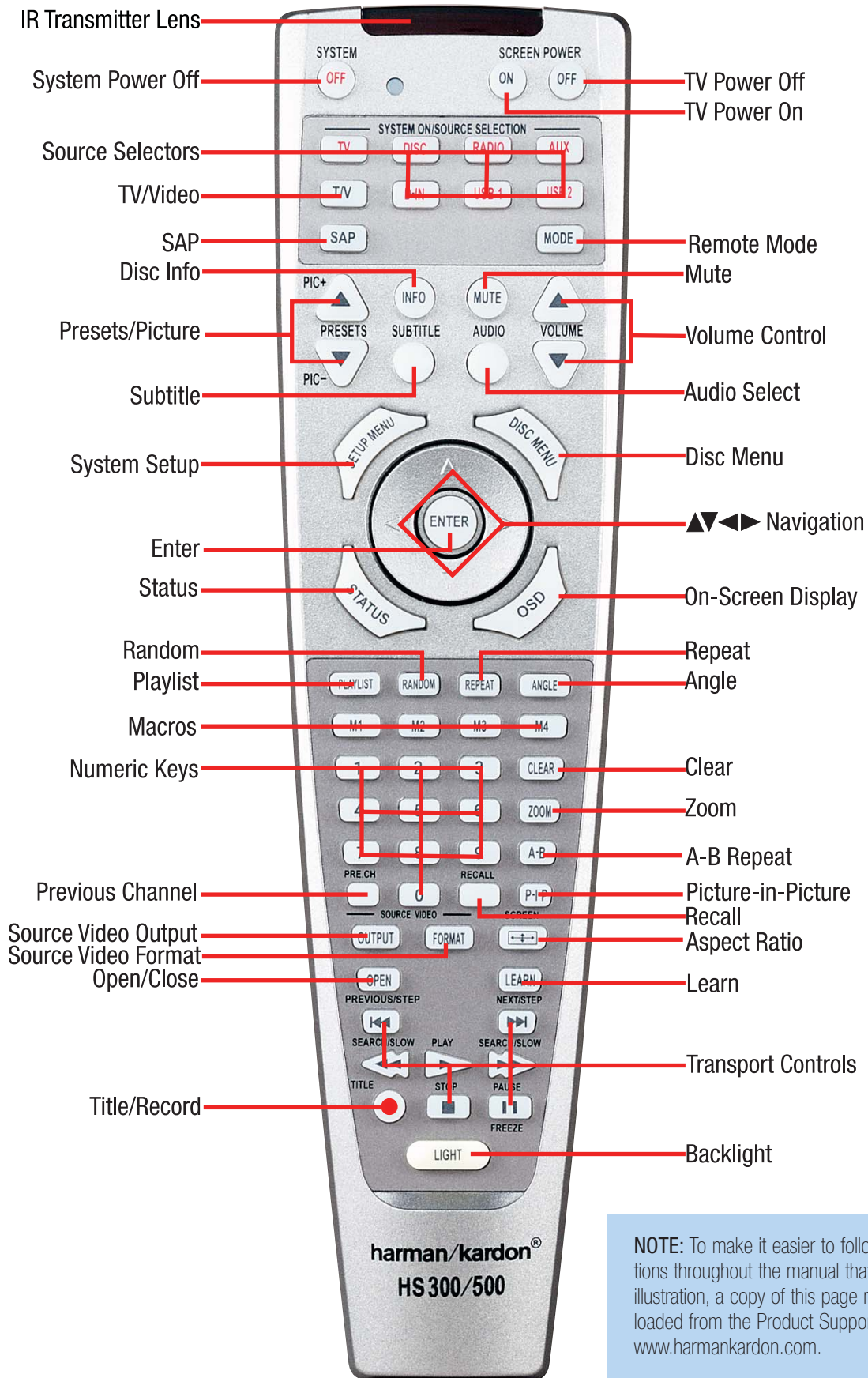
Mute Button: Press this button to mute the HS 500's speaker and headphones outputs temporarily. To end muting, press this button or adjust the volume. Muting also ends when the system is turned off.

Volume Controls: Press these buttons to raise or lower the volume, which will be shown in decibels (dB) in the Message Display.

Subtitle: Press this button while a DVD containing subtitle information is playing to turn subtitles off or select a subtitle language. This setting will only be in effect for the current disc.

NOTE: When you wish to make a recording, if you have programmed the recorder's control codes into the remote, you will need to simultaneously press both the Subtitle button and the Record button to transmit the Record control code.

REMOTE CONTROL FUNCTIONS



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REMOTE CONTROL FUNCTIONS

Audio: Press this button while a DVD is playing to display the current audio track information and to select another audio format.

Setup Menu: Press this button to access the System Setup menu. See the Initial Setup section for more information.

Disc Menu: Press this button while a DVD is playing to view the disc's menu.

Navigation and Enter Buttons: These buttons are used together to make selections within the on-screen menu system.

Status: When a DVD or VCD is playing, press this button to view the Status Bar, which contains playback mode information.

On-Screen Display (OSD): Press this button to activate the on-screen menu system.

Playlist: Each press of this button toggles between playback in the disc's original order and play of a previously programmed playlist. Press the Play Button to begin playback.

Random: This button turns on or off random play mode, which plays the tracks on a CD in random order.

Repeat: Press this button repeatedly to cycle through the repeat modes available with the current disc. Repeat may also be used with the tracks stored on a device connected to one of the USB ports. This button is not used to access A-B Repeat mode.

Angle: When a DVD encoded with multiple camera angles is playing and when the Angle Icon appears to indicate that the multiple-angle passage has been reached, press this button to cycle through the various available angles.

This button is also used to rotate still images. Each press rotates the image 90 degrees.

Macros: These buttons may be programmed to execute long command sequences with a single button press. They are useful for programming the command to turn on or off all of your components, or for accessing specialized functions for a different component than you are currently operating.

Numeric Keys: Use these buttons to enter radio station frequencies when using the tuner, or to select station presets. When a disc is playing, you may directly enter a track or chapter number to skip to that section of the disc.

Clear: Press this button to clear a radio station frequency or other number you have started to enter. This button may also be used to clear the on-screen displays. Press and hold this button for 5 seconds to reset the HS 500 to its factory-default settings.

Zoom: When viewing a DVD, VCD or JPEG still image, press this button repeatedly to enlarge the on-screen image by 2x, 3x, 4x or 5x (2x or 3x only for VCDs) before returning to the original size. While enlarged, use the Navigation buttons to explore the image.

A-B Repeat: While a disc is playing, the A-B Repeat function allows you to repeatedly play a passage, which may include several tracks or chapters. Press the button once to select the starting point ("A"), and a second time to select the end of the passage ("B"). Press the button again to end repeat play.

Pre. Ch: This button has no function with the HS 500. However, for many televisions pressing this button returns the TV to the previous channel.

Recall: This button has no function with the HS 500. However, for many televisions pressing this button displays the channel number, time or other information.

Picture-in-Picture: This button has no function with the HS 500. However, for many televisions pressing this button activates the picture-in-picture function for simultaneous viewing of two channels or inputs.

Source Video Output: This button selects the S-video, component video or HDMI output to be used when the internal disc player or a device connected to one of the USB ports is the source. Since the HS 500 cannot output S-video and component video simultaneously, the S-video or YUV (for component video) indicator will light in the front-panel display when that video output has been selected.

Source Video Format: This button selects the upscaled video output resolution (480i, 720p, 1080i) when the internal disc player or a device connected to one of the USB ports is the source. The 720p or 1080i indicator will light in the front-panel display to indicate the upscaled resolution.

Aspect Ratio: This button has no effect on the HS 500, but pressing it adjusts the aspect ratio on some video displays.

Open/Close: Press this button to open or close the disc drawer. If the HS 500 is in standby mode, pressing this button will turn it on.

Learn: The HS 500 remote is capable of "learning" individual IR codes from the original remote that came with your TV or a device that is connected to the Auxiliary or Digital Audio Inputs. See the Installation section for instructions for learning remote codes. There is also a quick reference for learning remote codes on the back of the remote.

Transport Controls: These buttons are used to operate the HS 500's internal disc player. Use the controls to skip forward or reverse by track or chapter; to fast-search forward or reverse; and to play, pause or stop the disc. After pressing the Pause button, the skip buttons may be used to step frame-by-frame through a video presentation, and the fast-search buttons may be used for slow-play.

Title/Record: When used with the internal disc player, this button allows you to select from the titles stored on the disc, which may include "making of" or other featurettes. If you have connected a recorder to the HS 500, this button may be used to make recordings when it is pressed simultaneously with the Subtitle button.

Backlight: Press this button to turn on the backlight to make it easier to see the buttons in a darkened room. The backlight will remain on for a few seconds after your last button press before going out, or you may turn off the backlight by pressing this button again.

INTRODUCTION TO HOME THEATER

The HS 500 may be the first multichannel surround sound component you've owned. This introductory section will help you to familiarize yourself with the basic concepts, which make setup and operation smoother.

If you are already familiar with home theater, you may skip this section and proceed to the Connections section on page 16.

Typical Home Theater System

A home theater typically includes your audio/video receiver, which controls the system; a DVD player; a source component (e.g., a cable box, a satellite dish receiver, an HDTV tuner or simply an antenna connected to the TV) for television broadcasts; a video display (TV); and loudspeakers.

The HS 500 offers a simpler solution by integrating the DVD player with the receiver, resulting in a sleek, streamlined component with just a few connections needed to enjoy a complete home theater experience.

All of these components are connected by various types of cables for audio and video signals.

Multichannel Audio

The benefit of a home theater system is that several loudspeakers are used in various locations around the room to produce "surround sound," immersing you in the musical or film presentation for increased realism.

The HS 500 may have up to five speakers connected to it (plus a subwoofer). Each speaker is powered by its own amplifier channel, and the subwoofer has its own amplifier on board.

- **Front Left and Right** – The main speakers are used the same way as in a two-channel system. However, you may notice that in many surround modes, these speakers are used more for ambient sound while the main action and dialogue are moved to the center speaker.
- **Center** – The center speaker is usually placed above or below the video screen, and is used mostly for dialogue in movies and television programs. This placement allows the dialogue to originate near the actors' faces, for a more natural sound.
- **Surround Left and Right** – The surround speakers are used to improve directionality of ambient sounds. In addition, by using more loudspeakers in the system, more dynamic soundtracks may be played without risk of overloading any one speaker.

Many people expect the surround speakers to play as loudly as the front speakers. Although all of the speakers in the system will be calibrated to sound equally loud at the listening position, most sound tracks use the surround speaker for ambient effects only, and they program their materials to steer very little sound to these speakers.

- **Subwoofer** – A subwoofer is a special-purpose speaker designed to play only the lowest frequencies (bass). It is used to augment the smaller, limited-range satellite speakers used for the other channels. In addition, many digital-format programs, such as movies recorded in Dolby Digital, contain a special low-frequency effects (LFE) channel that is directed only to the subwoofer. The LFE channel packs the punch of a rumbling train or airplane, or the power of an explosion, adding realism and excitement to your home theater.

Surround Modes

There are different theories as to the best way to present surround sound and to distribute soundtrack information among the various speakers. A variety of algorithms have been developed in an effort to accurately reproduce the way we hear sounds in the real world. The result is a rich variety of surround mode options. Some modes are selected automatically, depending on the signal being received from the source. In many cases, you may select a surround mode manually.

Several companies have taken surround sound in slightly different directions. It is helpful to group the numerous surround modes either by their brand name, or by using a generic name:

• Dolby Laboratories, Inc., Modes:

■ **Dolby Digital** – This mode is encoded in the program material either on a disc or within a television broadcast. It provides up to five separate main audio channels and a dedicated low-frequency effects (LFE) channel.

■ **Dolby Pro Logic II** – This mode is derived by an analog decoder built into the HS 500 that derives five full-range, discrete main audio channels from matrix surround-encoded or 2-channel analog sources. Select from Dolby Pro Logic II Movie, which is optimized for movies and television programs; Dolby Pro Logic II Music, which is optimized for music selections; or Dolby Pro Logic, the original version that steered a mono signal containing information below 7kHz to the surround channels.

- **DTS Mode** – DTS is a digital surround format that is encoded in the program material. It uses a different encoding and decoding method than Dolby Digital to provide up to 5 discrete main channels, plus an LFE channel. The HS 500 is capable of playing DTS materials when the Original setting is selected for the audio mode.
- **Stereo Mode** – Two-channel mode with no surround sound.

These surround modes may be selected on the HS 500 using the DVD Sound Mode setting found in the Audio Setup submenu (for the Disc Player), or the Audio Mode Setting within the on-screen menu for each source. For digital audio sources, such as the internal disc player or any source using one of the digital audio inputs, select Original to benefit from any digital surround modes encoded in the source materials.

Digital modes, such as Dolby Digital and DTS, are only available with specially encoded programs, such as DVDs and digital cable or satellite television. Other modes may be used with various digital and analog signals to create a different surround presentation, or to use a different number of speakers. Surround mode selection depends upon the number of speakers in your system, the materials you are watching or listening to, and your personal tastes. Feel free to experiment.

CONNECTIONS

There are different types of audio and video connections used to connect the HS 500 to the speakers and video display, and to connect any source devices to the HS 500. To make it easier to keep them all straight, the Consumer Electronics Association (CEA) has established a color-coding standard. Table 1 may be helpful to you as a reference while you set up your system.

Table 1 – Connection Color Guide

Audio Connections	
	Left Right
Front (FL/FR)	
Center (C)	
Surround (SL/SR)	
Subwoofer (SUB)	
Digital Audio Connections	
Coaxial	
Optical	Input
Video Connections	
Component	Y Pb Pr
Composite	
S-Video	
HDMI™ Connections	
HDMI	

Types of Connections

This section will briefly review different types of cables and connections that you may use to set up your system.

Speaker Connections

Speaker cables carry an amplified signal from the receiver's speaker terminals to each loudspeaker. Speaker cables generally contain two wire conductors, or leads, inside plastic insulation. The two conductors are usually differentiated in some way, by using different colors, or stripes, or even by adding a ridge to the insulation.

The differentiation is important because each speaker must be connected to the HS 500's speaker-output terminals using two wires, one positive (+) and one negative (-). This is called speaker polarity. It's important to maintain the proper polarity for all speakers in the system. If some speakers have their negative terminals connected to the HS 500's positive terminals, performance can suffer, especially for the low frequencies.

Always connect the positive terminal on the loudspeaker, which is colored red, to the positive terminal on the HS 500, which is colored as shown in the Connection Color Guide (Table 1). Similarly, always connect the black negative terminal on the speaker to the black negative terminal on the HS 500. The wires in the speaker system included with your HS 500 Home Theater System are color-coded with bands.

The HS 500 uses binding-post speaker terminals that can accept banana plugs or bare-wire cables, should you wish to upgrade your system in the future.

Banana plugs are simply plugged into the hole in the middle of the terminal cap. See Figure 1.

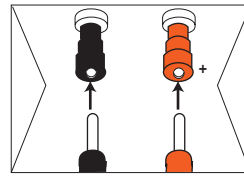


Figure 1 – Binding-Post Speaker Terminals With Banana Plugs

Bare wire cables are installed as follows (see Figure 2):

1. Unscrew the terminal cap until the pass-through hole in the collar is revealed.
2. Insert the bare end of the wire into the hole.
3. Screw the cap back into place until the wire is held snugly.

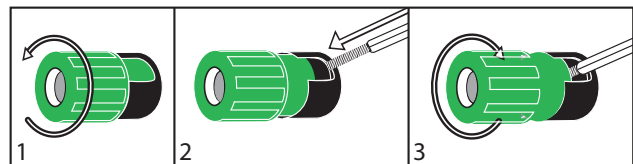


Figure 2 – Binding-Post Speaker Terminals With Bare Wires

Subwoofer

The subwoofer is a specialized type of loudspeaker that is usually connected in a different way. The subwoofer is used to play only the low frequencies (bass), which require much more power than the other speaker channels. In order to obtain the best results, the HS 500 includes a powered subwoofer that contains its own amplifier on board. A line-level (nonamplified) connection is made from the HS 500's Subwoofer Output to a corresponding jack on the subwoofer. See Figure 3.

Although the subwoofer output looks similar to the analog audio jacks used for the various components, it is filtered and only allows the low frequencies to pass. Don't connect this output to your other devices. Although doing so won't cause any harm, performance will suffer.



Figure 3 – Subwoofer

Connecting External Source Devices to the HS 500

The HS 500 is designed to process audio input signals. These signals originate in what are known as "source devices," including the internal DVD/CD player, a DVR (digital video recorder) or other recorder, a tape deck, a game console, a cable or satellite television box, a flash drive or an MP3 player. Although the tuner and disc player are built into the HS 500, they also count as sources, even though no external connections are needed, other than the FM and AM antennas.

In general, separate connections are required for the audio and video portions of the signal. The types of connections used depend upon what's available on the source device, and for video signals, the capabilities of your video display.

Audio Connections

There are two formats for audio connections: digital and analog. Digital audio signals are of higher quality, and are required for listening to sources encoded with digital surround modes, such as Dolby Digital and DTS. There are two types of digital audio connections commonly used: coaxial and optical. Either type of digital audio connection may be used for each source device, but never both simultaneously for the same source. However, it's okay to make both analog and digital audio connections at the same time to the same source.

The HS 500 allows you to connect different devices to each of the TV and Auxiliary analog audio inputs, and the coaxial or optical digital audio inputs.

Digital Audio

Coaxial digital audio jacks are usually color-coded in orange. Although they look similar to analog jacks, they should not be confused, and you should not connect coaxial digital audio outputs to analog inputs or vice versa. See Figure 4.



Figure 4 – Coaxial Digital Audio

Optical digital audio connectors are normally covered by a shutter to protect them from dust. The shutter opens as the cable is inserted. See Figure 5.

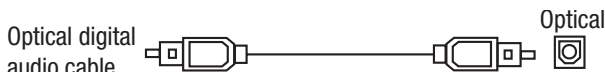


Figure 5 – Optical Digital Audio

Due to the nature of digital signals as binary bits, they aren't subject to signal degradation the way analog signals are. Therefore, the quality of coaxial and optical digital audio connections should be the same, although it is important to limit the length of the cable. Whichever type of connection you choose, Harman Kardon recommends that you always select the highest quality cables available within your budget.

Analog Audio

Analog connections require two cables, one for the left channel (white) and one for the right channel (red). See Figure 6. These two cables are often attached to each other for most of their length. Most sources that have digital audio jacks also have analog audio jacks, although some older types of sources, such as tape decks, have only analog jacks. For sources that are capable of both digital and analog audio, you may wish to make both connections. If you wish to record materials from DVDs or other copy-protected sources, you may only be able to do so using analog connections. Remember to comply with all laws regarding copy-right if you choose to make a copy for your own personal use.

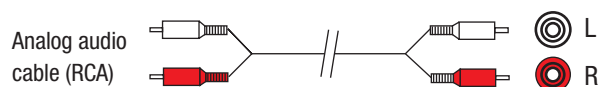


Figure 6 – Analog Audio

Video Connections

Although some sources produce an audio signal only (e.g., tape deck), many sources output both audio and video signals (e.g., cable television box, HDTV tuner, satellite box, VCR, DVR). You will need to connect one of the HS 500's video outputs to your video display.

Digital Video Connections

The HS 500 is equipped with an HDMI (High-Definition Multimedia Interface) output. HDMI is capable of carrying digital audio and video information using a single cable, delivering high-quality picture and sound.

There are different versions of HDMI, depending on the capability of the source device and the type of signal it is capable of transmitting via the HDMI connection.

The physical HDMI connection is simple. The connector is shaped for easy plug-in (see Figure 7). If your video display has a DVI input, you may use an HDMI-to-DVI adapter (not included) to connect it to the HDMI Output.

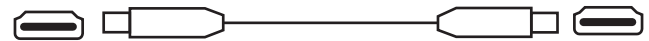


Figure 7 – HDMI Connection

Analog Video Connections

There are three types of analog video connections: composite video, S-video and component video.

Composite video is the basic connection most commonly available. The jack is usually color-coded yellow, and looks like an analog audio jack, although it is important never to confuse the two. Do not plug a composite video cable into an analog or coaxial digital audio jack, or vice versa. Both the chrominance (color) and luminance (intensity) components of the video signal are transmitted using a single cable. See Figure 8.

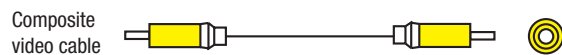


Figure 8 – Composite Video

S-video, or "separate" video, transmits the chrominance and luminance components using separate wires contained within a single cable. The plug on an S-video cable contains four metal pins, plus a plastic guide pin. Be careful to line up the plug correctly when you insert it into the jack on the receiver, source or video display. See Figure 9.

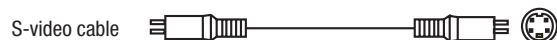


Figure 9 – S-Video

Component video separates the video signal into three components – one luminance ("Y") and two sub-sampled color signals ("Pb" and "Pr") – that are transmitted using three separate cables. The "Y" cable is color-coded green, the "Pb" cable is colored blue and the "Pr" cable is colored red. See Figure 10.

CONNECTIONS

Do not confuse component video connections with composite video (described above). Although the plugs and jacks may look similar, they are not compatible and cross-connecting them will result in no picture or a very distorted picture. Remember that component video uses three connections, colored green, blue and red, while composite video uses a single connection, which is often color-coded yellow.

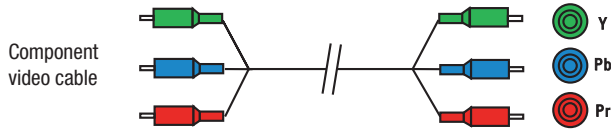


Figure 10 – Component Video

If it's available on your video display, HDMI is recommended as the best-quality connection, followed in preference by component video, S-video and then composite video.

Antennas

The HS 500 uses separate terminals for the included FM and AM antennas that provide proper reception for the tuner.

The FM antenna uses a 75-ohm F-connector. See Figure 11.

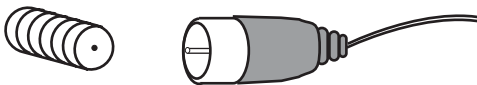


Figure 11 – FM Antenna

The AM loop antenna needs to be assembled. Then connect the two leads to the spring terminals on the receiver, being certain to connect the white wire to the terminal marked "AM", and the black wire to the terminal marked "GND." See Figure 12.

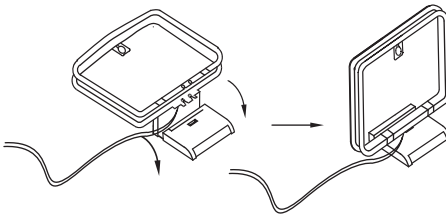


Figure 12 – AM Antenna

Remote IR Input and Output

The HS 500 is equipped with an infrared input and output to facilitate use of your system with a remote control in a variety of situations.

When the HS 500 is placed in such a way that aiming the remote at the front-panel IR sensor is difficult, such as inside a cabinet or facing away from the listener, you may connect an external IR receiver, such as the optional Harman Kardon HE 1000, to the Remote IR Input jack.

If any of your source devices are equipped with a compatible remote IR input, you may use a 1/8" mini-plug interconnect cable (not included) to connect the Remote IR Output to the source device's remote IR input, which will pass any applicable remote signals transmitted through the HS 500 to the source device. This enables you to control your sources even when the HS 500 itself is controlled via an external IR receiver.

To control more than one source device using the Remote IR Output, connect all sources in "daisy chain" fashion, with the HS 500's Remote IR Output connected to the first device's remote IR input, that device's remote IR output connected to the next device's remote IR input, and so forth.

NOTE: Not all remote controllable devices are equipped with compatible IR inputs and outputs. Check with the manufacturer of the source device for more information on the type of IR signal expected. The HS 500 will output a "stripped carrier" IR signal.

SPEAKER PLACEMENT

Before you begin to connect cables, it is important to set up your speakers in their correct locations in the room.

Optimally, the speakers should be placed in a circle with the listening position at its center. The distance from the listening position to the video display forms the radius of the circle. See Figure 13.

The speakers should be angled so that they directly face the listening position.

The center speaker is placed either on top of, below or on a shelf below the video display screen.

The front left and right speakers are placed along the circle, about 30 degrees from the center speaker and angled toward the listener.

It is best to place the front left/right and center speakers as close to the same height as possible, preferably at about the same height as the listener's ears. In any event the center speaker should be no more than two feet above or below the left/right speakers.

The side surround speakers should be placed 110 degrees from the center speaker, that is, slightly behind and angled toward the listener. If this isn't feasible, place the surround speakers behind the listener, with each surround speaker facing the opposite-side front speaker. The surround speakers may be placed a little higher than the listener's ears.

The subwoofer's location is less critical, since low-frequency sounds are omnidirectional. Placing the subwoofer close to a wall or in a corner will reinforce the low frequencies, and may create a "boomy" sound. You may wish to experiment over time by placing the subwoofer where the listener normally sits and then walking around the room until the low frequencies sound best. Place the subwoofer in that spot.

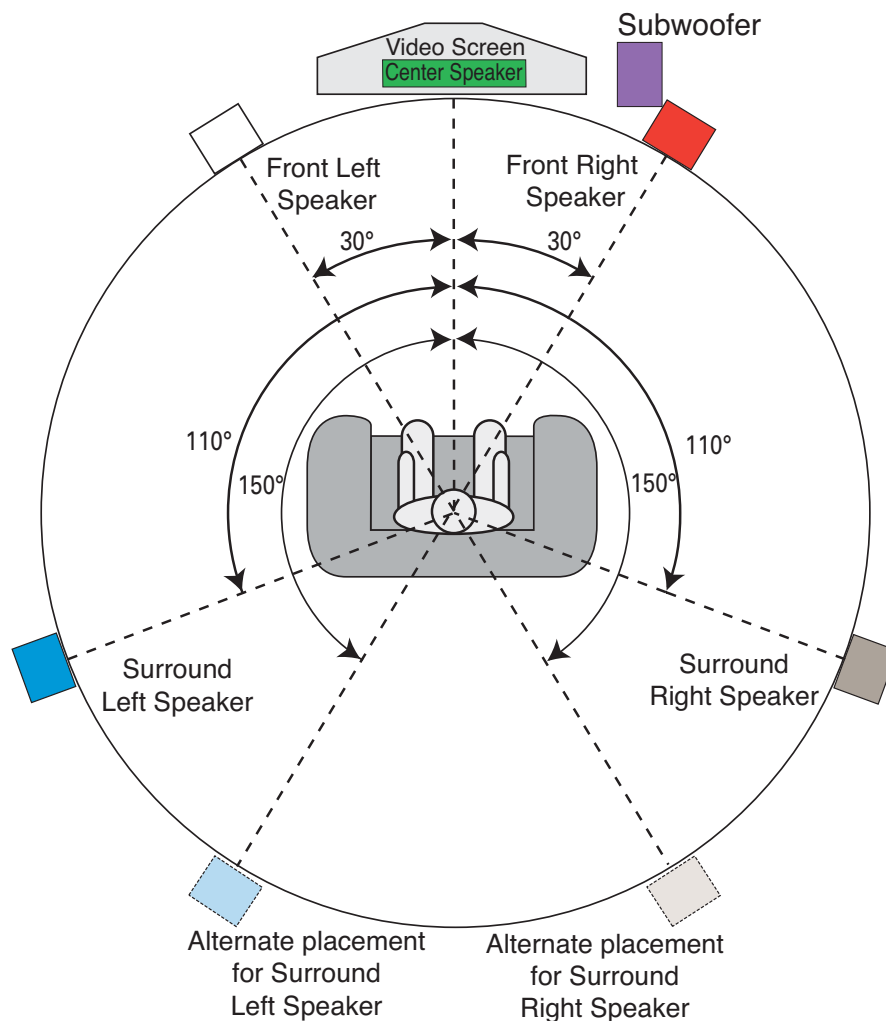


Figure 13 – Speaker Placement

INSTALLATION

You are now ready to connect the various components to the HS 500. Before beginning, make sure that all components, including the HS 500, are turned completely off and their power cords are unplugged. **Don't plug any of the power cords back in until you have finished making all of your connections.**

The HS 500 generates heat while it is playing. Select a location that leaves several inches of space on all sides. It is preferable to avoid completely enclosing it inside a cabinet. It is also preferable to stack components on separate shelves rather than directly on top of the HS 500. Some surface finishes are delicate. Try to select a location with a sturdy surface finish.

Step One – Connect the Speakers

If you have not yet done so, place your speakers in the listening room as described in the Speaker Placement section above.

Connect the center, front left, front right, surround left and surround right loudspeakers to the corresponding speaker terminals on the HS 500. Remember to maintain the proper polarity by always connecting the positive and negative terminals on each speaker to the positive and negative terminals on the receiver. Use the Connection Color Guide on page 16 as a reference. See Figure 14.

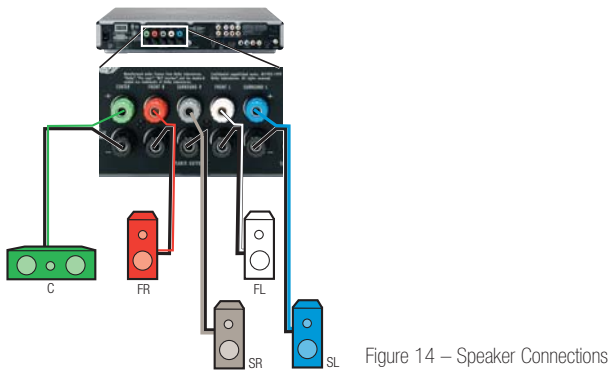


Figure 14 – Speaker Connections

Step Two – Connect the Subwoofer

Connect the Subwoofer Output on the HS 500 to the line-level input on your subwoofer. Use the 1/8-inch mini-plug cable packed with the speaker system to connect the Subwoofer Trigger on the HS 500 to the External Trigger Input on the subwoofer. See Figure 16. The trigger will automatically turn on the subwoofer when the HS 500 is turned on. Consult the owner's guide for the subwoofer for additional information.

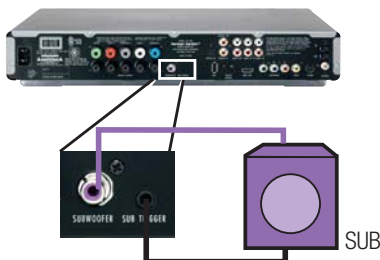


Figure 16 – Subwoofer Connection

Step Three – Connect the Antennas

Connect the FM and AM antennas to their terminals. Keep in mind that the AM terminals are polarized. Connect the white lead to the AM terminal and the black lead to the GND terminal.

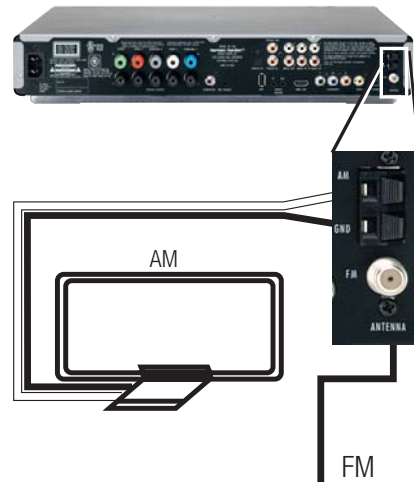


Figure 16 – Antenna Connections

Step Four (Optional) – Connect Any External Source Components

Although the HS 500 already contains an FM/AM tuner and DVD-Audio/Video player on board, you may have other components you would like to use with your home theater system. The HS 500 can accommodate up to two analog audio, two digital audio and two USB devices. You may connect different devices to the digital and analog audio inputs; they are treated as separate sources. You will notice that the HS 500 has no video inputs. Connect each source's video output directly to your television, but connect its audio output to the HS 500 to benefit from the multichannel surround sound. If you wish to make a recording from the disc player, you will only be able to make an analog recording of copy-protected materials, and you will need to connect the video inputs of your recorder to either the composite or S-video output of the HS 500.

When deciding which components to connect to each input, bear in mind that the remote may be programmed to control the device. By default, the Auxiliary input is preprogrammed to operate a VCR or DVR (TiVo), and the digital inputs (D-IN) are preprogrammed to operate a cable or satellite set-top box. Thus, you may want to connect your components accordingly. However, you may reassign the product types when you program the remote, and any compatible component with the correct audio outputs may be connected to any of the sources.

Use the worksheets in the Appendix to note which connections you will use for each of your source devices.

For each source, select a source input (TV, AUX, D-IN). In Table 2 we recommend connecting certain types of sources to certain source inputs to make it easier to program and use the remote control.

Decide which audio connections you will use. If your source has them, use *either* the coaxial digital or the optical digital audio connection.

Table 2 – Recommended Source Component Connections

Device Type	HS 500 Source Input	Audio Connections	Video Connections
VCR, DVR, PVR, TiVo® or other audio/video recorder	• AUX	• Analog inputs and outputs	<ul style="list-style-type: none"> • Connect recorder's video output directly to video display • For recording, use S-video or composite video output
	• D-IN	• Coaxial input and output	
CDR, MiniDisc, cassette	• AUX	• Analog inputs and outputs	Not required
	• D-IN	• Coaxial input and output	
TV, cable TV, satellite, HDTV or other device that delivers television programs	• TV	<ul style="list-style-type: none"> • Analog inputs or • Coaxial or Optical input 	Not required for television set; connect other device's video output directly to video display
	• D-IN	• Coaxial or Optical input	
Digital camera*, flash drive, hard disc drive or other USB device**	<ul style="list-style-type: none"> • USB 1 • USB 2 	<ul style="list-style-type: none"> • Side input at front of unit • Rear-panel input 	Included in single USB connection

* The HS 500 is only compatible with cameras that output files in the JPEG format.

** The HS 500 is only compatible with video files in the MPEG 2 and AVI formats. *Do not* connect a PC or other "host" USB device to the HS 500's USB ports.

Audio/Video Recorder

Select either the analog or digital audio connections for your recorder. Each connection is treated as a separate source by the HS 500.

If you are using analog audio, connect the analog audio outputs on your recorder to the AUX analog audio inputs on the HS 500, and the AUX analog audio outputs to the analog audio inputs on your recorder. See Figure 17.



Figure 17 – AUX Analog Audio Inputs and Outputs

If you are using the digital audio connections, you will need to use the D-IN coaxial input and output, as there is no optical audio output on the HS 500. See Figure 18.



Figure 18 – D-IN Coaxial Digital Audio Input and Output

When connecting a recorder, be careful to always connect one device's input to the other device's output.

If you would like to record video from the HS 500's internal disc player or a USB device, connect the recorder's S- or composite video input to either the S- or composite video output on the HS 500. When recording from the S-video output, select the S-video output in the Video Setup Menu, as component and S-video outputs are not available simultaneously. Connect *one* video output on the recorder directly to your video display or television.

TV, Cable, Satellite, HDTV

Select either the analog or coaxial or optical digital audio connection for your device. You may select either for the TV source.

If you are using analog audio, connect the analog audio outputs on your TV or set-top box to the TV analog audio inputs on the HS 500. See Figure 19.



Figure 19 – TV Analog Audio Inputs

If you are using digital audio, your TV or set-top box must have a compatible digital audio output, which should be connected to either the Coaxial or Optical Input on the HS 500. See Figure 20. The set-top box should be selected as the D-IN source.



Figure 20 – Coaxial and Optical Digital Audio Inputs

When you select TV as your source input, you may select between the analog audio (line) or either digital audio input.

If you are using a cable or satellite set-top box to receive television broadcasts, connect *one* of its video outputs directly to your video display.

INSTALLATION

Digital Camera, Flash Drive, Hard Disc Drive

The HS 500 is equipped with two independent USB ports for use with USB devices, but not "host" devices, such as your PC. Do not connect your PC to either of the HS 500's USB ports.

The USB 1 port is located on the right side of the HS 500, near the front panel. See Figure 21.



Figure 21 – USB 1 Port

The USB 2 port is located on the rear panel. See Figure 22.



Figure 22 – USB 2 Port

You may connect any USB device, such as a digital camera, flash drive or hard disc drive to either USB port. The HS 500 will automatically recognize any of the following types of files stored on the device: MP3 or WMA audio; MPEG 2 or uncompressed AVI video; JPEG still image. You may navigate the files using the HS 500's on-screen menu system, as explained in the Operation section.

NOTES:

- The HS 500 is not compatible with digital cameras that do not produce images in the JPEG file format.
- There is no special procedure for installing or removing USB devices; simply plug in or remove the device at any time.

Step Five – Connect Video Display

Only video connections should be made between the receiver and your video display (TV), unless your TV is the source for your television programming (see above).

Determine what types of video your display is capable of handling. Remember that HDMI is preferred, followed by component video S-video and then composite video.

Select the best type of video your display is capable of handling, and connect only one of the HS 500's video outputs to your display. See Figure 23.



Figure 23 – Video Outputs

Step Six – Plug In AC Power

Having made all of your wiring connections, it is now time to power up the HS 500. The HS 500 comes with a detachable power cord, which enables you to pre-install all wiring before final installation of the HS 500. Connect the female end of the power cord to the HS 500's

AC Input, and plug the other end of the cord into a working, unswitched AC outlet. See Figure 24. If you are using any external components with the HS 500 system, you may plug those into AC power at this time.



Figure 24 – AC Input for Power Cord

Step Seven – Insert Batteries in Remote

The HS 500 remote control uses three AAA batteries (included).

To remove the battery cover located on the back of the remote, firmly press the ridged depression and slide the cover towards the top of the remote.

Insert the batteries as shown in Figure 25, making sure to observe the correct polarity.

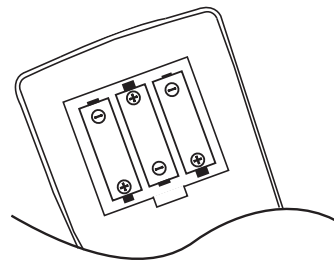


Figure 25 – Remote Battery Compartment

When using the remote, remember to point the lens toward the front panel of the HS 500. Make sure no objects, such as furniture, are blocking the remote's path to the receiver. Bright lights, fluorescent lights and plasma video displays may interfere with the remote's functioning. The remote has a range of about 20 feet, depending on the lighting conditions. It may be used at an angle of up to 30 degrees to either side of the HS 500.

If the remote seems to operate intermittently, or if pressing a button on the remote does not cause one of the source selectors to light up, then make sure the batteries have been inserted correctly, or replace all three batteries with fresh ones.

Step Eight – Program Sources Into the Remote

The HS 500 remote is capable of controlling not only the HS 500, but it may also be programmed to control many brands and models of VCRs, cable boxes, satellite receivers, cassette decks and TVs.

It may help to think of the remote as a book with pages. Each page represents the button functions for a different device. In order to access the functions for a particular device, you first need to turn to that page. This is done by pressing the Source Selector buttons to access the codes for the devices programmed into the remote. There is no "page" specifically set aside for the HS 500's system functions. Instead, the volume and audio controls are always active, and the functions for the internal disc player and tuner are active when those sources are selected.

INSTALLATION STEPS

At the factory, the codes to operate the HS 500 are preprogrammed. If you have other source devices in your system, follow these steps to program the correct codes into the remote.

- Using the codes in Tables A9–A13 of the Appendix, look up the product type (e.g., TV, cable TV box) and the brand name of your source. The number(s) listed are potential candidates for the correct code set for your particular device.
- Turn on your source device.
- By default, the AUX Source Selector is assigned device type VCR/Tivo, and the D-IN Source Selector is assigned device type CBL/SAT. However, you may reassign the device type of either Source Selector.

To program the device type for the AUX or D-IN Source Selector:

- Press and hold the Source Selector for at least three seconds until the Program Indicator LED flashes in green. The Source Selector button will also light up in red, and will then flash once, twice or three times to indicate the current device assignment (refer to Table 3).
- To change the device assignment, within five seconds hold down the Mode button on the remote while pressing the Numeric Key corresponding to the desired device type.
- Release and press the Source Selector button to record the entry.

Table 3 – Device Types for AUX and D-IN Source Selectors

Device Type	Indicated by Flashes	Numeric Key to Select
Tape	One	1
VCR/Tivo	Two	2
CBL/SAT	Three	3
Default (VCR/Tivo for AUX; CBL/SAT for D-IN)	Ten (or many fast flashes)	0

NOTE: The TV Source Selector is programmable, but its device type may not be changed. Since the Disc and Radio Source Selectors control the HS 500 itself, they are not programmable. USB devices are also controlled using the HS 500's menu system, and these Source Selectors are also not programmable.

- To program a particular product into the TV, AUX or D-IN Source Selector, press and hold the Source Selector and the Mute Button simultaneously until the Program Indicator flashes in amber, then release. See Figure 26.



Figure 26 – Source Selectors

- Enter a three-digit code from Step 1 above.
 - If the device turns off, then press the Source Selector again to accept the code, and it will flash. The remote will exit Program mode.
 - If the device does not turn off, try entering another code. If you run out of codes, you may search through all of the codes in the remote's library for that product type by pressing the ▲ or ▼ button repeatedly until the device turns off. When the device turns off, enter the code by pressing the Source Selector, which will flash. The remote then exits Program mode.

NOTE: When you have entered a valid three-digit product code, the Program Indicator LED will flash in green. However, if you enter an invalid product code, the Program Indicator LED will flash in red. You may then enter another code.

- Once you have accepted a code, it's a good idea to try using some other functions to control the device. Sometimes manufacturers use the same Power code for several different models, while other codes will vary. You may wish to repeat this process until you've programmed a satisfactory code set that operates most of the functions you frequently use. You will be able to program individual codes into the buttons on the HS 500 remote by "learning" them from the original component's remote as explained in Step 8 below.
- You may find out which code number you have programmed by pressing and holding the Source Selector and Mute Button simultaneously to enter Program mode. Then press the Enter Button, and the Program Indicator LED will flash in green in the code sequence. One flash represents "1", two blinks for "2", and so forth. A series of many fast flashes represents "0". Record the codes programmed for each device in Table 4.

Table 4 – Remote Control Codes

Source Input	Product Type	Remote Control Code
AUX		
D-IN		
TV	TV	

- After you have programmed a code set to operate a device, test the functions to see which ones may be missing or not operating correctly. You may "learn" individual key codes if you have the device's original remote control by following this procedure:

INSTALLATION

- a) Place the two remotes so that their IR transmitters face each other end to end, separated by about one inch. See Figure 27. The HS 500 remote's transmitter also serves as an IR receiver during the learning process.



Figure 27 – HS 500 and Original Remote Head-to-Head

- b) Place the HS 500 remote in Learning mode by simultaneously pressing and holding the Source Selector you wish to learn a code for and the Learn buttons until the Program Indicator flashes in amber, then release. See Figure 28.



Figure 28 – Learning Remote Commands

- c) Press and hold the button on the HS 500 remote you wish to program with the new code until the Program Indicator remains steadily lit in amber, then release it.
- d) Press and hold the button on the device's original remote whose code you wish to "learn" until the Program Indicator flashes in green, then release it.
- e) You may program additional buttons by repeating steps c) and d). To exit Learning mode, press the Learn button once. If you prefer, you may wait for the remote to "time out" and exit Learning mode on its own, but this will take about thirty seconds.

NOTE: The following buttons on the remote are not programmable, and are not subject to learning new codes: System Off, all of the Source Selectors, Mode, Subtitle, Audio, Status, Source Video Output, Source Video Format, Learn and Light. If you learn a code into a Macro key, you will not be able to program a Macro into that key, as the learned code will take priority.

If you are unable to locate a code set that correctly operates your source device, you may still connect the source to the HS 500 and operate it using the device's original remote control. Alternatively, you may wish to consider purchasing Harman Kardon's optional TC 30 activity-based remote, which is programmed by accessing a large database of product codes on the Internet. The TC 30 is also capable of "learning" codes from your device's original remote.

Most of the button labels on the remote describe the button's function when used to control the HS 500. However, the button may perform a very different function when used to control another device. Refer to the Remote Control Function List, Table A9 in the Appendix, for a list of each button's functions with the various product types.

If you wish, you may program Macros, which are preprogrammed code sequences that execute many code commands with a single button press. You may also program "punch-through" codes, which allow the remote to operate the volume, channel or transport controls of another device without having to switch the remote to the mode for that device. See pages 55 through 56 for instructions on these advanced programming functions.

If you make a mistake in programming your remote and you wish to completely reset it to its factory defaults, follow this procedure:

1. Simultaneously press any Source Selector and the "0" Numeric Key until the Program Indicator LED flashes in amber, and release.
2. Enter the numeric code "333".
3. The Program Indicator LED will light steadily in green, indicating that it is resetting the remote. Do not press any buttons while the LED is lit green. When it goes dark, the remote has been completely reset.

Step Nine – Turn On the HS 500

Plugging the HS 500 into AC power places it in Standby mode, which is indicated by the Power Indicator (surrounding the Standby/On Switch) turning amber.

There are several ways in which the HS 500 may be turned on from Standby mode.

- a) Press the Standby/On Switch on the top panel. See Figure 29.



Figure 29 – Standby/On Switch on Top Panel

- b) Press the Open/Close Button on the top panel. See Figure 30.



Figure 30 – Open/Close Button

INSTALLATION

Pressing the Open/Close Button will also select the Disc Player as the source input, and open the disc drawer.

- c) Using the remote, press any one of these buttons: TV, DISC, RADIO, D-IN, USB 1 or USB 2, the HS 500 will select that source. See Figure 31.

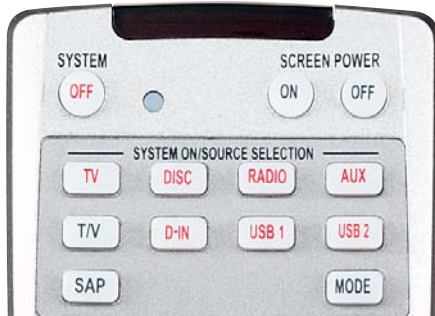


Figure 31 – Source Selectors

NOTE: Any time you press one of the Input Selectors on the remote (i.e., TV, DISC, RADIO, AUX, D-IN, USB 1 or USB 2), the remote will switch modes so that it will transmit the codes programmed to operate that device.

INITIAL SETUP

Before you begin enjoying your new home theater, a few adjustments should be made to configure the system.

Make sure that you have connected a video display to one of the video monitor outputs. When you turn on your display and the HS 500, you should see the HS 500's splash screen. The last-used source will be selected. If it was the Disc Player, the HS 500 will determine whether a disc is loaded and, if so, begin play. If not, the splash screen will remain. For other sources the corresponding screen will be displayed.

Using the On-Screen Menu System

The HS 500 uses two types of menu screens: Setup menus and Source menus.

Press the Setup Menu button on the remote to display the System Setup menu. See Figures 32 and 33.

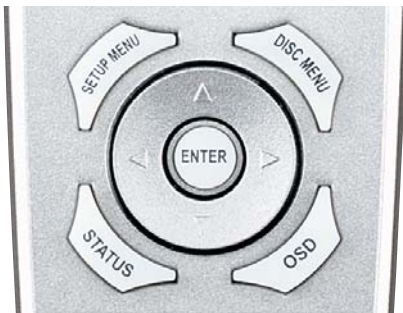


Figure 32 – Setup Menu Button

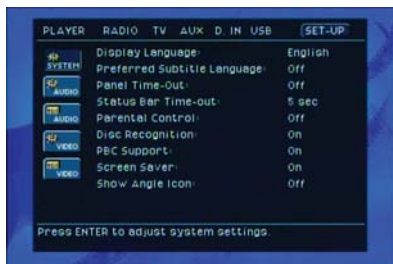


Figure 33 – System Setup Menu Screen

All of the HS 500's menu screens follow the same basic format.

The top line is the Main Menu line. The first six selections correspond to the source inputs. Selecting one of these menus also selects that source. The last item is the Setup menu that is used to configure the HS 500's system settings.

The HS 500 displays instructions at the bottom of the screen to guide you in making your selections. When adjusting a setting, available options will appear below the instructions line.

On the left side of the screen are navigation icons that may be used to access the submenus or display information. Use the Navigation buttons on the remote to highlight an icon, and press the Enter button to select or deselect it. When the icon is selected, it will look like a button that has been pressed in. When it is deselected, it looks like a button in the out position.

Most of the screen contains the various configuration settings, with the current setting displayed to the right. Use the Navigation buttons to highlight a setting. See Figure 34.



Figure 34 – Selecting a Setting

Press the Enter Button to make changes to the setting. The screen's appearance will change to alert you that you are affecting the system configuration. The selected setting line will remain fully lit, and the setting itself will change from a button to plain text with arrows on both sides. The remaining setting lines on the screen will dim. On the options line at the bottom of the screen, the current setting will be highlighted as a button. Use the ◀▶ buttons to scroll through the options list. As various options are highlighted at the bottom of the screen, the new setting will appear on the setting line. See Figure 35.



Figure 35 – Choosing a New Option for a Setting

Press the Enter Button when the desired setting is highlighted, and use the ▲/▼ buttons to select another setting line.

When you have made all desired adjustments to the current submenu, use the Navigation buttons to highlight the icon for the next submenu, and press the Enter Button to switch to that submenu.

When you have finished adjusting all settings, press the OSD button (but not the Setup Menu button) to clear the menu from the display. See Figure 32.

Step One – System Setup

In this step you will configure some basic system settings using the System Setup submenu. Press the Setup Menu button and the Enter button as explained above to access the settings in this submenu. Your screen should look similar to the one shown in Figure 33.

DISPLAY LANGUAGE: This setting selects the language that will be used for the HS 500's OSD menus and other system messages. The default is English, but you may select French, Spanish, German or Italian.

PREFERRED SUBTITLE LANGUAGE: This setting selects the language used for the display of subtitles. The default setting is OFF, to play discs without subtitles. To set the player so that subtitles will always play in a specific language when they are available, select from the choices shown.

If you do not find your preferred language in the options list, you may select a preferred language by first pressing the ◀▶ Buttons so that UNKNOWN or OTHER is highlighted in the options list. Press the Enter Button, and you will be prompted to enter a four-digit language code. See Figure 34. Select the code for the desired language from the list in Table A14 in the Appendix, and use the Numeric Keys to enter the code, then press the Enter Button.

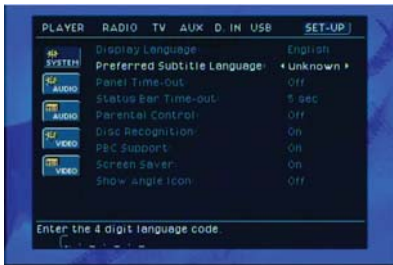


Figure 36 – Entering a Code for a Subtitle Language

This procedure selects a preferred subtitle language, but it will only be available when the disc being played contains that language. The list of subtitles available on any given disc is always shown on the disc jacket, usually at the bottom of the back cover. The subtitles may also be switched on or off, or a new language selected during playback using the Subtitle Button.

If you have selected a subtitle language and subtitles do not appear on screen, press the Subtitle Button to display the Subtitle banner. Press the Enter button to display the subtitle language options available on the disc. Use the ◀▶ Buttons to select the desired option, and press the Enter button. Then use the ◀▶ buttons to navigate to the Done button, and press Enter to clear the banner from the screen.

If subtitles still do not appear, press the Disc Menu Button to make sure that subtitling has been selected in the disc's menu system. See Figure 32.

NOTE: Due to the variations in how DVD discs are authored, the subtitle languages displayed by the HS 500 may not accurately reflect the actual languages available on the disc. It is recommended that subtitles be selected using the disc's menu.

PANEL TIME-OUT: This setting allows you to select the length of time the Front-Panel Display remains lit during disc playback (as some people find the front-panel display distracting while a movie is playing). You may program the HS 500 to refresh the front-panel display only when a button is pressed on the remote or front panel, and to turn the display off again after either five or 20 seconds. When the display is off, the blue Power Indicator will remain lit to remind you that the unit is turned on. When the Panel Time-Out setting is set to "Off," the display remains lit at all times.

STATUS BAR TIME-OUT: This setting selects the timeout interval for the on-screen Status Bar that appears at the top of your video screen when the Status Button is pressed while a disc is playing. During DVD playback, the status bar shows the current title and chapter, playback mode, the elapsed or remaining time in the current chapter or title, a setting to adjust the time display, and a temperature bar for the time display.

You may program the status bar to remain on screen for either five or 20 seconds after the Status Button is pressed. When OFF is selected, the timeout is disabled, and the status bar will remain on the screen until the Status Button or Clear Button is pressed. We strongly recommend programming the Status Bar to disappear on its own to avoid burning its image into a plasma or CRT display.

PARENTAL CONTROL: The HS 500's password system allows you to restrict viewing of certain materials that may not be suitable for younger members of the household by requiring the viewer to enter a password to view those materials. The system is based on rating information encoded in some DVDs that classifies materials into eight levels, roughly corresponding to the Motion Picture Association of America (MPAA) voluntary ratings system:

- Level 1G:** Corresponds to the MPAA's "G" (General Audiences) rating, and is considered suitable for all viewers.
- Level 2:** Intermediate level between the "PG" and "G" ratings.
- Level 3PG:** Corresponds to the MPAA's "PG" (Parental Guidance) rating.
- Level 4PG13:** Corresponds to the MPAA's "PG-13" (Parental Guidance and 13 years old) rating.
- Level 5:** Intermediate level between the "R" and "PG-13" ratings.
- Level 6PG-R:** Corresponds to the MPAA's "R" (Restricted) rating.
- Level 7NC17:** Corresponds to the MPAA's "NC-17" (17 years and older) rating.
- Level 8Adult:** All DVDs, including adult materials, can be played.
- Off:** Any DVD may be viewed without entering the password.

The HS 500 is shipped from the factory with the parental control system unlocked (no password is required to view any DVD), and with the password set to the four-digit code "8888." To activate the system, highlight the Parental Control Setting on the SYSTEM SETUP submenu, and press the Enter Button. You will be prompted to enter the four-digit password. See Figure 37.

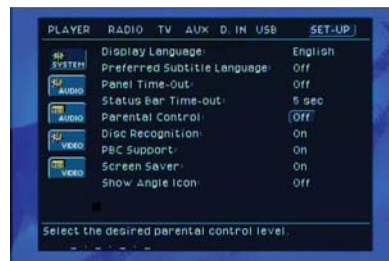


Figure 37 – Parental Control

INITIAL SETUP

If you have entered the password correctly, the ratings levels will be displayed on the options line. See Figure 38.

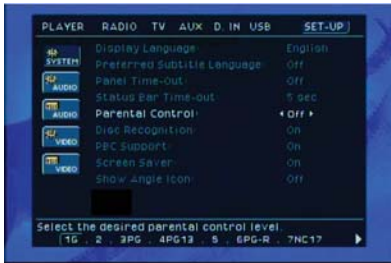


Figure 38 – Parental Control Ratings

Scroll to the left or right to select a rating, or to display additional options, including Off and New Password. See Figure 39.

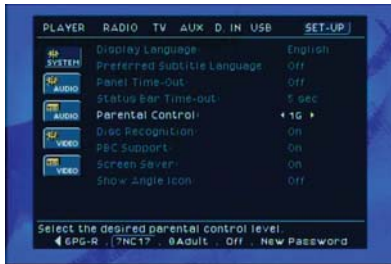


Figure 39 – Additional Parental Control Ratings

The first time you use the HS 500, it is recommended that you scroll to the New Password setting and press the Enter Button to enter a new password. Use the Numeric Keys to enter your new password once at the New Password prompt, and a second time at the Confirm Password prompt. See Figures 40 and 41. The HS 500 will return to the screen shown in Figure 38, and you may then change the Ratings Setting. Once you press the Enter Button and return to the **SYSTEM SETUP** submenu, the new password will take effect.

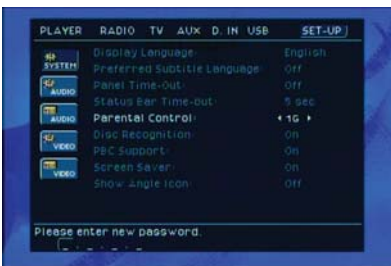


Figure 40 – Enter New Password

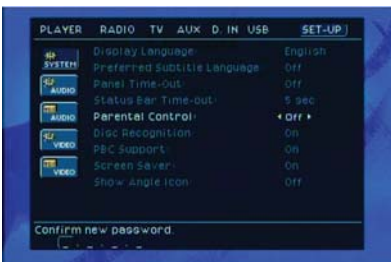


Figure 41 – Confirm New Password

DISC RECOGNITION: The setting for the Disc Recognition feature, when turned on, allows you to stop a DVD-Video disc, remove it from the player, play another disc, and then resume playback of the original disc at a later time from the point at which you paused. When a previously played disc is reinserted in the HS 500, you will be presented with an on-screen status message asking whether you wish to start playback from the beginning of the disc or resume at the point where you left off. Even when the setting is activated, you must press the Stop Button either once (Resume mode) or twice (Stop mode), but not the Pause Button. The unit may be turned off between discs. The HS 500 can store the information for up to 100 DVDs at a time.

PBC SUPPORT: This setting controls the activation of PBC (Play Back Control) Support for VCD discs. If you plan to play VCD discs, which are a CD-ROM-based format that predates DVD, we recommend that the setting be turned ON. However, with PBC enabled, the Repeat Track, Repeat Disc and Random functions may not be available for VCDs.

NOTE: The PBC indicator will light in the front-panel display any time a VCD encoded with playback control is loaded, regardless of whether the PBC Support setting has been activated.

SCREEN SAVER: The HS 500 offers a Screen Saver option to protect your TV or video display from damage that may occur if the player is left turned on with the same still image for a period of time, as there is a possibility that the image may be “burned” into some display devices. This is particularly important for plasma displays and some CRT devices. Set Screen Saver to ON so that the HS 500 will run the screen saver when no action has been detected for two minutes. Press a desired command key on the front panel or remote to “wake” the HS 500 and resume normal operation.

IMPORTANT NOTE: If the screen cursor is left either on the Main title line (without selecting a source or the Setup menus) or on one of the navigation icons on the left side of the screen, the screen saver will not be activated. Moreover, some discs, such as DVD-Audio discs and JPEG discs, can leave a still image displayed indefinitely. Use caution in both of these situations to avoid causing burn-in on your video display.

SHOW ANGLE ICON: Some DVDs are programmed with multiple-angle capability, allowing you to view the same scene from a different camera angle. Normally, the angle icon will be displayed on screen at the beginning of those sections of the disc to inform you that you may press the Angle Button to change to a different view. The front-panel Angle indicator will remain lit for the duration of the sequence containing multiple camera angles. If you find the appearance of the icon on-screen distracting, select the Show Angle Icon setting in the System submenu, and set it to OFF.

NOTE: When the on-screen angle icon is disabled, the front-panel Angle indicator will also be disabled.

Step Two – Audio Setup

In this step you may make adjustments to the audio settings using the Audio Setup submenu.

Use the ◀▶ Buttons to move the cursor to the submenu icons on the left side of the screen, and then use the ▲/▼ buttons to highlight the Audio Setup icon, which has a picture of a gear on it. See Figure 42. Press the Enter Button, and then use the Navigation Buttons to move the cursor to the settings on the Audio Setup submenu.



Figure 42 – Audio Setup Submenu

PREFERRED AUDIO LANGUAGE: This setting is used to select the default language that will be used for program playback. The factory default setting is English, but you may choose French, Spanish, German or Italian by making a selection from the options list as explained in the Using the On-Screen Menus section. To select a language other than those shown, select UNKNOWN (or OTHER) from the options list and press the Enter Button. You will be prompted to enter a four-digit language code. Look up the code for the desired language in the Language Code List, Table A14 in the Appendix.

This procedure selects a preferred audio program language, but it will only be available when the disc being played contains that language. The list of languages available on any given disc is always shown on the disc jacket, usually at the bottom of the back cover. The audio playback language may also be changed during playback using the Audio Select Button, but any changes made will only be effective during playback of that disc.

NOTE: The Audio Select Button is also used to change the disc's audio output format, e.g., Dolby Digital 5.1 versus Dolby Digital 2.0.

DYNAMIC RANGE: This setting allows you to take advantage of the Night-mode encoding present on some Dolby Digital recordings to reduce the volume of louder passages while maintaining intelligibility of quieter passages. This allows you to listen to programs at a level that allows the full impact of a soundtrack to be heard at a volume that is lower than you might otherwise use to avoid disturbing others. The HS 500 accomplishes this by compressing the audio to a greater or lesser degree, depending on which setting you choose. Three options are available:

- **MAXIMUM** does not make any changes to the original playback, and should be used when the volume setting in the listening room may be as loud as you desire.

- **MEDIUM** applies a moderate amount of compression so that louder passages are a little bit quieter.
- **MINIMUM** applies more compression so that louder passages are much softer.

Feel free to experiment with the settings at any time.

DELAY UNIT: This setting selects the unit of distance used for calculating delay times when the AUDIO ADJUSTMENTS submenu is activated. The default unit is feet, but you may select meters.

TONE CONTROL: This setting determines whether the Tone Controls are activated. When OFF is selected, the audio output is run “flat” with no tone cut or boost. When ON is selected, the tone control settings made in the next two adjustments are applied.

BASS LEVEL: When the Tone Control setting (above) is ON, you may boost or cut the amount of bass (low frequency) by up to ± 6 dB.

TREBLE LEVEL: When the Tone Control setting (above) is ON, you may boost or cut the amount of treble (high frequency) by up to ± 6 dB.

DVD SOUND MODE: This setting selects the surround mode that will be used when a DVD is playing. (To set the surround mode option for another input, such as “TV,” “Digital In,” “AUX” or the tuner, go to the specific menu for that input.) The factory default is ORIGINAL, which will play back DVDs in the format output from the disc, such as Dolby Digital or DTS. When only two-channel audio is available on the disc, such as for a CD, you may select Stereo (no surround sound), or one of the Dolby Pro Logic II modes (Movie, Music or original Dolby Pro Logic).

Step Three – Configure Speakers

Although the HS 500 is custom-designed to be used specifically with the loudspeakers that are included in your system, a few adjustments need to be made to insure optimum performance in your particular listening room.

You will need to measure the distance from each of the five main speakers to the listening position. If you use the metric system, return to the Audio Setup submenu and change the Delay Unit setting from its default of FEET to METER.

You may find it convenient to record the measurements in Table A3 in the Appendix before entering them into the HS 500.

NOTE: The HS 500 is designed to accommodate speaker placements of up to 15 feet from the listening position. If you have placed your speakers further from the listening position, move them closer.

Before you begin to make the audio adjustments, select test program material, either a test DVD you have purchased, or a movie or music selection you are familiar with. For best results, you may wish to also purchase a sound-pressure level (SPL) meter to assist you in setting the output levels correctly. If you use an SPL meter, set it to the C-Weighting, Slow scale, and adjust the HS 500 volume control until the meter measures 75dB. If you don't have an SPL meter, you may set the output levels “by ear”.

INITIAL SETUP

Use the ◀▶ Buttons to move the cursor to the submenu icons on the left side of the screen, and then use the ▲/▼ buttons to highlight the Audio Adjustments icon, which has a picture of a set of slide switches on it. See Figure 43. Press the Enter Button, and then use the Navigation Buttons to move the cursor to the settings on the Audio Adjustments submenu.

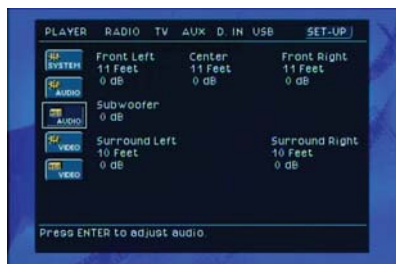


Figure 43 – Audio Adjustments Submenu

DELAY SETTINGS: The delay settings indicate the distance from each speaker to the listening position. Although ideally you placed all of your speakers in a circle equidistant from the listening position, we recognize that it isn't always practical to do so. This setting enables the HS 500 to delay the signal from some speakers by up to 16 mS to compensate.

You will notice that the delay settings are set in tandem for the front left and right speaker pair, and for the surround left and right speaker pair. Changing the settings for either speaker in these pairs also affects that setting for the other speaker in that pair. For this reason, it is important to place both speakers in each pair at about the same distance from the listening position.

Use the Navigation buttons to highlight the distance for each speaker, and press the Enter button to change it. Use the ◀▶ Buttons to scroll through the available settings.

NOTE: There is no delay setting for the subwoofer. Low-frequency sound waves by their nature are not noticeably affected by the distances in a typical listening room.

OUTPUT LEVEL SETTINGS: Output level adjustment is a key part of the configuration process for any surround sound system. The goal is to set the output levels so that all channels sound equally loud at the listening position. This is important because movie directors adjust the loudness of each channel in the recording to produce a desired sound presentation. Usually the director reduces the loudness, or even the presence, of information in the surround channels so as not to distract the viewer from the main action taking place on screen. If the test tones on your test disc sound as loud in the rear speakers as they do coming from the other speakers, the HS 500 is performing correctly.

In many cases the factory default setting of 0dB should accomplish that. However, in some cases the specifics of your listening room may require some adjustments.

To adjust the output levels, first insert a disc with test tones or content you are familiar with, and that has a reasonably even level without many dynamic changes.

If you are using an SPL meter with a disc containing test tones, adjust the level of each channel so that the meter reads 75dB. If you don't have a meter or a test disc, adjust the levels until all channels sound equally loud. Make sure not to use a surround sound-encoded disc for this process, or the surround channels will be set too high.

Use the Navigation Buttons to highlight the level setting for the front left channel. Press the Enter Button to display the available settings, which range from -6 dB to +6dB, and use the ◀▶ Buttons to scroll through them until you are satisfied with the level setting for that channel. Press the Enter button to select the setting, and use the Navigation Buttons to select the next channel. Repeat the procedure to enter the output level offset, if needed, that brings all of the channels to the same output volume. You may need to repeat this procedure more than once to accurately set the levels.

Step Four – Video Setup

In this step you will make a few adjustments to ensure that the video signal is output in a way that is compatible with your video display.

Use the ◀▶ Buttons to move the cursor to the submenu icons on the left side of the screen, and then use the ▲/▼ buttons to highlight the Video Setup icon that has a picture of a gear on it. See Figure 44. Press the Enter Button, and then use the Navigation Buttons to move the cursor to the settings on the Video Setup submenu.



Figure 44 – Video Setup Submenu

ASPECT RATIO: This setting selects the aspect ratio of video programming. Your choice should be made according to the shape of your video display and your personal preferences. Three choices are available:

- **16:9:** If you have a widescreen (16:9) display, or a display that has a widescreen mode, choose this setting. The HS 500 will adjust the output for widescreen movies so that they fill the entire screen in the proper aspect ratio. However, a disc recorded in the 4:3 aspect ratio will appear as a boxed image in the center, with black or gray bars on the left and right side of the screen. If the widescreen option is chosen and a widescreen movie is played on a conventional 4:3 aspect ratio set, the image will be distorted due to vertical compression.
- **4:3 Letterbox:** If you have a standard, 4:3 aspect ratio video display, choose this setting to see the entire frame of the movie as it is recorded on the disc without any image cutoff at the left and right sides. While this allows widescreen movies to be shown in their entirety, they will occupy a smaller portion of the screen and black "letterbox" bars may appear at the top and bottom of the screen.

- **4:3 PanScan:** If you have a standard, 4:3 aspect ratio video display and prefer to view widescreen movies without the black bars at the top and bottom of the screen, choose this option. However, since most DVDs do not contain special “pan/scan” coding that keeps the action in the frame, you may find that while the image will fill the screen, the vertical spread will cause it to be cropped at the left and right side.

SCAN TYPE: This setting allows you to select between progressive and interlaced scanning for the Component Video Outputs to maximize the image resolution for the type of video display in use. The output at the S-video and Composite Video Outputs will always be standard-rate video that is compatible with any television set or video display.

Two choices are available:

- **Progressive:** Select this option if you have a video display that is compatible with input sources of 480p or greater. Displays labeled as “HDTV Ready,” including virtually all large-screen LCD and plasma displays, are compatible with progressive scan.
- **Interlaced:** Select this option when you are using an older video display that has Y/Pr/Pb component inputs, but which is not capable of displaying high scan rate, or “HD,” signals.

NOTE: Changing the Scan Type setting from Interlaced to Progressive will automatically change the Video Output setting from S-video to Component.

VIDEO OUTPUT: The HS 500 is not designed to output both S-video and component video signals simultaneously, and this setting selects between them. If you have connected the HS 500’s component video outputs to your video display and are not seeing a picture, this setting may be the problem. In that case, you may adjust this setting without viewing the on-screen menu by pressing the Source Video Output button on the remote repeatedly.

VIDEO MODE: This setting only affects the HDMI and Component Video Outputs, and it controls how the video signals are optimized for progressive-scan display.

In most cases, the “automatic” mode is your best choice, as it senses whether the disc being played was originally recorded on video or shot on film. However, in some cases you may wish to compensate for errors in the disc authoring that occur when the frame rate is not properly maintained when films are converted to video. Three choices are available:

- **Auto:** This is the recommended setting, as it lets the HS 500 analyze the signals from the DVD and adjust the output accordingly.
- **Movie:** Choose this option for optimal playback of material that was shot on film, even though you are viewing it on video via a DVD.
- **Video:** Choose this option for optimal playback of material that was shot directly to video, such as concerts and sports programming.

VIDEO RESOLUTION: This setting displays the characteristics of the video output signal. When the HS 500 is connected to a video display

using the HDMI Output, the display sends information to the HS 500 that indicates the highest video resolution it is capable of handling, and the HS 500 automatically sets the video output to match it. That resolution is displayed here, and may also be indicated by the corresponding indicator in the front-panel display. You may use this setting to manually select a lower video output resolution. Changes made here remain active until the HS 500 or the display is turned off. When either is turned off, and then on again, the HS 500 will revert to the default setting transmitted by the display. Make sure your video display is capable of handling the HS 500’s HDMI output signal.

This setting also may be used to adjust the resolution of the component video output signal. If you wish to increase the resolution to 480p or better, make sure your video display device is capable of properly displaying the signal.

Do not attempt to change this setting from 480i to the progressive or high-definition settings (480p, 720p or 1080i) when the Composite or S-video Output is in use.

You may also access this setting by repeatedly pressing the Source Video Format button on the remote.

Step Five – Video Adjustments

In this step you may adjust five key parameters of the video signal to compensate for differences between HS 500 and other video sources. You may use either the HS 500’s built-in color bar test signal or a test disc as the standard for the adjustments. To ensure that your system is properly optimized, we strongly recommend that you adjust your video display using the display’s own controls before making any changes to the HS 500’s output. Once the display is properly calibrated with all settings on the HS 500 set to their midpoint, use the controls on this menu to fine tune the HS 500’s output.

Due to the nature of these settings, the navigation is somewhat different from the HS 500’s other menus and controls. The menu itself is called up in the same way as the other menus. Use the ◀▶ Buttons to move the cursor to the submenu icons on the left side of the screen, and then use the ▲/▼ buttons to highlight the Video Adjustments icon that has a picture of a set of slide switches on it. Press the Enter Button, and the video adjustments will appear as a banner at the top of the screen. See Figure 45.



Figure 45 – Video Adjustments Banner

INITIAL SETUP

To change any of the video adjustments shown at the top of the screen, use the Navigation Buttons to highlight the “+” to the right of a parameter name to increase the setting, or “-” to the left of a parameter name to decrease the setting. Then press the Enter Button to change the value as shown by the number of lines to the left or right of the center line in the temperature bar for the parameter.

When only the dark center line is shown with no blue lines, the setting is at the default midpoint value.

When adjusting the Black Level setting, only two adjustments are available:

“0 to 100” provides a full black level setting, which is indicated by the bar at the midpoint

“7.5 to 100” or “full,” which complies with standards for video with “setup”

Changes to any of the settings may be made with a test disc or broadcast signal playing, or you may use the internal test screen by using the Navigation Buttons to highlight the word OFF next to the TEST SCREEN line. Press the Enter Button and the setting will change to ON. A special combination test screen, including both color bars and gray scale along with 100% black and white fields, will be displayed. See Figure 46. To recall the video controls, press the OSD Button. Navigate the settings to make any necessary changes.

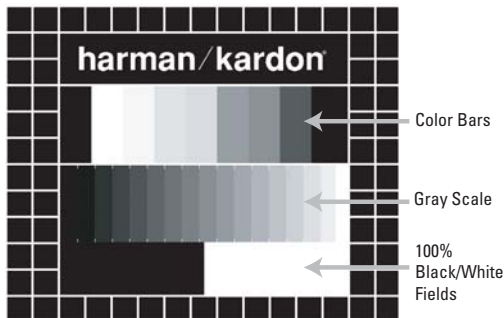


Figure 46 – Video Test Screen

With the test screen showing on your video display, the following adjustments may be made:

- The proper color intensity setting on your TV.
- Proper color adjustments using the color bars, which should be (left to right) black, white, yellow, cyan (turquoise), green, magenta, red, blue, black.
- The proper color transition, seen as sharp separation of the bars.
- The performance of the color circuits in your TV (with “Video” signals); bar edges should show no vertical crawling dots.

With the gray scale and the black/white fields below the color bars, the brightness and contrast of your screen can be adjusted.

Brightness Adjustment

1. Turn down the color control on your TV until the color bars are visible in black and white.

2. Adjust the contrast to the lowest level where you still can see all bars within the gray scale in the test picture separately and clearly.
3. Adjust the brightness so that the bars in the gray scale are all visible. The bar farthest to the left has to be as black as possible rather than gray but the next gradation must clearly be distinct from it. All the bars in the gray scale should be gradually and evenly changing from black to white, left to right.

Contrast Adjustment

1. Adjust the contrast on your TV until you see a bright white bar in the lower right corner of the screen and a deep-dark-black bar to the left. The optimal contrast setting will depend on your preference and the surrounding light in the TV room.
2. If the brightness of the white bar no longer increases when the contrast is turned up or the borders of the white “harman/kardon” letters on top bloom (overlight) into the black areas (drastically decreasing the sharpness of the type), the contrast has been turned up too much. Reduce the contrast until these effects disappear and the video still looks realistic.
3. If you are watching TV with customary surrounding daylight, adjust the contrast so that a normal video picture has about the same look as the surroundings in your room. That way the eye is relaxed when watching the TV picture. This contrast setting may be reduced when the surrounding light is dimmed, thereby usually improving the sharpness of a video significantly.
4. The gray scale in the middle line needs to have the same clear difference between each bar as before the contrast adjustment. If not, go back to “Brightness Adjustment” and repeat Step 3 and then “Contrast Adjustment,” making only minor adjustments each time for optimization.

Color and Tint Adjustment

1. When the brightness and contrast are set optimally, adjust the color control to the level of your preference. Set the level where the colors look strong but still natural, not overdone. If the color level is too high, depending on the TV, some of the bars will seem wider or the color intensity will not increase while the control is turned up. Then the color control must be reduced again. Ultimately, you also should test the color intensity with a video – e.g., pictures of natural faces, flowers, fruit and vegetables, and other common natural articles for an optimal setting of the color intensity.
2. Use the large white bar below the gray scale to tweak the warmth of the picture. Every viewer has a preference as to how the glow of the picture should be. Some prefer a little colder picture, some a warmer glow. The Tint function and the white bar can be used to control this. Adjust the Tint to the level where you feel the white color has the tone you prefer.

Step Six – Configure Sources

This is the last step in the configuration process. It is necessary so that the correct inputs are selected as you use various sources with your HS 500.

NOTE: If you have not connected any devices to the TV or D-IN input jacks on the HS 500, then you may skip this step. You are now ready to begin enjoying the finest in home entertainment using your HS 500 system. Turn to the Operation section to learn how to make the most of the many features of the HS 500.

Select the TV, AUX or D-IN source either by pressing its Source Selector on the remote (see Figure 47), or by pressing the OSD button and using the ◀▶ Buttons to select the source from the list at the top of the screen. See Figure 48 for the screen for the TV source.

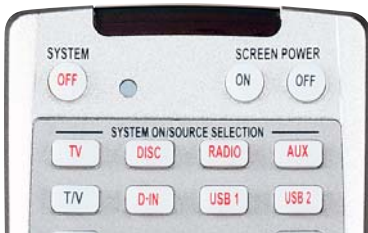


Figure 47 – Source Selectors



Figure 48 – TV Source Menu

Press the Enter Button to access the TV menu settings, and use the ▼ Button to select the Audio Input setting. Press the Enter Button to display the input options: Coaxial or Optical (digital audio) or Line (analog audio). Use the ◀▶ buttons to select the input to which you connected your TV's audio output, and press the Enter Button.

You may also select a surround mode for this source at the Audio setting line, and you may adjust the volume level for this source at the Level Adjustment setting line, but it is not necessary to make these adjustments now. These settings only apply to the TV source.

To configure the D-IN (Digital Input) source, use the Navigation Buttons to highlight D-IN on the top line, and press the Enter Button to access the settings for the D-IN source. See Figure 49.



Figure 49 – Digital Input (D-IN) Source Menu

Use the ▼ Button to select the Digital Input setting line, and press the Enter Button to view the options of Coaxial or Optical digital audio input. Select the input to which you have connected the source device you wish to listen to, and press the Enter Button.

You may also select a surround mode for this source at the Audio setting line, and you may adjust the volume level for this source at the Level Adjustment setting line, but it is not necessary to make these adjustments now. These settings only apply to the D-IN source.

You are now ready to begin enjoying the finest in home entertainment with your HS 500 home theater system!

OPERATION

Now that you have installed and configured your system components, you are ready to begin enjoying your home theater system.

Turning On the HS 500

When you have plugged in the HS 500, the Power Indicator surrounding the power switch should light up in amber. This indicates that the HS 500 is in Standby mode and is ready to be turned on. See Figure 50.



Figure 50 – Power Indicator and Standby/On Switch

There are several ways in which the HS 500 may be turned on:

- Press the Standby/On Switch on the top panel. See Figure 50.
- Press the Open/Close Button on the top panel. See Figure 50.
- Using the remote, press any one of these buttons: TV, DISC, RADIO, AUX, D-IN, USB 1 or USB 2. See Figure 51.

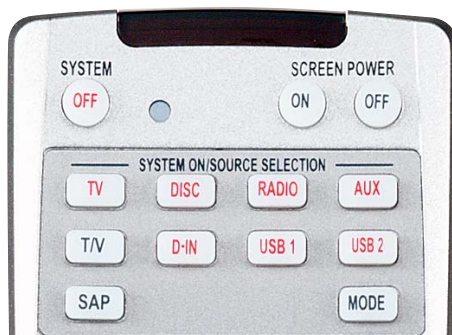


Figure 51 – Source Selectors

NOTE: Any time you press one of the remote's Source Selectors (i.e., TV, DISC, RADIO, AUX, D-IN, USB 1 or USB 2), the remote will switch modes so that it will transmit the codes programmed to operate that device.

To turn the HS 500 off, press either the Standby/On Switch on the top panel, or press the System OFF Button on the remote. See Figure 51. When the HS 500 is unplugged, any settings you have programmed, including system configuration and preset radio stations, will be preserved for up to four weeks.

Volume Control

The volume may be adjusted either by turning the knob on the front panel (clockwise to increase volume or counterclockwise to decrease volume), or by pressing the Volume Control Buttons on the remote. See Figure 52. The volume is displayed as a negative number of decibels (dB) below the 0dB reference point. Unlike some volume controls on other products, 0dB is the maximum volume for the HS 500. Although it's physically possible to turn the volume to a higher level, doing so may damage your hearing and your speakers. For certain more dynamic

audio materials, even 0dB may be too high, allowing for damage to equipment.

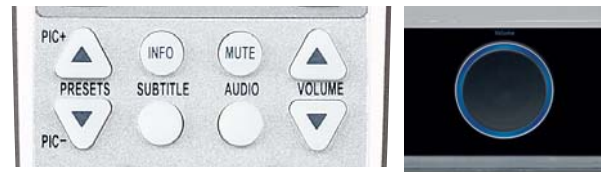


Figure 52 – Volume Controls

The HS 500 is designed to reproduce audio with a minimum amount of distortion. This clarity may lead you to think that your hearing and the equipment can handle higher volumes. We urge caution with regard to volume levels.

Mute Function

To temporarily mute all speakers and the headphones, press the Mute Button on the remote. See Figure 53. Any recording in progress will not be affected. The MUTE message will appear briefly in the display. To restore normal audio, either press the Mute Button again, or adjust the volume. Turning off the HS 500 will also end muting.



Figure 53 – Mute Button

Tone Controls

You may boost or cut either the treble or the bass frequencies by up to 6dB.

The tone controls are adjusted using the Audio Setup submenu as described in Step Two of the Initial Setup section.

Press the Setup Menu button on the remote, and use the Navigation Buttons to highlight the Audio Setup menu icon on the left side of the screen (has picture of a gear). Press the Enter Button to view the Audio Setup menu, and use the Navigation Buttons to highlight the Tone Control setting. To adjust the tone controls, the Tone Control setting must be ON. The Bass and Treble controls may then be boost or cut as desired. See Figure 42.

If you wish to remove the tone controls from the circuit for “flat” response without losing bass or treble settings for future use, set the Tone Control to OFF.

NOTE: The HS 500 does not have a conventional balance control. The settings made using the Audio Adjustments submenu as explained in Step Three of the Initial Setup section compensate for any special acoustic characteristics of your room or speakers, and we recommend that you leave the settings as they are after you have completed the configuration process. It is possible to manually adjust the levels of the left and right channels –

decreasing one and increasing the other by the same amount – using the Audio Adjustments submenu. This achieves the same effect as using a balance control.

Headphones

Plug the 1/8" plug on a pair of headphones into the headphone jack on the right side of the HS 500 for private listening.



Figure 54 – Headphone Jack

The HS 500 cannot accommodate a 1/4" headphone plug without an adapter (not included). Using the headphones output mutes the speakers.

Source Selection

Most of the time you may find it convenient to select a source by pressing its Source Selector on the remote. See Figure 51.

Pressing a Source Selector not only selects that source as the HS 500's input, but also turns on the HS 500 if it is in Standby mode, and switches the remote to the mode that operates the source.

NOTE: Press the Mode button on the remote to switch it to operate another device without changing the source selection for the HS 500. See Figure 55.



Figure 55 – Mode Button on Remote

When the source is selected, the HS 500 will make the following selections as appropriate to the source:

1. For the TV and D-IN sources, the HS 500 will select the correct analog or digital audio input. See Step Six of the Initial Setup section for more information on configuring the audio input.
2. For all sources, the HS 500 will select the correct audio, or surround sound, mode. The Audio Mode setting is adjusted using the Source submenu for the RADIO, TV, AUX and D-IN sources.

The adjustment is called DVD Sound Mode for the Disc Player, and is adjusted using the System Audio Setup submenu. There is no surround sound processing available for materials on USB devices, and they are always played in their original formats.

3. For the TV, AUX and D-IN sources, the HS 500 will adjust the audio level (volume) for that source only, based on the setting in the Source submenu.

NOTE: Pressing the Open/Close button always causes the HS 500 to select the Disc Player as the source.

The following sections describe the operation of the internal disc player and tuner, as well as the other sources.

OPERATION

USING THE HS 500 DISC PLAYER

Thanks to advanced digital technology, the HS 500 features an internal DVD-Audio/Video disc player within its low-profile chassis. Although you may previously have owned a CD or DVD player, we recommend you take a few minutes to learn the specifics of operating the HS 500 disc player. You also may want to take a moment now to review the glossary terms in the back of the manual to familiarize yourself with the terminology used to describe DVD players.

Playback Basics

In some respects disc playback is the same for all types of discs. We suggest you read through the basic instructions, and then read the sections pertaining to the various disc types.

Disc Handling Precautions

- To keep the disc clean, handle the disc by its edge. Do not touch the surface. See Figure 56.

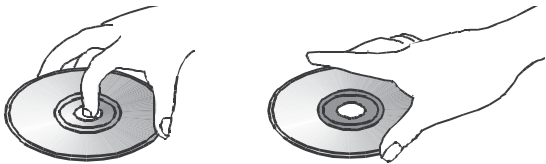


Figure 56 – How to Handle a Disc

- Do not stick paper or tape on the disc. If there is glue (or a similar substance) on the disc, remove the glue completely before using the disc.
- Do not expose the disc to direct sunlight or sources such as hot air ducts, or leave it in a car parked in direct sunlight, as there can be a considerable rise in temperature inside the car.
- After playing, store the disc in its case.
- Do not write on the label side with a ball-point pen or other sharp writing utensil.
- Be careful not to drop or bend the disc.

Disc Cleaning Precautions

- Before playing, clean the disc with a cleaning cloth. Wipe the disc from the center out.
- Do not use solvents such as benzene, thinner, commercially available cleaners or anti-static spray intended for vinyl LPs.

Disc Loading Precautions

- Do not load more than one disc on disc tray.
- Do not place a disc on the tray upside down.
- Do not try to close the disc tray when the disc is not positioned or centered properly.

Loading Discs

To load discs in the HS 500, first turn it on by pressing in the Standby/On Switch or the Open/Close button on the top panel or the DISC button on the remote. The Power Indicator is amber when the unit is connected to an AC power source, and it turns blue when the HS 500 is turned on.

Next, if you have not already done so, press the Open/Close Button so that the disc tray opens.

Hold the disc by the edge, and gently place it into the disc drawer, making certain that the disc is properly seated in the tray's insert. If the disc is not correctly centered, you may damage both the disc and the player when the drawer closes. When loading discs, please note the following:

- The HS 500 will play discs with the following logos as well as most DVD-RW or DVD+RW discs and most WMA and JPEG discs, including Kodak Picture CDs, but not Kodak Photo CDs. DO NOT attempt to play another type of disc.



- The HS 500 will only display video in the NTSC format. Although the PAL format is generally used in Europe and other regions of the world outside North America, some music or other DVDs are available in PAL with a Region Code of "0," which means they may be played on any DVD player around the world. The HS 500 will automatically detect the PAL format, and make the necessary conversions so that the video may be displayed on an NTSC TV. PAL discs bearing a Region Code other than "0" or "1" may not be played on the HS 500.
- Playback capability for CD-RW, DVD-RW, DVD-R, DVD+RW or DVD+R discs will vary according to the quality of the disc. On some occasions it is possible that these discs may not play on the HS 500. This does not indicate any problem with the HS 500.
- The HS 500 will only play discs that are coded for Region 1 or discs that are open to being played in all regions (Region Code "0"). Discs that contain a Region Code of 2, 3, 4, 5 or 6 (as noted by a number inside a world map logo on the disc's jacket) will not play.
- Both 5-inch (12cm) and 3-inch (8cm) discs may be used.

- Load CDs or DVD-Audio discs, with the label side up.
- When loading DVD-Video discs with printed labels, load them label side up. If the disc contains both standard and high-definition (not HD-DVD or Blu-ray Disc) versions of the program, make sure the desired label faces up.
- Some DVD-Video discs are double-sided. The title information for these will be printed on the inner ring of the disc, very close to the center hole. The title for the side you wish to play should be facing up.

After a disc is properly loaded, press the Open/Close Button to close the disc drawer. After the drawer closes, you will see the READING message in the Main Information Display to alert you to the fact that the unit is determining the type of disc (DVD-Video, DVD-Audio, CD, VCD, JPEG, WMA or MP3) and is reading the data for track, chapter, title and other information about the disc.

Once the disc's data has been read, the type of disc will be displayed by the Disc-Type Indicator in the front-panel display. If the disc is a DVD, CD or VCD2.0 disc, it will automatically begin playing. The disc's track and timing information and other relevant data will appear in the Main Information Display.

Any time a control button is pressed, an icon will appear in the upper right corner of the screen to indicate the player's action. These icons include the standard transport modes (play, stop, pause, forward and reverse fast and slow search, track skip), the opening or closing of the disc drawer, or the prohibit icon (Ø) if the command action is not available at that time or for that disc. As explained in more detail below, pressing the Status Button displays the Status Banner for DVDs, and pressing the Info Button displays the Player submenu.

- When a DVD is detected, playback will automatically begin and the screen will show the program or the disc's menu, depending on how the disc was created.
- If a CD is detected, playback will begin automatically.
- If the disc contains MP3, WMA or JPEG files, or if it is a VCD without playback control, the Player Information display will appear. See Figure 57. To play one of these files, use the Navigation Buttons to select a folder and press the Enter Button to open it. Use the Navigation Buttons to select a file for playback, and press the Enter Button to begin play.

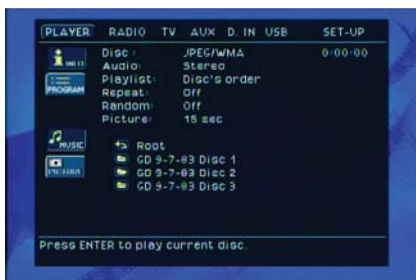


Figure 57 – Player Information Screen (JPEG/WMA Disc)

- VCD2.0 discs will begin play automatically, similar to a conventional audio CD. Not all VCDs will play on the HS 500. VCDs containing raw MPEG files will not play.

If a disc is already in the drawer when the unit is turned on, it will begin playing. If the disc was stopped using the Resume function, playback will begin from the point where it was stopped. If the disc was stopped by pressing the Stop Button twice, the disc will begin playing from its beginning. If the Disc Recognition feature was turned on in the System Setup menu (see Figure 33), a screen will appear asking you whether to begin playback from the beginning of the disc, or from the point where playback was stopped during the last viewing session. See Figure 58.



Figure 58 – Disc-Recognition Resume Screen

Playback Features for DVD and CD Discs

See Figure 59 for reference to the transport controls described below.



Figure 59 – Transport Controls

- To momentarily pause playback and freeze the current picture frame on a DVD, press the Pause Button. To resume playback after pressing the Pause button, press the Play Button.
- To move forward or backward through the tracks on a DVD-Audio disc or CD, or the chapters on a DVD, press the Previous/Next Buttons on the remote.
- To move forward or backward through the DVD or CD disc being played at fast speed, press the Search Forward/Reverse Buttons. Once one of these buttons is pressed, the fast search will continue until the Play Button is pressed. Each additional press of the Search Forward/Reverse Buttons will cycle through the five available fast-search speeds. The speed will be indicated by the number of filled-in triangles that appear in the upper right corner of the screen.

OPERATION

NOTE: Fast search is available when DVD-Audio, MP3 and WMA discs are playing. Search speeds available may vary for different types of discs.

- When a DVD is playing, you may move forward or backward through the disc in slow motion by first pressing the Pause Button and then pressing the Search/Slow Forward or Search/Slow Reverse Buttons. Each additional press of the buttons will cycle the player through one of the five forward or reverse slow-play speeds, as indicated by the number of filled-in triangles appearing in the upper right corner of the screen. Press the Play Button to resume normal playback.

NOTE: There is no audio playback during fast or slow-forward or -reverse play. This is normal for DVDs, as surround processors cannot process the digital audio streams during slow modes. Slow-play is available for VCDs, but not for audio CDs, MP3s or WMAs. Slow-play speeds may vary for different types of discs.

- To advance frame by frame while a DVD is playing, first press the Pause Button, then press the Skip/Step (Previous) or Skip/Step (Next) button repeatedly. Press the Pause or Play Button to resume normal play. Frame-by-frame movement in reverse is not available.

NOTE: Playback of a disc with 96kHz/24-bit audio requires the use of circuitry normally used for other features. Accordingly, Slow Play Reverse and Step Advance features are not available with these discs.

- When a camera icon appears on screen, or the Angle Indicator appears on the front panel, it indicates that there is multiple-angle information on the disc being played. To change the angle, press the Angle Button repeatedly until the desired angle view appears. An on-screen banner message will appear to indicate the angle view in use.
- To illuminate the buttons on the remote control so that they may be seen in low-light conditions, press the Light Button.

The availability of the Zoom, Repeat, Repeat A-B and Random functions depends on the type of disc. In addition, the availability of the Player Information screens and Status Bar vary from one disc type to another. These features are described in the following sections describing playback of DVDs, CDs, MP3s, WMAs, JPEGs and VCDs. Programming playlists is explained after the section on VCDs.

DVD PLAYBACK

Using a DVD's Menu

One of the unique features of the DVD system is that it offers a producer the opportunity to include a wide range of features on a disc, including multiple language tracks; subtitles in a variety of languages; special information such as movie trailers and cast information; and other customized information. In addition, producers may divide a movie or program into chapters that allow for quick access to specific parts of the program. These chapters may be accompanied by thumbnail pictures of a scene from the specific chapter to help you select the desired spot on the disc.

When a disc is playing, press the Disc Menu Button to pause the playback and display the disc's menu. As there are no hard rules about style and contents for DVD menus, the way they appear on the screen and the information they contain will vary from one disc to another. However, the following general rules apply to most menus:

- You may move through the options on a menu with the Navigation Buttons, as the disc's programming allows. The option selected will typically be highlighted in a certain color or inside an outline box.
- To select a highlighted option, which may either play a portion of the disc or move to a submenu, press the Enter Button.
- On some discs, when you select the DVD menu during the playback of a movie, the disc will return to the point in the program where the menu was selected by offering a "Play Movie" option. Press the Enter Button or Play Button to resume play. However, not all discs offer this feature, and selecting the menu while playing a movie may mean that you will have to go back to either the beginning of the program or the start of a chapter. This feature is out of the control of the HS 500, as it is set by the disc's internal programming.

IMPORTANT NOTE ON DVD PLAYBACK

The HS 500 is capable of all the features and options covered by the DVD standards. However, not all discs will function identically, and some discs will not have many of the features of the DVD system. For example, most current DVD discs do not take advantage of the multiple-angle feature.

When you press a button and the player displays the "Feature Prohibited" icon "Ø", this is an indication that the disc has not been programmed for that feature. In addition, it is common for the producers of DVD discs to block the use of certain functions during only some parts of a disc. For example, many discs prohibit the use of fast-play buttons or prohibit access to the Chapter Menu display during the playback of copyright notices, studio logos, movie credits or trailers.

Zoom

The HS 500's advanced digital video processing circuits include a Zoom feature that allows you to enlarge the image of a DVD, VCD or JPEG for closer examination of a particular part of the picture. Four steps of enlargement are available.



Figure 60 – Zoom Button

- To use the Zoom feature, press the Zoom Button while a disc is playing or paused. See Figure 60. Each press of the button will increase the zoom-in effect. When you have zoomed through all four steps (two steps of enlargement for VCDs), the picture will return to normal size.
- When the zoom feature is activated, you may use the Navigation Buttons to explore the enlarged picture once the information box with the zoom ratio and playback time no longer appears on the screen.
- Some discs are created in a way that prevents the Zoom feature from operating. In addition, the Zoom feature will not operate on disc menus and may not operate on subtitles.

Playback Resume

The HS 500 offers a "Resume" feature for DVD playback that is different from the conventional "Stop" function you may be used to on CD players. When the Stop Button is pressed once, the disc will stop and Resume will appear briefly in the upper right corner of the video screen and in the Main Information Display. While the Resume feature is active, the disc's position is entered into the unit's memory so that when the Play Button is pressed to resume playback, the program will continue at the point where it was when the Stop Button was pressed. To completely stop playback, press the Stop Button twice.

You may resume a DVD (Audio or Video), CD, VCD with Playback Control, MP3 or JPEG disc after placing the HS 500 in Standby mode. Resume will not operate for WMA files or for VCDs that do not have playback control.

Disc Recognition

When the Disc Recognition feature is turned on in the **SYSTEM SETUP** menu, you may press the Stop Button either once (to enter Resume mode) or twice (to enter Stop mode) and remove the DVD from the player. Even if you turn the HS 500 off, the next time you insert that DVD, you will be presented with the option of either starting playback from the beginning, or resuming playback at the point at which you stopped previously. The HS 500 can recognize up to 100 DVDs total.

OPERATION

Player Information Menu

The HS 500's Player Information menu displays disc information and enables you to program playback modes. Press the Info Button to display the Player Information menu. See Figure 61.



Figure 61 – Player Information Screen (Info Button)

The Player Information menu has three submenus, which may be accessed by using the Navigation Buttons to highlight the submenu's icon, and pressing the Enter Button to select it. These submenus are different from the Setup menus in that many items are for display only and cannot be changed using the menu system.

PLAYBACK INFO Submenu: This submenu displays basic disc and playback mode information. See Figure 62. Access it either by pressing the OSD button, or by highlighting the Info icon with the lower case "i" (see Figure 61) and selecting it twice.



Figure 62 – Player Information Screen (OSD Button)

Disc: This line displays the disc type, such as DVD-Video.

Audio: The current audio track will be displayed here. You may navigate to this line, press the Enter button, and use the ◀▶ buttons to scroll through the available audio tracks, which are usually the available surround sound formats or audio languages. You may also change this setting by repeatedly pressing the Audio button on the remote.

Playlist: This line indicates whether playback will occur in the disc's order, or following a programmed playlist.

Repeat: This line displays the current repeat mode, or Off if Repeat mode is not active.

Random: Random play is not available for DVDs.

Subtitle: You may select from the subtitles available on the disc at this line.

The disc's contents are displayed below this basic information.

The top line shown in the contents section of Figure 62 is the current title. Move the cursor to highlight this line and press the Enter button to view a list of all the titles on the disc. Select any title and press Enter to expand it and view the chapter list for that title. Select a chapter and press the Enter button to begin play of that chapter.

The arrow(s) at the lower left of the screen enable you to advance forward or backward through the contents of the disc a page at a time.

PROGRAM submenu: The Program submenu displays the play order of each title or chapter, depending on the current view, and allows you to edit the order. See the section on Programming a Playlist for more information.



Figure 63 – Disc Info Submenu

DISC INFO Submenu: This submenu displays detailed information about the disc content (see Figure 63). You will not be able to make any changes to the items on this submenu. However, you may use the Video Setup submenu to change the HS 500 player settings for video aspect ratio or scan type.

Disc: This line displays the disc type.

Disc ID: If the disc is encoded with an identification label, it will appear here.

Aspect Ratio: This line displays the aspect ratio of the video content on the disc, and the format in which it is being played back according to the setting established in the VIDEO SETUP submenu. Some discs may contain two versions of the same program with a widescreen aspect ratio on one side of the disc, and a standard aspect ratio on the other.

Video Standard: The disc's format is shown here. For Region 1 players, this will normally be NTSC, although some DVDs that are open region (playable in all regions) may be in the PAL format. The HS 500 will convert the video to the NTSC format used by your television.

Scan Type: This line displays whether the video program on the DVD was recorded with a progressive- or interlaced-scan rate. It also displays how the program is being played back, based on the setting established in the VIDEO SETUP submenu.

Audio Resolution: This line displays the sample rate and bit rate for the current audio format.

Audio Format: This line displays the current audio track, such as Dolby Digital 5.1 or linear PCM.

Video Bit Rate: This line displays the video bit rate up to the maximum of 10 Mbps. This indication will vary as a disc is played in response to changes in the amount of compression that was applied to the video signal when the disc was created. Thus, as shown in Figure 63, when the disc is stopped or paused, this line will remain blank.

Audio Bit Rate: This line displays the audio bit rate up to the maximum of 5 Mbps.

When you have finished viewing the Player menus, press the Info, OSD or Clear Button to remove the displays from the screen and return to normal play.

On-Screen Status Display

When a DVD is playing, you may press the Status Button at any time to view a quick summary of the disc's playback status. The Status Bar not only gives you a snapshot of the unit's current state, it also provides an easy way to select a different group, title, chapter or track, or use the time search feature. See Figure 64.



Figure 64 – Status Bar

- **Group/Title:** For DVD-Video discs, this displays the current title number. For DVD-Audio discs, the group number is shown.
- **Chapter:** For DVD-Video discs, this shows the current chapter. For DVD-Audio discs, the current track is shown.
- **Play Mode Icon:** This displays the current play mode icon; e.g., Play ►, Pause ||, Stop ■.
- **Time Display:** This section of the display shows the time corresponding to the type of display indicated in the Time Display Type. The Time Search function enables you to start playback at any point in the program. Use the ◀▶ Navigation Buttons to highlight this display. You may then use the Numeric Keys to enter the numbers corresponding to the time on the disc at which you wish play to commence. After you enter the last digit, there will be a momentary delay before the digit appears while the HS 500 locates the selected time position, then play will begin.
- **Time Display Type:** This section identifies the type of information in the Time Display section of the display. Use the Navigation Buttons to select this setting, and each subsequent press of the Enter Button will change the time display from Title Elapsed, to Title Remaining, to Chapter Elapsed to Chapter Remaining, and cycle back to Title Elapsed. The time displayed on screen and in the front-panel Information Display will change accordingly. For DVD-Audio discs,

the time display options are Group Elapsed, Group Remaining, Track Elapsed and Track Remaining.

- **Time Bar:** This display is a graphic representation of the time elapsed for the title being played. As the disc plays, the number of bars will increase to reflect approximately what percentage of the title has been played thus far.

Titles and Groups

To select a title or group, first press the Status Button so that the Status Display appears. The Current Title or Group will be highlighted in a blue box. Press the Enter Button and arrows will appear on either side of the current title or group number, enabling you to either use the Numeric Keys to enter the desired title/group or to use the ◀▶ Navigation Buttons to scroll through the available title/group numbers. Press the Enter Button again to begin playing the new title or group. See Figure 65.



Figure 65 – Selecting a Title

If a "0" icon appears when you attempt to select a new title (group), this is an indication that the disc does not allow the title (group) to be changed in this manner, even though a list of numbers will appear. This is a function of the way the disc was created and is not a flaw in the HS 500.

For some discs, you may press the Title or Audio Button during playback to change the current title or group. Other discs will switch to the disc menu, and some discs may simply restart play from the beginning of the current title or group. This is a function of how the disc was authored, and does not reflect a problem with the HS 500.

Chapters and Tracks

To select a chapter for DVD-Video discs or a track for DVD-Audio discs, first press the Status Button so that the Status Display appears. Next, press the ► Navigation Button so that the Current Chapter or Track Number is highlighted. Press the Enter Button and arrows will appear on either side of the current chapter or track number, enabling you to either use the Numeric Keys to enter the desired chapter/track or to use the ◀▶ Navigation Buttons to scroll through the available chapter/track numbers. Press the Enter Button again to begin playing the new chapter or track.

To select a specific chapter or track on a DVD at any time during playback, simply press the number corresponding to the chapter or track you wish to view using the Numeric Keys. You may also move one by one through the chapters or tracks at any time by pressing the Skip Reverse (Previous)/Skip Forward (Next) Buttons.

OPERATION

Audio Soundtracks

Many DVDs contain more than one audio soundtrack. On many discs, you will find multiple languages, while others will offer a choice of different audio formats or mixes (e.g., Dolby Digital or DTS), while some will also contain commentary from the director or stars. The default audio language is set in the Audio Setup menu.

To change the audio soundtrack, press the Audio Select Button to display the Audio banner and show the current audio soundtrack configuration. See Figure 66.

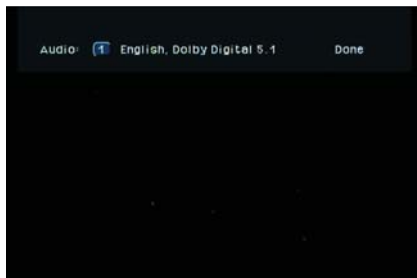


Figure 66 – Audio Status Bar

Each press of the Audio Select Button will change the current audio soundtrack. Alternatively, press the Enter Button to enable you to scroll through the choices of available soundtracks. See Figure 67.



Figure 67 – Selecting an Audio Track

When the desired selection appears, press the ◀▶ Navigation Buttons so that Done is highlighted, and then press the Enter Button to remove the banner display and return to normal playback.

NOTES ON AUDIO TRACKS:

- Not all discs contain multiple audio soundtrack choices. Check the information on back of the disc jacket to see what audio languages or format options are available.
- Some DVDs do not allow direct selection of the audio track during playback. For these discs, you must change the audio soundtrack using the disc's menu system. Press the Disc Menu Button to display the disc's menu and then use the Navigation Buttons to make your selection following the navigation scheme of the individual disc.
- When you change the audio soundtrack or language with the Audio Select Button on the remote control as shown above, you only override the audio language setting established in the Audio

Setup menu for the disc currently being played. The unit will revert to its default setting with the next disc.

Subtitles (DVD-Video Discs Only)

Many DVDs contain one or more subtitle languages. The default subtitle language is set in the System Setup menu, but you may also turn the subtitles on or off, or change the language at any time during a disc's playback. To change the subtitle language or turn the subtitles on or off, press the Subtitle Button to display the Subtitle banner and show the current configuration. Each press of either the Subtitle Button will change the current subtitle language, or turn subtitling off. Or you may press the Enter Button and scroll through the available choices. When your desired selection appears, press the ◀▶ Navigation Buttons until Done is highlighted and then press the Enter Button to remove the banner display and return to normal playback.

NOTE: Due to the variations in how DVD discs are authored, subtitle languages displayed by the HS 500 may not accurately reflect the actual languages available on the disc. It is recommended that subtitles be selected using the disc's menu.

Angles (DVD-Video Discs Only)

Some DVDs contain multiple-angle views, which allow the disc's creators to provide different camera views of the same scene. In many cases the disc will alert you to the presence of multiple angles by showing a camera icon or other indication, but in any case where multiple-angle material is available, if the Show Angle Icon setting in the System Setup menu has been set to On, the Multiple Angle Icon will appear on screen briefly at the beginning of the passage where multiple camera angles are available, and the Angle Indicator will light in the front panel Information Display for the entire duration of the passage.

If the Show Angle Icon setting has been set to Off, neither the on-screen nor front-panel icons will appear at any time, although you may still change the camera angle as described below if you are familiar with the presentation.

When multiple angle views are available, press the Angle Button to change the view. See Figure 68. The current angle number and total available angles will be displayed in the upper right corner of the screen. Each press of the Angle Button will change the current camera angle. Wait a brief moment for the angle status bar to disappear from view on its own. If you press the Angle Button during a section where multiple views are not available, the prohibit icon will appear.



Figure 68 – Angle Button

Repeat Play

The HS 500 offers several repeat functions that allow you to take advantage of the capacity of the unit for unattended playback. Press the Repeat button once to display the Repeat/Random Status Bar on-screen. See Figure 69. Press the Repeat Button again to cycle through the options, or press the Enter Button and scroll through the options:

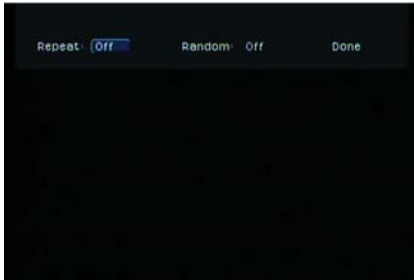


Figure 69 – Repeat/Random Status Bar

- **Repeat 1:** Repeats the DVD chapter or DVD-Audio track currently being played until the disc is manually stopped. The Repeat (“Rep.”) and 1 indicators will light in the front-panel display.
- **Repeat Title or Group:** This mode repeats the title or group currently being played until the disc is manually stopped. The Repeat (“Rep.”) indicator will light in the front-panel display.

A-B Repeat Play

The Repeat A-B function allows you to select any portion of a DVD-Video disc and have it repeat continually until stopped.

To initiate a Repeat A-B playback sequence, follow these steps while a disc is playing:



Figure 70 – A-B Repeat Button

1. Press the A-B Repeat Button (see Figure 70) on the remote when you want to choose the beginning point; the Status Bar will appear on screen, and “REPEAT A-” will appear next to the playback mode indicator. The “A” indicator will light in the front-panel display.
2. Press the A-B Repeat Button again to choose the end point. Repeat A-B has been set, and the A-B section will be played continuously.
3. Press the A-B Repeat Button on the remote again to cancel Repeat A-B mode.

OPERATION

CD PLAYBACK

Many functions of the HS 500 operate the same way for CD playback as for DVD play; however, there are some important differences. When a CD is loaded, the HS 500 will automatically display the Player Information menu. See Figure 71. Status banners are not available during CD play. Features unique to CD play are described in this section.



Figure 71 – CD Player Information Screen

Player Information Menu

The HS 500's Player Information menu displays disc information and enables you to program playback modes. If it is not already on screen, press the Info Button to display the Player Information menu. See Figure 71.

The Player Information menu has two submenus, Playback Info and Program, which may be accessed by using the Navigation Buttons to highlight the submenu's icon, and pressing the Enter Button to select.

Playback Info Submenu: This submenu displays basic disc and playback mode information. See Figure 71.

Disc: This line displays the disc type, such as CD.

Audio: This line displays the type of audio recorded on the disc, usually Stereo for CDs.

Playlist: You may choose to play the tracks in order as they appear on the disc, or you may program a playlist containing some or all of the tracks in the order in which you wish to hear them. This line indicates which of these two modes has been selected.

Repeat: With this line highlighted, press the Enter Button or the Repeat Button to activate Repeat mode. Each press will change the repeat mode from Repeat 1 (repeat one track) to Repeat All (repeat all tracks on the disc) to Repeat Off. Repeat A-B is not selected using this setting.

Random: With this line highlighted, press the Enter Button or the Random Button to activate Random play mode, in which the tracks on the disc are played in random order. Each press will toggle between turning Random play on or off.

Time: This line indicates the time display mode (Track Elapsed, Track Remaining, Disc Elapsed, Disc Remaining), with the time displayed to the right. Press the Enter Button to enable scrolling through the time display options, and press the Enter Button again to make your selection.

Time Search Function: While the disc is in Play mode, you may begin playback from a specific time in the track or disc by navigating until the time is highlighted. Use the Numeric Keys to enter the desired start time, remembering to enter leading zeros. For example, if you wish to begin play at one minute and thirty seconds into the current track, enter "0-0-1-3-0." After you enter the last digit, there will be a momentary delay before the digit appears while the HS 500 locates the selected time position, then play will begin.

Track List: A list of tracks on the disc will appear. Use the Navigation Buttons to scroll through the list. Press the Enter Button or the Play Button while a track is highlighted to begin play. If the disc contains more tracks than there is room to display at once, a page down arrow will appear in the lower left corner of the screen. Highlight it and press the Enter button to view the next page of track listings. On subsequent pages a page up arrow will also appear.



Figure 72 – CD Program Screen

Program Submenu: This submenu lets you program a playlist. See Figure 72. It looks similar to the Player Information submenu, but adds a column to the right of the track list for indicating the play order. See the section on Programming a Playlist for more information. When you have finished viewing the Player menus, press the OSD or Clear Button to remove the displays from the screen.

Tracks

To select a track, make sure the Player Information menu is on screen. Press the Info or OSD Button to activate it if necessary. Next, press the Navigation Buttons so that the Track is highlighted, and press the Enter Button to begin playing the new track.

During playback, you may move one by one through the chapters at any time by pressing the Skip Reverse (Previous)/Skip Forward (Next) Buttons. When you press the Previous or Skip Reverse button once, the player will return to the start of the current track. Additional presses of either button will step back through the available tracks, one at a time. See Figure 73.

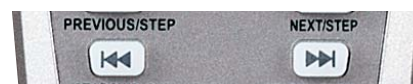


Figure 73 – Skip Reverse (Previous) and Skip Forward (Next) Buttons

NOTE: When a JPEG, MP3 or Windows Media disc is playing, a special screen will appear. See the section describing those types of discs for more information.

Repeat Play

The HS 500 offers several repeat functions for CDs that allow you to take advantage of the capacity of the unit for unattended playback:

- **Repeat Program:** Repeats the current playlist if Programmed Order has been selected at the Playlist setting.
- **Repeat 1 Track:** For CDs, VCDs, MP3s and WMAs, repeats the track or file currently being played until the disc is manually stopped. The Repeat and 1 indicators will light in the front-panel display.
- **Repeat Disc:** For CDs, VCDs, MP3s, WMAs and JPEGs, repeats the entire disc until play is manually stopped. The Repeat indicator will light in the front-panel display.
- **Repeat Folder:** For MP3s, WMAs and JPEGs, repeats all tracks within the current folder until play is manually stopped. The Repeat indicator will light in the front-panel display.
- **Repeat A-B:** Repeats any selected portion of the disc until the disc is manually stopped (see below for more information).

Each press of the Repeat Button (see Figure 74) cycles through the available Repeat options (except Repeat A-B). In addition, the Repeat setting in the Player Information menu will change.



Figure 74 – Repeat Button

A-B Repeat Play

The Repeat A-B function allows you to select any portion of a CD and have it repeat continually until the unit is manually stopped.

To initiate a Repeat A-B playback sequence, follow these steps while a disc is playing:

1. Press the A-B Repeat Button on the remote (see Figure 70) when you want to choose the beginning point; the Repeat A- icon appears on the Repeat line of the Player Information menu to indicate the beginning of the passage to be repeated.
2. Press the A-B Repeat Button again to choose the end point. Repeat A-B has been set, and the A-B section will be played continuously.
3. Press the A-B Repeat Button again to cancel Repeat A-B mode.

Random Play

The Random Play function will play all of the tracks on a CD in a random order, as selected by the HS 500. Once the HS 500 has played all of the tracks on the disc once, it will stop.

Select the random mode by pressing the Random Button on the remote. See Figure 75. Each press of the Random Button will toggle the setting between “Off” and “On”, meaning that the remaining tracks on the disc will be played in random order.

The Random Indicator in the Front-Panel Information Display will light when the Random setting is on.



Figure 75 – Random Button

OPERATION

MP3, WINDOWS MEDIA AND JPEG PLAYBACK

The HS 500 will recognize data on CD-ROM discs and USB devices recorded in the MP3, Windows Media 9 (WMA) or JPEG formats, including images stored on Kodak® Picture CDs. You may also play discs with more than one of the three formats.

The specific file types that may be played on the HS 500 are:

- **MP3 Files:** MP3 is a popular audio compression format that was developed by the Motion Picture Experts Group as part of the MPEG-1 video compression format. Depending on the specific MP3 encoder used, file size is greatly reduced so that you store many more songs on one compact disc than in the standard audio CD format. MP3 is also used to download audio files to computers for home use. In order to play an MP3 file on the HS 500, the disc may not contain any encryption or coding that prevents playback. Always be certain that you have, or have purchased, the proper rights or authorization before creating a CD-ROM with MP3 or any other codec format.
- **WMA Files:** WMA (Windows Media Audio) is an audio compression format developed by the Microsoft® Corporation for use with its Windows Media Player. WMA files may be created with greater compression than MP3 without sacrificing audio quality so that even more songs may be recorded on a disc. There have been a number of versions of Windows Media, and the HS 500 is compatible only with files that end in the “wma” extension and that were recorded using the Windows Media Series 9 encoding, but only up to 320kbps.
- **JPEG Files:** “JPEG” is the acronym used to identify image files recorded according to specifications established by Joint Photographic Experts Group for compressing still images. Identified by the file extension “jpg” when they are recorded on most computers, JPEG files may be created by a digital still camera and then edited and “burned” to a disc in your personal computer, recorded on a CD-ROM disc from film images by a photo processor, or scanned from printed photos into your personal computer and then burned onto a CD-ROM. You may also connect a digital camera directly to one of the HS 500’s USB ports, if the camera is equipped with a USB connection, and if it stores its images in the JPEG format.

Discs containing MP3, WMA or JPEG files are navigated and controlled a little differently from standard DVDs and CDs. When a disc containing one or more of these types of files is loaded in the HS 500, the Player Information menu screen will appear. See Figure 76.

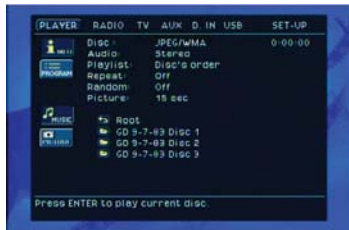


Figure 76 – Player Information Screen (JPEG/WMA Disc)

This screen will display a list of the main folders contained on the disc. The elapsed time will appear in the upper right corner of the screen. It isn't possible to change the time display, and the Time Search function is not available.

MP3 or WMA Disc Playback

MP3 and WMA discs may contain 200 tracks or even more. To get the best overview about all tracks on the disc and their names and to select them comfortably, use the on-screen display rather than the front-panel display. The front-panel display will only show the number and the elapsed time of the track being played.

The supported bit rate for WMA files is between 64kbps and 320kbps. The supported bit rate for MP3 files is between 32kbps and 320kbps.

- To select a folder (if any), press the Navigation Buttons until the desired folder name is highlighted, then press the Enter Button.
- To select a track, press the Navigation Buttons until the desired track name is highlighted.

To start play of the selected track, press the Enter or Play Button.

During MP3/WMA playback, some of the standard CD/DVD playback controls operate in their normal fashion (refer to Figure 59):

- You may skip forward to the next track on the disc by pressing the Skip/Next Button.
- You may skip back to the previous track on the disc by pressing the Skip/Prev Button *twice*.
- Press the Pause Button to momentarily stop playback. Press the Play Button to resume play. Press the Stop Button to enter stop mode.
- Press the Search Forward or Search Reverse buttons, for fast search of a track. Press the Play ►, Pause || or Stop Button ■ to end fast play.
- Slow-play is not available during MP3/WMA playback.
- You may play an MP3 or WMA disc in random mode by adjusting the Random setting in the Player Information submenu. You may also access the Random function while an MP3 or WMA disc is playing by pressing the Random Button. See Figure 75.
- The Repeat function may be accessed during playback of an MP3 or WMA disc by pressing the Repeat Button on the remote. See Figure 74. Repeatedly press the Repeat Button to scroll through the options of Repeat 1 (repeat one file), Repeat All (repeat all files) or Repeat Folder (repeat all files within the current folder). The next press will turn the repeat function off. Repeat A-B is not available during MP3/WMA playback.

NOTES ON MP3 AND WMA PLAYBACK

- During playback, the front-panel display and the time indicator on the screen above the list will show the elapsed time of the track being played. Other time display options are not available with MP3/WMA playback.
- The HS 500 is only compatible with standard MP3- and WMA-encoded discs. Other compressed audio formats used for Internet audio downloads will not play on the HS 500.

- Due to the differences in various versions of the MP3 and WMA formats, and the many differences between the CD-R machines used to record discs on a computer, it is possible that some discs may not play on the HS 500 even though they will work on a computer. This is normal and does not indicate a fault with the unit.
- When a multisession disc with both standard CD audio and MP3 or WMA content is in use, the HS 500 will play only the CD audio sections of the disc. Track numbers will be visible in the display, but the files will not be decoded.
- If a disc containing MP3, WMA and/or JPEG files is created in more than one session, the HS 500 may not recognize files added during the later sessions, especially if the disc was finalized after the first session.
- When a disc with multiple folders is playing, only tracks from one folder can be displayed and played at a time. Select the desired folder and press the Play Button or Enter Button to start the first track. To see and play tracks from other folders, you must first select the root folder using the Navigation Buttons, and press the Enter Button to open or close that folder. You may then navigate an open folder and select the desired folder. Press the Enter Button to open the folder, and select the desired track. Then press the Play Button.
- Only stereo-audio playback is available for MP3 and WMA discs.
- Programmed playlists are not available for MP3/WMA discs.
- Use the Navigation Buttons to select the DISC INFO Submenu icon on the left side of the screen, and press the Enter Button to view it. If the disc contains ID3 tag information, then the current MP3 track information – song title, artist, album, year, genre, and any comments – for WMA and JPEG files, only the file name will appear.

JPEG Playback

The HS 500 is capable of recognizing JPEG still-image files and displaying them. When a disc or folder containing JPEG files is loaded, the JPEG Disc-Type Indicator will light in the Main Information Display. The disc will immediately begin displaying the images on the disc in order.

When viewing JPEG images, the Angle Button may be used to rotate the image. With the image onscreen, press the Angle Button once to display the current orientation of the image, usually +0. Press the Angle Button again to rotate the image clockwise 90 degrees. Each additional press of the Angle Button will continue to rotate the image clockwise by 90 degrees.

You may use the Zoom Button to enlarge a JPEG image, and the Navigation Buttons to explore the enlarged image.

You may view thumbnails of the images in the selected folder by pressing the Disc Menu Button. When the images appear on screen, you may use the Navigation Buttons to move the picture frame until the desired image is selected. Press the Enter Button to display a full-size view of that image. See Figure 77.

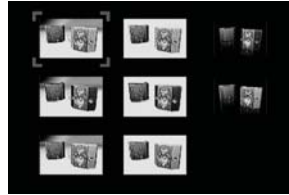


Figure 77 – Thumbnail Image Menu

Simultaneous Playback

When MP3 audio files are stored on the same disc as the JPEG still-image files, you may simultaneously play the audio and view the still images. To access each set of folders, i.e., audio and still-image, select both the Music and Picture icons on the left side of the screen. See Figure 78. Each click on one of the icons selects or deselects the relevant folders for listening or viewing. For WMA files, you may only select one of the icons at a time, as simultaneous playback is not available for JPEG and WMA files.



Figure 78 – Simultaneous Playback

NOTE: High-resolution images may not display correctly during simultaneous playback due to the HS 500's memory limitations.

Slide Shows

If several JPEG still-image files are available in the selected folder, the HS 500 will display them in turn automatically as a "slide show." You may program the amount of time each still image remains on screen using the Picture setting in the Player Information menu. See Figure 79. Select from a viewing time of 15, 30 or 45 seconds, or when simultaneous playback with MP3 audio files is desired, you may program the HS 500 to synchronize display of the still images to the audio track by selecting the Follow Audio Track option.



Figure 79 – Picture Viewing Time

OPERATION

VCD PLAYBACK

VCD, a video-playback format that predates DVD, is based on a different compression format than DVD and uses a recording method that is similar to CD. Although the DVD has, for the most part, replaced VCD as a format, the HS 500 offers VCD playback so that you may play your existing library of VCD discs, or home movies that you have recorded as VCDs on your computer.

There are two versions of the VCD format: an early version which is simply called “VCD” and a later version with Playback Control that’s called “Version 2.0” or “PBC.” The HS 500 is compatible with both forms of VCD, although playback will vary according to which version is used and the specific way in which the disc was created.

Even though VCD discs provide video, because the format is based on CD technology, the playback functions for a VCD disc are similar to CD. To play a VCD disc, place it in the HS 500 as you would do with any other CD or DVD disc. The unit takes a few seconds to read the disc’s contents; the VCD Disc Type Indicator in the front-panel display will light and the disc will begin playing.

Keep in mind that the exact level of functionality for any VCD will vary widely and it is ultimately determined by the way the disc was created, not by the HS 500, particularly if the disc has been created under VCD Version 2.0 with Playback Control (see “Playback Control”).

NOTE: VCDs that contain only raw MPEG files will not play in the HS 500.

When playing VCD discs, most standard DVD/CD playback controls are used, including Play, Stop, Pause, Resume, Track Skip Forward and Reverse, Slow Forward, Step Forward and Fast Forward. The Reverse Search and Step Reverse functions are not available with VCDs.

With VCDs, you have access to information on the disc playing by pressing the Info Button on the remote. The availability of the Repeat and Random functions will depend on whether PBC Support has been activated using the System Setup Submenu. With PBC Support on, Repeat and Random will not be available.

Repeat A-B is always available. Simply press the Repeat A-B Button once at the beginning of the passage to be repeated, again at the end of the passage, and a third time to cancel Repeat A-B mode.

Status Bar

When playing VCD discs, it is possible to access the disc’s features using the Status Bar. Press the Status Button to view it.

The Status Bar will appear the same as for DVDs (see Figure 80), except that the current track number will be shown, rather than the title, and there is no chapter display. You may select the track number and change it to skip to another track. You may also begin play from a specific time marker by selecting the numeric time display and entering the desired starting point using the Numeric Keys. You may also change the time display from Track Elapsed, to Track Remaining, to Disc Elapsed, to Disc Remaining, and back to Track Elapsed, just as with

DVDs. The elapsed time will appear as a graphic temperature bar, with additional lines added as more of the track or disc is played.

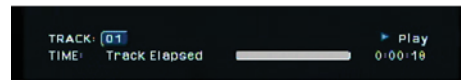


Figure 80 – VCD Status Bar

Zoom

The Zoom function is available for VCDs by pressing the Zoom Button. Repeatedly pressing this button will cycle through the possible settings of 1x, 2x and 3x zoom, as shown in the upper right corner of the screen. After the enlargement indication disappears from view, you may explore the image using the Navigation Buttons.

Playback Control

VCD discs made under the Revision 2.0 specification will usually offer PBC playback control. The PBC Indicator in the front display will turn on automatically with any VCD when the disc is played. With PBC, you can select titles and navigate the disc as with DVDs. However, the access to some functions may be prohibited by PBC playback control; in that case, the prohibit icon will appear on screen.

When a VCD is made without PBC, the disc can be controlled the same as an audio CD, but direct track access by entering a number is not possible without opening the Status Bar. With PBC, many discs include chapter selection menus that are similar to those found on DVDs. However, on VCD discs, the disc menu (if any) is accessed and controlled differently than on DVDs.

- Play will start with the first track (which may be an intro), then proceed to the VCD menu (if any) automatically.
- The Next (Skip Forward) command will skip to the VCD menu from the intro (Track 1) directly.
- Once the menu options appear on the screen, make your selection by pressing the Numeric Keys that correspond to your desired choice. The desired selection will begin playing automatically.
- Direct number entry without any VCD menu shown on-screen has no effect – even when the Status Bar is on.

The Disc Menu Button used during DVD playback is not used for VCD playback. Use of functions when PBC is on will vary according to the disc type. Note that if the disc was created with Playback Control (PBC) it is not possible to change track numbers directly.

PROGRAMMING A PLAYLIST

You may program a playlist for any type of disc except for VCDs by following these steps:

1. If the disc is playing press the Stop button. Playlists may only be programmed in Stop mode.
2. If the Player Information screen is not visible, press the OSD button to display it. Make sure to press the Program icon on the left side of the screen so that you may view the column indicating the play order of the tracks, chapters or titles. Navigate until the Disc List setting is highlighted. See Figure 81.



Figure 81 – Program Submenu

3. Press the Enter Button and select the Clear Program option, which clears all tracks from the playlist. See Figure 82.



Figure 82 – Clearing Play-Order List

4. The simplest way to program your playlist is to scroll down to each track in the desired playlist order. Press the Enter Button and select the Add option. Remember to stay in the Play Order column. If you press Enter while the track name is highlighted, the HS 500 will simply play that track.

See Figure 83, in which the user scrolled to Track 5 in the list, pressed the Enter Button to program it, and selected the Add option. Track 5 was automatically programmed as the next track in the playlist. Since the playlist was empty, Track 5 was programmed to play first.



Figure 83 – Adding a Track to the Playlist

5. Repeat Step 4 to add as many tracks as you desire to your playlist. You need not add all tracks on the disc.

NOTE: If you select a track that was already added to the playlist and add it again, it will not repeat. Instead it will be moved to the end of the playlist. If you wish to repeat a track during programmed play, use the Repeat functions.

6. Navigate to the Disc list column heading and select the Prg list option to view the tracks in programmed play order. You will notice that the tracks have automatically been reordered, and that any gaps in the play order have been filled. See Figure 84.



Figure 84 – Programmed Playlist

7. To play your programmed playlist, navigate to the Playlist setting near the top of the screen. Select it, and choose the Programmed order option. See Figure 85.



Figure 85 – Playlist Setting

OPERATION

Alternatively, press the Playlist Button to toggle the Playlist setting between Disc and Programmed order. See Figure 86.



Figure 86 – Playlist Button

9. Press the Play button to begin play.

Editing a Programmed Playlist

You may edit your playlist by following these steps:

1. If the disc is playing press the Stop button. Playlists may only be programmed or edited in Stop mode.
2. If the Player Information screen is not visible, press the OSD button to display it. Make sure to press the Program icon on the left side of the screen so that you may view the play order column, and navigate until the Prg list setting is highlighted. See Figure 87. Select it and change it to the Disc List option so that you may view all tracks on the disc.



Figure 87 – Viewing a Programmed Playlist

3. Scroll to the play order number for the track you wish to edit, and select it. See Figure 88.



Figure 88 – Editing a Track Within a Playlist

- a) To move the selected track to the end of the playlist, select the Add option.
- b) To move the selected track to a different position in the playlist, scroll to the option that shows three dashed lines. Use the Numeric Keys to enter the desired order in the playlist, and press the Enter button.
- c) To delete the track from the playlist, select the Clear option.
- d) If you wish to add a track that was not previously programmed into your playlist, then scroll to its play order number, select it and

program it into the list using either option a) to add it to the end of the list or option b) to program it to a specific place in the list. See Figure 89.



Figure 89 – Adding a New Track to an Existing Playlist

Canceling A Programmed Playlist

If you wish to play the tracks in the original order in which they appear on the disc, navigate to the Playlist setting and select the Disc's order option. Your playlist will be saved, and you may play the tracks in programmed order by changing the Playlist setting.

To clear a programmed playlist from the HS 500's memory, follow one of these procedures:

1. Navigate to the heading of the play-order column (either Disc list or Prg list) and select it. Choose the Clear Program option.
2. Open the disc drawer. When you close it, even if the same disc is loaded, the playlist will have been cleared.

Using the HS 500 Tuner

Select the HS 500 tuner as the source either by pressing the RADIO button on the remote, which will also turn on the system if it is in Standby mode, or by pressing the OSD button to access the menu for the current source. Use the ◀▶ Navigation Buttons to highlight RADIO and press Enter to select it. The Radio screen will appear as shown in Figure 90.



Figure 90 – Radio (Tuner) Screen

The screen contains the following information:

AUDIO: This setting is used to select the audio surround mode.

STATION NAME: If you have selected the RDS (Radio Data Service) display by selecting its icon on the left side of the screen, this line will

display any identifier transmitted by the radio station. Press the RDS icon to deselect it and remove the Station Name line from view.

#: The HS 500's tuner includes a total of 60 preset station locations, 30 for each band (AM or FM), which may be viewed on screen. The numeric column on the left side of the station list indicates the preset number for each station. The first time you select the tuner as the source you will see a default list of presets. Most likely these stations are not in use in your area. You may select the # symbol at the head of this column and you will be presented with the following options (see Figure 91):

Auto Preset: Select this option to have the HS 500 automatically scan for stations with acceptable signal strength. Each station found will be added as a preset.

Clear List: Select this option to clear the list of presets.

Restore Default List: Select this option to reset the presets to the factory default list.



Figure 91 – Programming Presets

Station: The Station column lists your preset stations by name. Press the Enter Button to listen to the highlighted station, and press the Enter Button again when the proper name of the station is shown on the Station Name line to capture the station's name, if it is being transmitted as an RDS signal and if you have selected RDS display using the icon.

Frequency: Unlike other tuners you may have used previously, the HS 500 is tuned using the preset locations. You may select a preset station to listen to as described above, or you may tune a new frequency for that preset using the Frequency column.

NOTE: Changing the frequency so that you may listen to a different station permanently changes the preset for that location. If you wish to listen to a new station, we recommend that you scroll down to an unused preset location, or one which you don't wish to listen to before tuning to a new frequency.

To tune a new frequency:

1. Highlight the frequency of an unused preset, or a preset you no longer wish to save.
2. Tune to the new frequency in one of three ways:

Auto Tuning: If the Tuning icon on the left side of the screen is depressed so that the word AUTO appears, then the tuner is in auto tuning mode. Use the Forward or Reverse Search/Slow Buttons on the remote (see Figure 92) to scan to a higher or lower frequency.

Press the Search Button once, and the tuner will scan until it finds a station of acceptable signal strength. To stop scanning without finding such a station, press the opposite-direction Search Button.



Figure 92 – Tuning a Radio Station

Manual Tuning: If the Tuning icon on the left side of the screen is deselected so that the word MANUAL appears, then the tuner is in manual tuning mode. The HS 500 defaults to auto tuning mode; thus you may find it necessary to select manual tuning mode first. Use the Forward or Reverse Search/Slow Buttons on the remote (see Figure 92) to tune to a higher or lower frequency by one frequency increment at a time (0.1MHz for FM, or 10kHz for AM).

Direct Tuning: If you know the frequency of the station you wish to listen to, use the Numeric Keys to enter it, and it will be tuned immediately. You must enter digits for all places in the frequency for it to be accepted; e.g., if you wish to tune to station 92.3 FM, enter 9 – 2 – 3 – 0.

To switch between the AM and FM bands, navigate to the tuner band selector icon on the left side of the screen. Press the Enter Button until the desired band appears on the icon. Alternatively, press the Radio button on the remote repeatedly to toggle between the bands.

Deselect the Info icon on the left side of the screen to remove the Audio and Station Name lines from view, enabling you to view a few more presets at a time on screen.

Select a preset station by following one of these steps:

1. With the cursor anywhere on the screen *except* in the Frequency column, use the Numeric Keys to directly enter the desired preset number, and press the Enter Button to begin listening to that station. Remember to first select the desired tuner band.
2. With the cursor anywhere on the screen use the Preset Buttons on the remote to scroll through the list of stations. The Preset Up Button will navigate to a higher-numbered preset, and the Preset Down Button navigates to a lower-numbered preset. However, the cursor will appear to travel in the wrong direction, as the preset stations list is numbered in increasing order down the screen.
3. With any station highlighted, use the ▲/▼ Navigation Buttons to scroll through the list of presets, and press Enter to tune the highlighted station. Use the Navigation Buttons to highlight the large Page Up and Page Down icons when visible on the left side of the screen. Each press of either icon will skip one page of preset stations.

NOTE: Be aware that the screen saver may not activate itself when the tuner is in operation. After selecting the desired station, you may wish to turn off your video display to avoid "burn-in." You will still be able to use the Search and Preset buttons, as well as the Numeric Keys, to tune a new station or preset, which will be displayed on the HS 500's front panel.

OPERATION

Selecting an External Source

As explained in the Installation and Initial Setup sections, you may connect the audio outputs of an external source device, such as a cable television set-top box, to any of the HS 500's analog or digital inputs. You may select any one of the three source inputs: TV, AUX (Auxiliary) or D-IN (Digital Input).

Select the source in one of two ways:

1. Press the correct Source Selector on the remote. If the HS 500 is in Standby mode, this will turn it on.
2. Press the OSD button and use the ◀▶ Buttons to highlight the source in the list at the top of the screen. Press the Enter Button to select the source, and its menu screen will be displayed. Press the OSD button to clear the menu from view.

TV Source

When you highlight TV at the top of the screen, the screen shown in Figure 93 will appear.

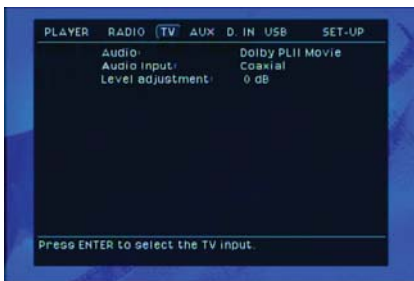


Figure 93 – TV Source Screen

Press the Enter Button to select TV as the source input, and to access the menu settings.

Audio: Use this setting to select a surround mode.

Audio Input: Use this setting to select either the Coaxial or Optical Digital or TV Analog Audio input, depending on which input the TV source device is connected to.

Level Adjustment: This setting allows you to adjust the volume independently for this source.

Press the OSD button to clear this menu from the screen.

Auxiliary Source

When you highlight AUX at the top of the screen, the screen shown in Figure 94 will appear.

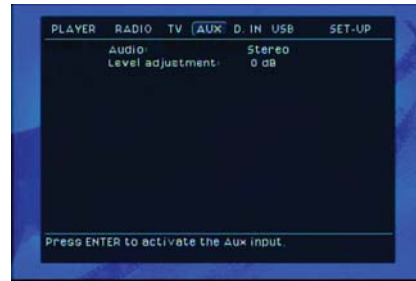


Figure 94 – AUX Source Screen

Press the Enter Button to select AUX as the source input, and to access the menu settings.

Audio: Use this setting to select a surround mode.

Level Adjustment: This setting allows you to adjust the volume independently for this source.

NOTE: There is no setting for selection of the audio input for this source. Only the Auxiliary analog audio input is available.

Press the OSD button to clear this menu from the screen.

Digital Input Source

When you highlight D-IN at the top of the screen, the screen shown in Figure 95 will appear.

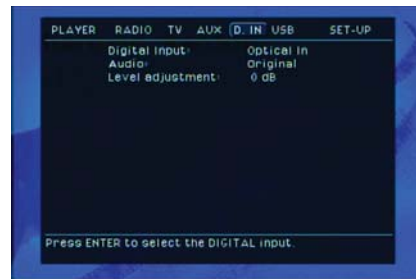


Figure 95 – D-IN Source Screen

Press the Enter Button to select D-IN as the source input, and to access the menu settings.

Digital Input: Use this setting to select either the coaxial or optical digital audio input, depending on which input the source device is connected to. If you have used the coaxial input for the TV source, then connect the D-IN source device to the optical input, and select that input here.

Audio: Use this setting to select a surround mode.

Level Adjustment: This setting allows you to adjust the volume independently for this source.

Press the OSD button to clear this menu from the screen.

Recording

Two-channel analog and digital audio signals are normally available at the Coaxial Digital and Analog Audio recording outputs. Thus, to make a recording, you need only make sure to connect your audio recorder to

the appropriate output jacks, insert blank media and make sure the recorder is turned on and recording while the source is playing.

NOTES:

1. Analog audio signals are not converted to digital form, and digital audio signals are not converted to analog audio form. However, you may record a coaxial digital audio source using the digital audio output.
2. Only PCM digital audio signals are available for recording. Proprietary formats such as Dolby Digital and DTS may not be recorded using the digital audio connection, although, if the source is connected using the analog audio connections, an analog recording may be made.
3. To activate recording using the HS 500 remote, if you have programmed your recorder's codes, press the title and subtitle buttons simultaneously.
4. Please make certain that you are aware of any copyright restrictions on any material you record. Unauthorized duplication of copyrighted materials is prohibited by federal law.

USB Source

The HS 500 is equipped with two USB ports, located on the front right side (USB 1) and the rear (USB 2) of the unit. See Figure 96.



Figure 96 – Front and Rear USB ports

You may insert or remove a client USB device at any time. *Do not* connect a host USB device, such as a personal computer, to either USB port. Doing so may damage the HS 500 or the computer, which would not be covered under warranty.

The USB source device is controlled on-screen. See Figure 97.



Figure 97 – USB Menu Screen

Many of the elements of the screen are similar to the Disc Player Information screen used to navigate CDs.

Disc: Identifies the type of files found on the device.

Time: The time appears in the upper right corner of the screen. It is for display only, and the time-search function is not available.

Audio: This setting allows you to select a surround mode.

Playlist: This setting cannot be changed for USB devices, as programmed play is not available.

Repeat: This setting allows you to repeat play of one track, one folder of files or to turn off repeat play.

Random: Random play is not available for USB devices.

Picture: If there are JPEG still-image files stored on the device, you may select the amount of time each remains on-screen – 15, 30 or 45 seconds. There is no option for simultaneous playback of JPEG and MP3 or other audio files.

You may remove the above lines from view by highlighting the Info icon on the left side of the screen. Pressing the Enter Button to deselect it.

Navigate the files stored on the device as you would the tracks on a CD. Press the Enter Button to expand or collapse a folder, and use the ▲/▼ buttons to scroll through the files. Press the Enter Button to play the highlighted file.

Select the ID3 icon on the left side of the screen to display additional information about the current file, if it has been encoded. ID3 tag information is for display only, and no settings on that screen may be changed.

You may select which types of files on the device are available at any time by selecting the Music, Picture and/or Movie icon. You may select up to three file types at the same time, but at least one file type will always be selected.

- **MPEG 2 files:** MPEG stands for the Motion Pictures Expert Group, which defines digital audio/video standards. The MPEG 2 format is a method of compressing video presentations, and is the standard generally used for television broadcasting and DVD, with some minor modifications appropriate to each type of use.
- **AVI (Audio Video Interleave) files:** The AVI format was developed by Microsoft Corporation to contain media files. AVI files can be quite large, and a number of compression techniques have been developed. Due to the lack of standardization among these compression programs, the HS 500 is not able to play compressed AVI files. Because enthusiasts have adopted a variety of techniques for adding features to the AVI format, it is possible that any particular AVI file will not be compatible with the HS 500.

ADVANCED FUNCTIONS

Advanced Remote Control Functions

The remote control not only operates the HS 500, but it also serves as a universal remote that may be programmed to operate your other home theater components, as described in the Installation section. Each time you select one of your other components, the remote switches to the control functions for that component. Since many buttons will have unique functions for each component, refer to the Function List in the Appendix for assistance. The function of each button will not necessarily correspond to the label printed on the button.

Punch-Through Programming

The HS 500 remote allows you to select one component for the remote to operate, while simultaneously setting certain groups of controls to operate another component. For example, while using the HS 500 to control surround modes and other audio functions, you may wish to operate the transport controls of your tape player. Or while using the remote to control video functions on your TV, you may wish to use your cable box to change channels and the HS 500 to control the volume.

All of this is possible using punch-through programming.

To program punch-through control while operating any device:

1. Simultaneously press and hold the Source Selector for the main device the remote will be operating and the Mute button until the LED flashes and the remote enters program mode.
2. Select the type of punch-through programming.
 - a) To program volume control punch-through, press the Volume Up Button.
 - b) To program channel control punch-through, press the Volume Down Button.
 - c) To program transport control punch-through, press the Play Button.
3. Press the Source Selector for the device whose volume, channel or transport controls you would like to be active while operating the device you selected in the first step. The LED will flash green to confirm the programming.

For example, if you wish to watch your TV while changing channels using your cable box (D-IN), you would first press the TV and Mute buttons until the LED flashed. You would then press the Play Button, followed by the D-IN button.

To undo punch-through programming, follow the same steps as above, but press the same Source Selector in steps 1 and 3.

To switch the remote to operate another device without changing the source selection on the HS 500, press the Mode button. Each press cycles through the devices, indicated by the LED behind the Source Selector lighting up.

Macros

Macros are used to program sequences of up to nineteen commands that are executed with a single button press. Macros are well-suited for power on and off commands, or to send out a favorite multidigit channel number with one button press, or to have the ability to send out a code sequence to control another device while the remote is operating one device.

NOTES:

- Use caution when programming complicated macros. It isn't possible to program a pause or delay before sending commands after Power On, and the component may not be ready to respond to commands instantaneously after powering on.
- Some brands of TVs use the Macro Buttons for the User Settings function (see the Function List in the Appendix). When one of those brands of TVs has been programmed into the remote, you may not program macros.
- If you have learned a code into one of the Macro Buttons, the learned code will take priority, and you may not program a macro into that button.

To program, or "record" a macro, follow these steps:

1. Simultaneously press one of the four Macro Buttons or the Power On Button and the Mute Button at the same time until the Program Indicator LED flashes in amber.
2. Press the Source Selector for each device before you enter commands to be transmitted to that device. This step counts as one of the 19 commands allowed for each macro. The Program Indicator LED will flash twice in green to acknowledge each command.
3. For the Power On command, do not press the Power On button. Press the Mute Button instead.
4. Press the Power Off Button to program the Power Off command.
5. Press the Preset Up Button to end the programming process, and the Program Indicator LED will flash three times in green.

It isn't possible to "edit" a command within a macro. However, you may erase the macro as follows:

1. Simultaneously press and hold the Mute Button and the Macro Button containing the macro until the LED flashes in amber.
2. Press the Preset Down Button to erase the macro, and the Program Indicator LED will flash three times in green.

Resetting the Remote

To reset the remote to its factory defaults, simultaneously press and hold any Source Selector and the Mute Button until the Program Indicator LED flashes in amber, then enter the code "333". The Program Indicator LED will light steadily in green while the remote is resetting. When the LED goes out, the remote will have been fully reset.

Processor Reset

There may be instances where you wish to fully reset the HS 500 to its factory defaults, or the unit may behave erratically after a power surge.

For erratic behavior, we recommend you first turn the Power Switch off and unplug the AC Power Cord for at least three minutes. Plug the cord back in and turn the unit back on. If this doesn't work, you may want to try a system reset.

NOTE: A system reset erases all user configurations, including parental control, audio, video, speaker and level settings and tuner presets. After a reset, you will need to reenter all of these settings.

To reset the HS 500, turn it on, stop playback and remove any disc or USB device. Press the Clear Button to remove any on-screen displays, so that only the HS 500 "splash screen" is visible. Press and hold the Clear Button for five seconds. The on-screen picture may jump, indicating a successful reset.

If the unit still does not function correctly after a processor reset, contact an authorized Harman Kardon service center for assistance. Service centers may be located by visiting our Web site at www.harmankardon.com.

Memory

If the HS 500 is unplugged or experiences a power outage, it will retain user settings for up to four weeks.

TROUBLESHOOTING GUIDE

SYMPTOM	CAUSE	SOLUTION
Unit does not function when Main Power Switch is pushed	<ul style="list-style-type: none"> No AC Power 	<ul style="list-style-type: none"> Make certain AC power cord is plugged into a live outlet Check to see whether outlet is switch-controlled
Display lights, but no sound or picture	<ul style="list-style-type: none"> Intermittent input connections Mute is on Volume control is down 	<ul style="list-style-type: none"> Make certain that all input and speaker connections are secure Press Mute Button Turn up volume control
No sound from any speaker; light around power switch is red	<ul style="list-style-type: none"> Amplifier is in protection mode due to possible short Amplifier is in protection mode due to internal problems 	<ul style="list-style-type: none"> Check speaker wire connections for shorts at receiver and speaker ends Contact your local Harman Kardon service center
No sound from surround or center speakers	<ul style="list-style-type: none"> Incorrect surround mode Input is monaural Incorrect configuration Stereo or Mono program material 	<ul style="list-style-type: none"> Select a mode other than Stereo There is no surround information from mono sources Check speaker-mode configuration in Audio Adjustments submenu The surround decoder may not create center- or rear-channel information from nonencoded programs
Unit does not respond to remote commands	<ul style="list-style-type: none"> Weak batteries in remote Wrong device selected Remote sensor is obscured 	<ul style="list-style-type: none"> Change remote batteries Press the correct selector Make certain front panel sensor is visible to remote or connect an optional remote sensor
Intermittent buzzing in tuner	<ul style="list-style-type: none"> Local interference 	<ul style="list-style-type: none"> Move unit or antenna away from computers, fluorescent lights, motors or other electrical appliances
No picture	<ul style="list-style-type: none"> Intermittent connections Wrong input Progressive Scan output selected HDMI Output is connected to a video display that is not HDCP-compliant Wrong video output setting 	<ul style="list-style-type: none"> Check all video connections. Check input selection of TV or video display. Use Progressive Scan mode only with compatible TV. Press Source Video Format Button to toggle to the correct resolution. The HDMI Output may not be used with video displays that are not HDCP-compliant. Unplug the cable and select another audio and video connection S- and component video are not available simultaneously. Press Source Video Output Button to toggle to the correct video output.
Disc does not play	<ul style="list-style-type: none"> Disc loaded improperly Incorrect disc type Invalid Region Code Rating is above parental control setting 	<ul style="list-style-type: none"> Load disc label-side up; align the disc with the guides and place it in its proper position. Check to see that the disc is CD, CD-R, CD-RW, VCD, MP3, WMA, JPEG, DVD-R/RW, DVD+R/RW (standard-conforming), DVD-Audio or DVD-Video; other types will not play. Use Region 1 or Open Region (0) disc only. Enter password to override or change rating settings
No sound	<ul style="list-style-type: none"> Intermittent connections Incorrect audio input selection for external source DVD disc is in fast or slow mode 	<ul style="list-style-type: none"> Check all audio connections. Make sure audio input selection matches physical connection. There is no audio playback on DVD discs during fast or slow modes.
Picture is distorted or jumps during fast forward or reverse play	<ul style="list-style-type: none"> MPEG-2 decoding 	<ul style="list-style-type: none"> It is a normal artifact of DVD playback for pictures to jump or show some distortion during rapid play.

TROUBLESHOOTING GUIDE

SYMPTOM	CAUSE	SOLUTION
Some remote buttons do not operate during DVD play; prohibited symbol Ø appears	<ul style="list-style-type: none"> Function not permitted at this time 	<ul style="list-style-type: none"> With most discs, some functions are not permitted at certain times (e.g., Track Skip) or at all (e.g., direct audio track selection).
The OSD menu is in a foreign language	<ul style="list-style-type: none"> Incorrect OSD language 	<ul style="list-style-type: none"> Change the display language selection in the System Setup menu.
The Ø symbol appears	<ul style="list-style-type: none"> Requested function not available at this time 	<ul style="list-style-type: none"> Certain functions may be disabled by the DVD itself during some passages of a disc.
Picture is displayed in the wrong aspect ratio	<ul style="list-style-type: none"> Incorrect match of aspect-ratio settings to disc 	<ul style="list-style-type: none"> Change aspect-ratio settings.
Disc will not copy to VCR	<ul style="list-style-type: none"> Copy protection 	<ul style="list-style-type: none"> Many DVDs are encoded with copy protection to prevent copying to VCR.
Password not accepted.	<ul style="list-style-type: none"> Incorrect password being used or password has been forgotten 	<ul style="list-style-type: none"> Stop play of disc and clear all displays from screen. Press and hold Clear Button until the display blinks. This resets the password and all settings to their defaults. You will need to reenter all audio, video and system settings.
Disc Drawer remains open indefinitely	<ul style="list-style-type: none"> Drawer does not close automatically 	<ul style="list-style-type: none"> Press Open/Close button or turn off HS 500 to close disc drawer.
Screen Saver not activated	<ul style="list-style-type: none"> Screen saver will not activate when cursor is on top main title line of OSD, or in column of icons on left side of screen 	<ul style="list-style-type: none"> Move cursor to main disc information or playlist area to avoid burn-in on plasma and CRT displays.
Front-panel PBC indicator remains lit even when PBC setting is Off in System Setup menu	<ul style="list-style-type: none"> PBC indicator reflects disc encoding, not HS 500 status 	<ul style="list-style-type: none"> This is normal behavior.
Pressing Setup Menu button during disc playback displays Player Information menu	<ul style="list-style-type: none"> This is normal behavior when activating OSD during disc playback 	<ul style="list-style-type: none"> Press Setup Menu button a second time to view System Setup menu.
Cannot program playlist	<ul style="list-style-type: none"> Programmed play is not available for all disc types HS 500 must be in Stop mode to program a playlist 	<ul style="list-style-type: none"> Programmed play is available only for CDs, DVD-Audio and Video discs, MP3s, WMAs and JPEGs. Programmed play is not available for VCD discs or for files stored on a USB device. Stop play of disc before programming a playlist.

In addition to the items shown above, additional information on troubleshooting possible problems with your HS 500, or installation-related issues, may be found in the list of "Frequently Asked Questions" which is located in the Product Support section of our Web site at www.harmanardon.com.

HS 500 TECHNICAL SPECIFICATIONS

DVD Player

Pickup:	Semiconductor laser, wavelength 650nm
Video signal system:	NTSC
Video signal vertical resolution:	> 480 lines (DVD)
Video signal-to-noise ratio:	> 60dB (DVD)
Audio frequency response: (Stereo)	DVD (PCM): 20Hz – 22kHz (± 1 dB) CD (PCM): 20Hz – 20kHz (± 1 dB)
Audio signal-to-noise ratio:	> 80dB (PCM)
Total harmonic distortion:	< 0.01% (PCM)
Dynamic range:	DVD (PCM): > 85dB (EIAJ, 2kHz) CD: > 85dB (EIAJ)

FM Tuner

System:	PLL quartz-locked digital synthesizer system
Tuning range:	87.50 – 108.00MHz
Antenna terminals:	75 Ohms, unbalanced
Intermediate frequency:	10.7MHz

AM Tuner Section

Frequency range:	520 – 1720kHz
Signal-to-noise ratio:	45dB
Usable sensitivity:	Loop 500 μ V
Distortion:	1kHz, 50% Mod 0.8%
Selectivity:	± 10 kHz, 30dB

Video Outputs

HDMI output	Video: 480p, 720p, 1080i HDMI Version 1.0-compliant HDCP Version 1.1-compliant
Component video output:	Y: 1 Vp-p/75 ohms, sync negative polarity Pr: 0.7 Vp-p/75 ohms Pb: 0.7 Vp-p/75 ohms
Composite video output:	1 Vp-p/75 ohms
S-video output:	Y: 1 Vp-p/75 ohms C: NTSC 0.286 Vp-p/75 ohms

Audio Section

Amplifier power:	65 Watts per channel, 20Hz – 20kHz, < 0.5% THD into 6 ohms
Line output:	1 Vrms, 1 k ohm
Frequency response:	DVD-Audio (5-channel): 2Hz – 48kHz, ± 0.5 dB DVD (linear PCM): 2Hz – 22kHz, ± 0.5 dB (48kHz sampling)
SNR (A-weighted):	> 115dB
THD:	0.0025%
Dynamic range:	(DVD-Audio): 115dB (24-bit) (DVD): 105dB (20-bit) (CD): 100dB
Channel separation:	> 90dB

General

Power requirements:	AC 120V, 50Hz
Power consumption:	3W Standby, 500W Maximum, all channels driven
Dimensions (H x W x D):	3-3/16" x 17-15/16" x 15-3/4" (81mm x 456mm x 400mm)
Weight:	12 lb (5.5kg)

Depth measurement includes knobs, buttons and terminal connections. Height measurement includes feet and chassis.

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Aspect Ratio: This is a description of the width of a video image in relation to its height. A conventional video screen is four units wide for every three units of height, making it almost square. Newer wide-aspect-ratio video displays are 16 units wide for every nine units of height, making them more like the screen in a movie theater. The program material on a DVD may be recorded in either format and, in addition, you may configure the HS 500 to play back in either format, depending on the features recorded on a disc.

AVI (Audio Video Interleave) Files: The AVI format was developed by Microsoft Corporation to contain media files. AVI files can be quite large, and a number of compression techniques have been developed. Due to the lack of standardization among these compression programs, the HS 500 is not able to play compressed AVI files. Because enthusiasts have adopted a variety of techniques for adding features to the AVI format, it is possible that any particular AVI file will not be compatible with the HS 500.

Chapter: DVD programs are divided into chapters and titles. Chapters are the subsections programmed into a single title on a disc. Chapters may be compared to the individual tracks on an audio CD. Press the Disc Menu Button to see a listing of the chapters on a disc.

Component Video: This form of video signal eliminates many of the artifacts of traditional composite video signals by splitting the signal into a separate luminance channel (the “Y” signal channel) and two color-difference signals (the Pr and Pb signal channels). With a component video connection, you will see greater picture resolution and eliminate many picture imperfections such as the moiré patterns often seen on check-patterned cloth. However, in order to benefit from component video, you must have a video display with Y/Pr/Pb component video inputs. Do not connect the component video outputs of the HS 500 to the standard composite or S-video inputs of a TV or recorder.

Group: The individual tracks on a DVD-Audio disc may be combined into Groups. There may be more than one Group on a disc. Depending on the way a disc’s producers create the program, the Groups can contain different program material, or they may repeat the disc’s content in different audio formats, such as 5.1 audio or high-resolution stereo.

HDCP (High-Bandwidth Digital Content Protection): HDCP is the specification for protecting digitally encoded content from unauthorized copying when it is transmitted from a DVD player (or other video source) to a video display using HDMI or DVI connections. In order to take advantage of the high-resolution output of the HS 500 via its HDMI output, your display must be HDCP-compliant. Virtually all displays with HDMI inputs are HDCP-compliant, but not all DVI-equipped displays are. If you are using the HS 500 with an optional HDMI-to-DVI cable or adapter, check the owner’s manual for your display to determine whether it is HDCP-compliant.

HDMI (High-Definition Multimedia Interface): HDMI is a serial-bus form of communication between the DVD player and the video display or audio/video receiver. It is capable of passing digital audio and high-definition digital video using a single cable. With HDMI, the HS 500 is

capable of outputting high-resolution (720p or 1080i) video and 5.1-channel Dolby Digital or DTS digital audio, with the convenience of just a single cable connection.

JPEG Files: JPEG stands for the Joint Photographic Experts Group, which developed a standard for compressing still images, such as photographs. JPEG files may be created on a personal computer by importing images from a digital camera, or scanning printed photographs. These files may be burned onto a compact disc or stored on a USB device. The HS 500 is capable of recognizing JPEG files and enabling you to view them on your video screen.

MP3 Files: MP3 is an audio compression format that was developed by the Motion Picture Experts Group as an adjunct to the MPEG-1 video compression format. A number of encoding software programs are available for transferring CDs and other audio programs into the MP3 format. The main benefit of MP3 is that it reduces the size of audio files considerably, depending on the amount of compression selected during the encoding process, enabling you to store many more songs on one compact disc than in the standard audio CD format. The HS 500 is capable of playing MP3 files stored either on a disc or a USB device using its advanced graphic interface.

MPEG 2 files: MPEG stands for the Motion Pictures Expert Group, which defines digital audio/video standards. The MPEG 2 format is a method of compressing video presentations, and is the standard generally used for television broadcasting and DVD, with some minor modifications appropriate to each type of use.

Multiple Angle: DVDs have the capability to show up to four different views of the same scene in a program. When a disc is encoded with multiple-angle information, pressing the Angle Button will enable you to switch between these different views. Note that, at present, few discs take advantage of this capability and, when they do, the multiple-angle technology may only be present for short periods of time within the disc. Producers will usually insert some sort of icon or graphic in the picture to alert you to the availability of multiple-angle scenes. In addition, the HS 500’s angle indicator will remain lit in the front-panel display for the duration of multi-angle availability.

Progressive Scan: Progressive-scan playback takes the original video signal on the disc and formats it as a high-scan-rate output with twice the scan lines of conventional video images. Progressive-scan outputs must be connected to “digital-ready” or high-definition video displays, regardless of the technology of the specific display (e.g., conventional direct-view television, front or rear projector, plasma display panel or LCD). In some cases, the displays may have special inputs for use with high-scan-rate inputs, and in others you may need to make adjustments to the display’s setup menus to make certain that the inputs used are configured for an “HD” signal. Although the progressive-scan output uses the component video jacks, it is not compatible with older conventional analog video displays, even when they have component inputs, unless you change the Scan Rate setting in the Video Setup submenu.

Reading: This is a message that you will see when you first press the Play Button. It refers to the fact that the player must first examine the contents of the disc to determine its type, and then extract the information

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about the material on the disc, such as languages, aspect ratios, subtitles, number of titles and more. The slight delay while the contents of the disc are read is normal.

Resume: The operation of the Stop Button on the HS 500 works differently from what you are used to on CD players. On a traditional CD player, when you press the Stop button, the unit does just that – it stops playback. On a CD player, when you press the Start button again, the disc starts from the beginning.

With the HS 500, however, you have two options when playing most discs. Pressing the Stop Button once will stop the playback, but it actually puts the unit in the Resume mode. This means that you can turn the machine off and, when you press the Play Button the next time, the disc will resume playback from the point on the disc where the Stop Button was pressed. This is helpful if you are watching a movie and must interrupt your viewing session but wish to pick up where you left off.

Pressing the Stop Button twice will stop the machine in a traditional manner and, when the disc is played again, it will start from the beginning. In Resume mode, the Harman Kardon screen will appear, and the RESUME message will appear in the Information Display.

The resume function is not available for WMA files. For DVDs, CDs, MP3 files, JPEG files, and VCDs with PBC (Playback Control) only, the resume function will be retained even after the HS 500 has been placed in Standby mode by pressing the Standby/On Switch, but not after the unit has been unplugged from AC power.

Title: For a DVD, a title is defined as an entire movie or program. There may be as many chapters within a title as the producers decide to include. Most discs include only one title, but some may have more than one, to give you a “Double Feature” presentation or to include other special features. Press the Title Button to see a listing of the titles on a disc. When a disc has only one title, pressing the Title Button may show a list of the chapters.

WMA Files: WMA (Windows Media® Audio) is an audio compression format that was developed by the Microsoft® Corporation for use with its Windows Media Player and other devices. WMA files can be even smaller in size than MP3 files, while maintaining similar quality. The HS 500 is capable of playing WMA files stored on a disc or USB device. Although Windows Media Player uses other file formats, the HS 500 is only capable of playing WMA files that end in the “.wma” extension.

Appendix – Default settings, worksheets, remote product codes

Table A1 – System Setup Menu Settings

Setting	Default	Your Setting
Display Language	English	
Preferred Subtitle Language	Off	
Panel Time-Out	Off	
Status Bar Time-Out	5 Seconds	
Parental Control	Off	
Disc Recognition	On	
PBC Support	On	
Screen Saver	On	
Show Angle Icon	Off	

Table A2 – Audio Setup Menu Settings

Setting	Default	Your Setting
Preferred Audio Language	English	
Dynamic Range	Maximum	
Delay Unit	Feet	
Tone Control	Off	
Bass Level	0dB	
Treble Level	0dB	
DVD Sound Mode	Original	

Table A3 – Audio Adjustments Menu (Bass Management)

Speaker Position	Default Delay Distance (From Speaker to Listening Position)	Your Delay Distance	Default Output Level	Your Output Level
Front Left	11 Feet		0dB	
Center	11 Feet		0dB	
Front Right	11 Feet		0dB	
Surround Right	10 Feet		0dB	
Surround Left	10 Feet		0dB	
Subwoofer	N/A	-----	0dB	

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Table A4 – Video Setup Menu

Setting	Default	Your Setting
Aspect Ratio	16:9	
Scan Type	Progressive	
Video Output	Component	
Video Mode	Auto	
Video Resolution	Standard	

Table A5 – Video Adjustments Menu

All settings default to "0", showing only one bar in the center of the graph.

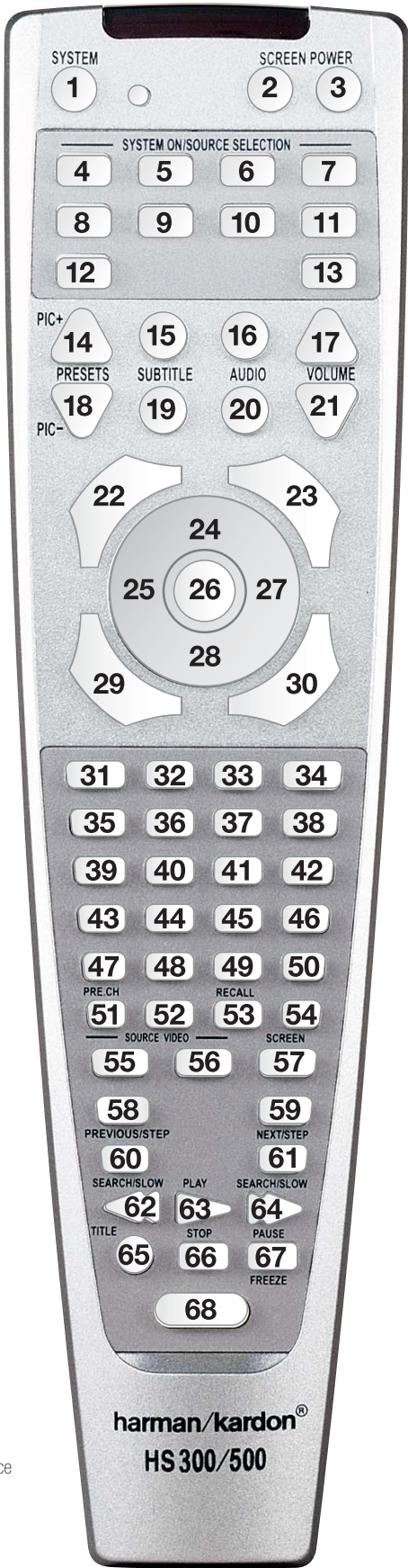
Setting	Your Setting
Color	
Contrast	
Brightness	
Tint	
Black Level	

Table A6 – Source Input Settings

Source	Audio Mode	Your Audio Mode	Input	Your Input	Level	Your Level
TV	Dolby Pro Logic II Movie		Coaxial		0dB	
AUX	Stereo		N/A		0dB	
D-IN	Original		Optical		0dB	

Table A7 – Remote Control Codes

Source	Product Type (Circle One, Default Is Bold)	Remote Control Code
TV	TV	
AUX	Tape, VCR/TiVo , CBL/SAT	
D-IN	Tape, VCR/TiVo, CBL/SAT	



Refer to the numbered buttons in this drawing when using the Function List.

Figure 98 – Remote Control Function List Reference

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Table A8 – Remote Control Function List

	Source Mode	TV	Disc	Radio	AUX & D-IN			USB 1 & USB 2
Key #	Button Name	TV Function	DVD/CD Function	Tuner Function	Tape Function	VCR/TiVo Function	CBL/SAT Function	
1	System Off	System Off	System Off	System Off	System Off	System Off	System Off	System Off
2	Screen Power On	TV On	TV On	TV On	TV On	TV On	TV On	TV On
3	Screen Power Off	TV Off (Power)	TV Off (Power)	TV Off (Power)	TV Off (Power)	TV Off (Power)	TV Off (Power)	TV Off (Power)
4	TV	TV	TV	TV	TV	TV	TV	TV
5	Disc	Disc	Disc	Disc	Disc	Disc	Disc	Disc
6	Radio	Radio	Radio	AM/FM	Radio	Radio	Radio	Radio
7	AUX	AUX	AUX	AUX	AUX	AUX	AUX	AUX
8	TV	Input Select				TV/VCR	TV/CBL (SAT)	
9	D-IN	D-IN	D-IN	D-IN	D-IN	D-IN	D-IN	D-IN
10	USB 1	USB 1	USB 1	USB 1	USB 1	USB 1	USB 1	USB 1
11	USB 2	USB 2	USB 2	USB 2	USB 2	USB 2	USB 2	USB 2
12	SAP	SAP						
13	Mode	Mode	Mode	Mode	Mode	Mode	Mode	Mode
14	Preset/Pic +	Ch +	Picture +	Preset +		Ch +	Ch +	Picture +
15	Info	Input Info	Disc Info	Info		Guide	Info/Guide	Disc Info
16	Mute	Mute	Mute	Mute	Mute	Mute	Mute	Mute
17	Vol +	Vol +	Vol +	Vol +	Vol +	Vol +	Vol +	Vol +
18	Preset/Pic –	Ch –	Picture –	Preset –		Ch –	Ch –	Picture –
19	Subtitle		Subtitle					Subtitle
20	Audio	Audio	Audio Select	Audio	Audio	Audio	Audio	Audio Select
21	Vol –	Vol –	Vol –	Vol –	Vol –	Vol –	Vol –	Vol –
22	Setup Menu	Setup Menu	Setup Menu	Setup Menu	Setup Menu	Setup Menu	Setup Menu	Setup Menu
23	Disc Menu		Disc Menu			Menu	Menu	Disc Menu
24	Cursor Up	Cursor Up	Cursor Up	Cursor Up	Cursor Up	Up	Up	Cursor Up
25	Cursor Left	Cursor Left	Cursor Left	Cursor Left	Cursor Left	Left	Left	Cursor Left
26	Enter	Enter	Enter	Enter	Enter	Enter/Select	Enter	Enter
27	Cursor Right	Cursor Right	Cursor Right	Cursor Right	Cursor Right	Right	Right	Cursor Right
28	Cursor Down	Cursor Down	Cursor Down	Cursor Down	Cursor Down	Down	Down	Cursor Down
29	Status	Status	Status	Status	RDS On/Off	Status	Status	Status
30	OSD	OSD	OSD	OSD	OSD	OSD/Live TV	OSD	OSD
31	Playlist		Playlist		Intro Scan	List	FAV	Playlist
32	Random		Random			Thumb Down	Music/Alt	Random
33	Repeat		Repeat			Thumb Up		Repeat
34	Angle		Angle		Music Scan	Return/Exit		Angle

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	Source Mode	TV	Disc	Radio	AUX & D-IN			USB 1 & USB 2
Key #	Button Name	TV Function	DVD/CD Function	Tuner Function	Tape Function	VCR/TiVo Function	CBL/SAT Function	
35	M1	User 1	M1	M1	M1	M1	M1	M1
36	M2	User 2	M2	M2	M2	M2	M2	M2
37	M3	User 3	M3	M3	M3	M3	M3	M3
38	M4	User 4	M4	M4	M4	M4	M4	M4
39	1	1	1	1	1	1	1	1
40	2	2	2	2	2	2	2	2
41	3	3	3	3	3	3	3	3
42	Clear	Clear	Clear	Clear	Counter Reset	Clear	Bypass/Next	Clear
43	4	4	4	4	4	4	4	4
44	5	5	5	5	5	5	5	5
45	6	6	6	6	6	6	6	6
46	Zoom		Zoom			Cancel	PPV/Cancel	Zoom
47	7	7	7	7	7	7	7	7
48	8	8	8	8	8	8	8	8
49	9	9	9	9	9	9	9	9
50	A-B		A-B					A-B
51	Pre. Ch	Previous Ch				PIP	Previous Ch	
52	0	0	0	0	0	0	0	0
53	Recall	Recall			Display	Slow		
54	PIP	PIP	PIP	PIP	PIP	PIP	PIP	PIP
55	Source Video Output		Video Output					Video Output
56	Source Video Format		Video Format					Video Format
57	Screen	Aspect Change	Aspect Change	Aspect Change	Aspect Change	Aspect Change	Aspect Change	Aspect Change
58	Open	Open	Open/Close	Open/Close	Open/Close	Eject/Skip	Open/Close	Open/Close
59	Learn	Learn	Learn	Learn	Learn	Learn	Learn	Learn
60	Previous/Step –		Previous/Step –	Preset –	Rev Skip	Scan –		Previous/Step –
61	Next/Step +		Next/Step +	Preset +	Fwd Skip	Scan +		Next/Step +
62	R. Search/Slow		R. Search/Slow	Tuning Down	Rewind	Rew		R. Search/Slow
63	Play		Play		Play	Play		Play
64	F. Search/Slow		F. Search/Slow	Tuning UP	FF	FF		F. Search/Slow
65	Title		Title		Rec (w/Subtitle)	Rec (w/Subtitle)		Title
66	Stop		Stop		Stop	Stop		Stop
67	Pause	Freeze	Pause		Rec Pause	Pause		Pause
68	Light	Light	Light	Light	Light	Light	Light	Light

APPENDIX

Refer to Tables A9 through A13 when programming the codes for your components into the remote.

Table A9 – Remote Control Product Codes – TV

TV Brand Name	Code Number List
A MARK	103 132
ADMIRAL	192
ADVENT	004
AKAI	001 160
AMPRO	070 164
AMSTRAD	053
ANAM	045 055 057 076 095 099 103 106 109 112 122 138 240
AOC	001 011 103
APEX	007
BLAUPUNKT	084
BROCKSONIC	140 205 206
CANDLE	001 002 003 011
CAPEHART	059
CENTURION	170 171
CENTRONIC	045
CITIZEN	001 002 003 011 045 092 094 132
CLASSIC	045
CONCERTO	011
CONTEC	041 045 051 052
CORANDO	172
CORNEA SYSTEM	006
CORONADO	132
CRAIG	045 049 055 157 158 159
CROWN	045 132
CURTIS MATHES	001 011 092 132 241
CXC	045
DAEWOO	011 022 023 038 045 046 056 068 073 094 098 102 105 108 111 114 116 118 119 127 132 241
DAYTRON	011 132
DIGI LINK	200
DYNASTY	045
DYNATECH	063
ELECTROHOME	074 132
EMERSON	001 008 011 012 033 045 048 049 051 052 091 132 137 139 141 157 158 162 205
FISHER	013 058
FUJITSU	135
FUNAI	008 033 045
FUTURETECH	045
GE	001 011 014 015 038 057 070 071 121 133 141 145 163 199 219
GRADIENTE	222
GRUNDIG	193
HAIER	009
HALLMARK	011
HARMAN KARDON	039 201
HITACHI	001 011 015 016 017 018 029 043 072 132 144 147
INFINITY	148

TV Brand Name	Code Number List
INKEL	120
JBL	148
JC PENNEY	001 011 014 015 030 035 092 132 145
JENSEN	019
JVC	010 038 040 079
KAWASHO	173
KEC	045
KENWOOD	001 204
KLOSS	002 060
KMC	132
KTV	001 045 132 162
LG (GOLDSTAR)	011 093 097 101 103 104 110 113 118 128 132
LLOYTRON	172 173
LODGENET	069
LOGIK	069
LUXMAN	011
LXI	013 021 053 077 145 148
MAGNAVOX	001 003 011 060 061 062 064 065 066 118 132 145 148 220 226 227
MARANTZ	005 074 148
MATSUI	148
MEMOREX	011 013 069 230
METZ	084
MGA	001 011 033 044 050 074
MIDLAND	199
MINERVA	084
mitsubishi	001 011 030 033 042 044 100 115 134 154 160 167 168 229
MOTOROLA	221
MTC	175 176
NAD	021 031
NATIONAL	169 177 178 179 181 182
NEC	001 013 022 025 030 042 057 121 123 125
NIKEI	045
ONKING	045
ONWA	045
OPTONICA	025 077
ORION	207 208 209 210 211
PANASONIC	038 057 076 081 087 148 169
PENNEY	199
PHILCO	001 003 011 030 045 057 060 061 064 065 118 132 148
PHILIPS	001 003 011 040 060 066 067 088 132 145 148 242
PIONEER	001 011 024 029 031 032 213 214
PORTLAND	011 132
PROSCAN	133
PROTON	011 059 122 132 165
QUASAR	038 057 087
RADIO SHACK	011 025 045 048 118 132 195 196 197 198

Table A9 – continued

TV Brand Name	Code Number List
RCA	011 029 030 057 071 082 133 145 161 163 199 224 225
REALISTIC	013 025 045 048 195 196 197
RUNCO	152 153
SAA	183
SAMPO	005 011 059
SAMSUNG	011 051 085 092 096 104 118 124 128 132 145 243
SANYO	013 026 027 037 041 054 058 078 216 228
SCOTT	011 033 045 049 132
SEARS	011 013 021 033 035 049 058 078 092 132 145
SHARP	011 020 025 028 033 034 077 086 132 154 244
SIEMENS	084
SIGNATURE	069
SONY	001 043 067 075 089 107 117 130 136 194 212 218 223
SOUNDESIGN	003 011 033 045
SPECTRICON	103
SSS	011 045
SUPREMACY	002
SYLVANIA	001 003 008 011 060 061 064 065 118 131 145 148 215
SYMPHONIC	008 184
TANDY	077
TATUNG	057 063
TECHNICS	080
TECHWOOD	011
TEKNIKA	001 002 003 011 030 033 036 045 069 074 092 094 132
TELEFUNKEN	047 083 142
TELERENT	069
TERA	156
THOMAS	008
THOMSON	190 191
TMK	011
TOSHIBA	013 021 035 042 052 063 092 126 129 202
TOTEVISION	132
UNIVERSAL	014 015
VIDEO CONCEPTS	160
VIDTECH	011
WARDS	011 014 015 025 033 061 062 064 065 069 071 132 148
WHITE WESTINGHOUSE	008
YAMAHA	001 011
YORK	011
YUPITERU	045
ZENITH	069 070 090 094 245
ZONDA	103

Table A10 – Remote Control Product Codes – TAPE

Tape Brand Name	Code Number List
AIWA	015 071 100 114
CARVER	006 008 027 036
DENON	105 227 229
FISHER	064
LG (GOLDSTAR)	011
HARMAN KARDON	001 233
JVC	106 116 239 240
KENWOOD	005 013 023 026 064 146 181
LINN	124
LUXMAN	035 137 139
MAGNAVOX	027
MARANTZ	014 027 056 065 087
MCINTOSH	238
MITSUBISHI	242 243
NAD	029 048
NAKAMICHI	025 244 245
ONKYO	002 012 016 017 018 019 115 247
OPTIMUS	026 054 055
PANASONIC	007 010 032 088 195
PHILIPS	027 087
PIONEER	003 039 047 050 066 098 222
QUASAR	007 088
SANSUI	027 113 119 224
SHARP	026 181
SONY	020 022 052 084 089 246
TEAC	009
TECHNICS	007 010 076 088 109 122 193
TOSHIBA	112
VICTOR	106
YAMAHA	021 026 031 040 067

APPENDIX

Table A11 – Table A11 – Remote Control Product Codes – VCR

VCR Brand Name	Code Number List	VCR Brand Name	Code Number List
AIWA	040	MINOLTA	019 026
AKAI	022 048 050 108 109 126	MITSUBISHI	019 026 049 050 053 055 063 065 131 145 146 178
AMPRO	076	MOTOROLA	175 176
AMSTRAD	133	MTC	133
ANAM	037 039 089	MULTITECH	030 040
ASA	134	NAD	139
AUDIO DYNAMICS	018 029 044 048	NATIONAL	140
BROCKSONIC	041 043 110 147 166	NEC	018 029 044 048 052
CANDLE	134 135 137	NORDMENDE	048
CANON	034 037 039 135 140	OPTIMUS	159
CAPEHART	094	OPTONICA	057 058
CITIZEN	134	ORION	147 166
CRAIG	003 045 116	PANASONIC	007 009 010 037 070 074 078 114 125 150 167 172 177 183 185 186
CURTIS MATHES	037 039	PENTAX	019 026 037 039 067
DAEWOO	012 014 017 068 069 094 096 097 098 102 103 104	PHILCO	037 039 040 071
DAYTRON	094	PHILIPS	037 039 040 058 071 075 087
DBX	018 029 044 048	PILOT	087
DUAL	136	PIONEER	019 027 052
DYNATECH	040 057	PORTLAND	094
ELECTROHOME	063	PROSCAN	179 180
EMERSON	013 023 031 033 035 037 040 041 042 043 050 087 110 112 119	PULSAR	076
FERGUSON	136	QUARTZ	001 020
FINLUX	133	QUASAR	039 070 079 125 144
FISHER	003 015 016 017	RADIO SHACK	133 134 137 140 141 142 152 158 159 160 161
FUNAI	040 133	RCA	019 026 039 066 067 093 095 124 125 127 157 172 184
GE	037 039 067 076 093 095 124 127	REALISTIC	003 015 017 020 037 039 040 045 057 058 087 137 152 159 160
GO VIDEO	113 117	RICOH	062
GRAETZ	136	RUNCO	128
HARMAN KARDON	004 018 024 049	SABA	136
HITACHI	011 040 048 067 118 130	SAISHO	143
INSTANT REPLAY	037 039	SALORA	020
ITT	136	SAMSUNG	038 045 088 090 091 093 095 098 099 101 105 106 109 182
JCL	037 039	SANSUI	028 048 052 116 147 166
JC PENNEY	018 019 021 039 045 070 087	SANYO	003 014 017 020 115
JENSEN	048	SCHAUB LORENZ	136
JVC	018 037 039 048 052 054 059 064 111 130 132	SCOTT	023 043 098 110 112
KENWOOD	020 044 048 052	SEARS	003 015 016 017 019 020 026 037 047 077 084 087
LG (GOLDSTAR)	018 019 026 087 092 100 107	SHARP	006 037 058 129 156
LLOYD	040	SHINTOM	030
LXI	019 020 040 087	SONY	001 002 003 016 037 056 060 061 062 080 081 082 129 173
MAGIN	045	SOUNDESIGN	040
MAGNAVOX	037 039 040 071 072	STS	019
MARNATZ	018 037 039 071 073	SYLVANIA	008 037 039 040 063 071
MARTA	087	SYMPHONIC	040
MATSUI	033 036		
MEI	037 039		
MEMOREX	003 017 020 037 039 040 057 076 087 115 120		
MGA	049 050 063		

Table A11 – continued

VCR Brand Name	Code Number List
TANDY	017 040
TASHICO	134
TATUNG	044 048
TEAC	040 044 048
TECHNICS	037 039
TEKNIKA	025 037 039 040 087
TELEFUNKEN	136
THOMAS	040
THOMSON	136
THORN	136
TIVO	187 188 189 190 191 192 193 194 195
TMK	013
TOSHIBA	015 019 047 051 063 085 098 112 155
TOTEVISION	045 087
UNITECH	045
VECTOR RESEARCH	018
VICTOR	052
VIDEO CONCEPTS	018 040 050
VIDEOSONIC	045
WARDS	003 019 023 030 037 039 040 045 057 058 112
YAMAHA	018 040 044 048
ZENITH	040 052 060 062 076 083 087 181

Table A12 – continued

CBL Brand Name	Code Number List
GE	076
GEMINI	015 029 032 060
GOLDEN CHANNEL	037
GOODMIND	112
HAMLIN	055 056 061 099 100 101 117 175 207 208
HITACHI	007 061 188
HOSPITALITY	074 080
JASCO	111
JERROLD	002 003 007 011 015 016 017 073 093 095 096 097 162 167
LINSAY	118
M-NET	043
MACOM	040 191
MAGNAVOX	017 019 068 082
MEMOREX	058
MOTOROLA	007
MOVIE TIME	035 039
NSC	022 035 044 075 190
OAK	023 038 043 059 094 196 197
PACE	179
PANASONIC	050 053 176 177 189 214
PANTHER	114
PARAGON	058
PHILIPS	013 019 020 027 069 085 090
PIONEER	007 041 057 119 171 200 209
POPULAR MECHANICS	116
POST NEWS WEEK	023
PRELUDE	120
PRIMESTAR	162
PTS	018 054 075 076
PULSAR	058
RADIO SHACK	111 112 213
RCA	053 214
RECOTON	116
REGAL	055 056 061 099 100 101 207
REGENCY	063 115
REMBRANT	032
SAMSUNG	004 037 072 186
SCIENTIFIC ATLANTA	003 018 047 048 049 051 052 058 110 183 184 203 204 215 216 217 218 219 220 221 222 223 224 225 227 228
SEAM	121
SHERITECH	029
SIGNAL	037
SIGNATURE	007 188
SL MARX	037
SONY	229
SPRUCER	053 081 177 189
STARCOM	002 011 015 016 163
STARGATE	015 037 120
SYLVANIA	071
TADIRAN	037

Table A12 – Remote Control Product Codes – CBL

CBL Brand Name	Code Number List
ABC	003 005 011 045 048 052 059 110
ALLEGRO	111
AMERICAST	212
ANTRONIX	021
ARCHER	012 014 021 031 112
AT&T	007
BELCOR	113
CABLE STAR	033 113
CENTURION	092
CENTURY	014
CITIZEN	014 111
CLEARMAX	006
COLOUR VOICE	069 090
COMBANO	083 084
COMTRONICS	026 037
DIAMOND	030
DIGI	114
EAGLE	027 037 046 186
EASTERN	063 066 070 115
ELECTRICORD	039
EMERSON	112
FOCUS	116
GENERAL INSTRUMENT	003 007 011 015 017 093 095 096 097 168 210
GC ELECTRONICS	113

APPENDIX

Table A12 – continued

CBL Brand Name	Code Number List
TANDY	024
TELECAPATION	028
TEXSCAN	036 071
TFC	122
TIMELESS	123
TOCOM	045 046 062 170 205
TOSHIBA	058
UNIKA	014 021 031
UNITED CABLE	011 059
UNIVERSAL	012 014 021 031 033 034 039 042 113
VIDEOWAY	124 211
VIEWSTAR	019 022 025 086 087 088 089 190
ZENITH	058 065 098 125 211
ZENTEK	116

Table A13 – Remote Control Product Codes – SAT

SAT Brand Name	Code Number List
ALPHASTAR	422 442 450 472
AMPLICA	356
BIRDVIEW	414 425
BSR	359
CAPETRONICS	359
CHANNEL MASTER	320 321 322 325 361
CHAPARRAL	315 316 319 380 451
CITOH	360
CURTIS MATHES	356
DRAKE	312 317 318 413 481
DX ANTENNA	331 352 362 379 483
ECHOSTAR	304 364 395 397 452 453 463 477 478 484 485
ELECTRO HOME	392
EUROPLUS	415
FUJITSU	324 328 329 334
GENERAL INSTRUMENT	303 311 323 365 403 454 468 474
HITACHI DBS	455
HOUSTON TRACKER	463
HUGHES	372 437 486
HYTEK	359
JANIEL	366
JERROLD	367 454 464 468
JVC	308
KATHREIN	410
LEGEND	453
LUXOR	368
MACOM	317 365 369 370 371
MAGNAVOX	461 473
MEMOREX	453
NEXTWAVE	423 424
NORSAT	373 374
OPTIMUS	466
PANASONIC	366 457 469
PANSAT	420

Table A13 – continued

SAT Brand Name	Code Number List
PERSONAL CABLE	418
PHILIPS	304 375
PICO	407
PRESIDENT	326 404
PRIMESTAR	412 454 464 475
RCA	306 309 408 436 439 465 488
RCA DSS	458
REALISTIC	349 377 480
SAMSUNG	306 307 422 442
SATELLITE SERVICE CO	335 341 353 388
SCIENTIFIC ATLANTA	339
SONY	309 405 487
STAR CHOICE DBS	459
STARCAST	347
SUPER GUIDE	327 423 424
TEECOM	330 333 378 390 391 393 409
TOSHIBA	302 426 460 461 462 470
UNIDEN	323 332 348 349 350 351 354 355 381 382 383 389 403 466 479 480
ZENITH	385 386 387 394 419

Table A14 – DVD Language Codes

The availability of specific languages for the main audio track or subtitles is dependent on the choices made by a disc's producer. You should always consult the disc's jacket for information on languages for any disc. In the case of some languages, you may be required to enter a code from the list below to access that language.

Language	Code	Language	Code	Language	Code	Language	Code
Abkhazian	6566	Georgian	7565	Maori	7773	Swahili	8387
Afar	6565	German	6869	Marathi	7782	Swedish	8386
Afrikaans	6570	Greek	6976	Moldavian	7779	Tagalog	8476
Albanian	8381	Greenlandic	7576	Mongolian	7778	Tajik	8471
Ameharic	6577	Guarani	7178	Naru	7865	Tamil	8465
Arabic	6582	Gujarati	7185	Nepali	7869	Tatar	8484
Armenian	7289	Hausa	7265	Norwegian	7879	Telugu	8469
Assamese	6583	Hebrew	7387	Occitan	7967	Thai	8472
Aymara	6588	Hindi	7273	Oriya	7982	Tibetan	6679
Azerbaijani	6590	Hungarian	7285	Oromo (Afan)	7977	Tigrinya	8473
Bashkir	6665	Icelandic	7383	Panjabi	8065	Tonga	8479
Basque	6985	Indonesian	7378	Pashto, Pushto	8083	Tsonga	8483
Bengali, Bangla	6678	Interlingua	7365	Persian	7065	Turkish	8482
Bhutani	6890	Interlingue	7369	Polish	8076	Turkmen	8475
Bihari	6672	Iunpiak	7375	Portuguese	8084	Twi	8487
Bislama	6673	Irish	7165	Quechua	8185	Ukrainian	8575
Breton	6682	Italian	7384	Rhaero-Romance	8277	Urdu	8582
Bulgarian	6671	Japanese	7465	Romanian	8279	Uzbek	8590
Burmese	7789	Javanese	7487	Russian	8285	Vietnamese	8673
Byelorussian	6669	Kannada	7578	Language	Code	Volapuk	8679
Cambodian	7577	Kashmiri	7583	Samoan	8377	Welsh	6789
Catalan	6765	Kazakh	7575	Sangho	8371	Wolof	8779
Chinese	9072	Kinyarwanda	8287	Sanskrit	8365	Xhosa	8872
Corsican	6779	Kirghiz	7589	Scots Gaelic	7168	Yiddish	7473
Croatian	7282	Kirundi	8278	Serbian	8382	Yoruba	8979
Czech	6783	Korean	7579	Serbo-Croatian	8372	Zulu	9085
Danish	6865	Kurdish	7585	Sesotho	8384		
Dutch	7876	Laothian	7679	Setswana	8478		
English	6978	Latin	7665	Shona	8378		
Esperanto	6979	Latvian, Lettish	7686	Sindhi	8368		
Estonian	6984	Lingala	7678	Singhalese	8373		
Faroese	7079	Lithuanian	7684	Siswati	8383		
Fiji	7074	Macedonian	7775	Slovak	8375		
Finnish	7073	Malagsy	7771	Slovenian	8376		
French	7082	Malay	7783	Somali	8379		
Frisian	7089	Malayalam	7776	Spanish	6983		
Galician	7176	Maltese	7784	Sundanese	8385		

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