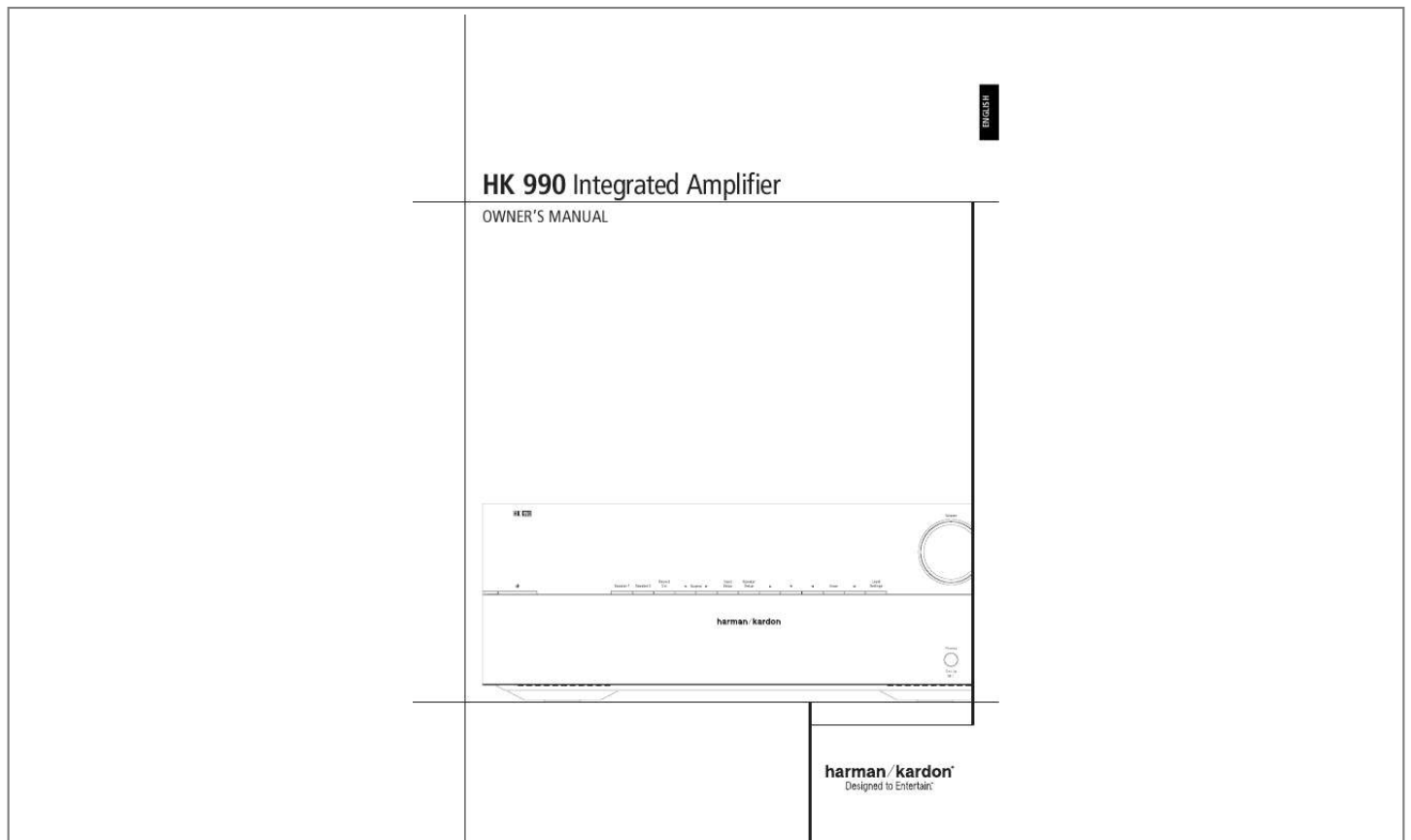




# Your PDF Guides

You can read the recommendations in the user guide, the technical guide or the installation guide for HARMAN KARDON HK 990. You'll find the answers to all your questions on the HARMAN KARDON HK 990 in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

**User manual HARMAN KARDON HK 990**  
**User guide HARMAN KARDON HK 990**  
**Operating instructions HARMAN KARDON HK 990**  
**Instructions for use HARMAN KARDON HK 990**  
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**Manual abstract:**

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. @ @9. @ @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. @ @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. @ @15.

@ @16. @ @17. @ @18. Do not expose batteries to excessive heat such as sunshine, fire or the like. 13 operating Instructions 13 Troubleshooting 14 specifications 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. DECLARATION OF CONFORMITY We, Harman Consumer Group International 2, route de Tours F-72500 Château-du-Loir France declare in own responsibility, that the product described in this owners manual is in compliance with technical standards: EN 55013:2001 + A1:2003 EN 55020:2002 + A1:2003 EN 61000-3-2:2000 EN 61000-3-3:1995 + A1:2001 EN 60065:2002 Jurjen Amsterdam Harman Consumer Group International 09/08 2 Table of ConTenTs Introduction Congratulations on your choice of the Harman Kardon HK 990 Integrated amplifier. In order to obtain the best performance from this integrated amplifier, please be sure to read this owner's manual and use your integrated amplifier only in accordance with its instructions. The special features, of this unit include: In terms of raw power, the HK 990 is the most muscular amplifier ever to carry the harman/kardon® name, more than capable of driving the most demanding loudspeaker loads without breaking a sweat. but the HK 990's awesome power is nothing if not highly refined, extending beyond watts and amps. With a choice of discrete optical or coaxial inputs or an analog only signal path, as well as fourth-generation Real-Time linear smoothing (Rls IV), 2.2-channel ezset/eQ room optimization, dual subwoofer outputs and an audiophile-quality phono preamp section, the HK 990 offers a combination of features you will find irresistible. others, of course, may simply hunger for all that power. We understand completely.

- High Current Capability provides the instantaneous current necessary to precisely drive and control nearly any loudspeaker system
- Ultrawide-bandwidth amplifier design for improved transient accuracy and phase linearity
- low negative feedback for further improved dynamic accuracy
- Use of discrete electronic circuitry to provide the highest performance level
- Dual-path technology allows for pure analog or pure digital audio processing within the same product
- ezset/eQ room optimization for quick and accurate system setup, optimized for two channels and two subwoofers
- symmetric (balanced) XLR analog inputs offer lower noise levels and higher signal-to-noise performance
- Rls IV digital-to-analog conversion technology, with dual conversion using two stereo aD1955 high-grade DaCs in Dual Mono configuration
- The HRs link allows Harman Kardon CD players to lock themselves to the external clock of the amplifier for a jitter-free connection, similar to having the CD playback inside the amplifier
- Dual differential input stages with their own high-voltage supply, resulting in high gain and low noise as well as high channel separation
- Cascoded predriver stage considerably reduces high-frequency distortion, allowing crystalclear high frequencies, free from any harsh sound
- Thermal Tracking Mechanism using ThermalTrak™ output stage transistors that include internal temperature sensors to bias the current of the output stage in real time
- sophisticated electronic protection circuitry guards the amplifier from short-circuit or from damaged speakers and wires, without impairing sound quality, by using current limiting or output relays
- DC servo to ensure that the DC level of the amplifier output will stay within a contained limit at any condition
- Multiple protection circuits will switch the amplifier off in case overcurrent, overvoltage, overtemperature or DC protection is detected
- Dual toroidal transformers and up to 15.000f of supply filtering per channel for high channel separation and tight bass control, even with low-impedance loads
- Dual-line dot-matrix display
- Record out available in both digital and analog domains (two analog outputs and one coaxial digital output)
- a/b speaker switching
- IR remote extension jacks for control of the amplifier when placed in a cabinet
- Harman Kardon system remote for control of compatible Harman Kardon CD players and tuners
- Accessory list
- owners Manual
- Remote Control + 4 aaa batteries
- ezset Microphone
- Power cord

ENGLISH InTRoDUCTIoN 3 Controls and Functions E D C B 1 2 3 4 5 6 7 8 9 A 0 Power Indicator: This leD will illuminate in amber when the unit is in the standby mode to signal that the unit is ready to be turned on. When the unit is in operation, the indicator will turn white. 1 System Power Control: Press this button to turn on the HK 990; press it again to turn the unit off (to standby). entering standby also saves all setup parameters.

2 Speaker 1/2 Selectors: Press to select speaker pair 1 or 2, or both, or neither (headphone output only). 3 Record Out Selector: first press shows the record source presently selected in the display. Pressing on the the source selectors 4 within a few seconds after pressing 3 changes the record source. exit this function by pressing 3 again, or wait for a few seconds until exit takes place automatically. 4 Input Source Selector: select input source for listening by pressing one of the "source" buttons repeatedly to scroll through all the Inputs either forwards or backwards, until the display shows the desired source.



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5 Input Setup Button: Press this button to enter/exit the Input setup Mode. Here you can select the physical connection for each source (analog/Digital etc.) as well as Gain, bass/Treble etc. Refer to the setup section of this manual. 6 Speaker Setup Selector: Press this button to enter the speaker setup Menu, where you can switch subwoofers on and off, select crossover frequency, run automatic speaker setup (ezset/eQ) etc.

Refer to the setup section of this manual. 7 Up/Down Arrow Buttons: Press to scroll through various options for adjustment in a menu. 8 Left/Right Arrow Buttons: Press to increase/decrease a parameter or to select between parameters after selecting a menu for adjustment with the Up/Down arrow buttons. 9 Level Settings Button: Press to enter/exit the balance left/right adjustment for the speakers as well as subwoofer level. A Headphone Jack/Setup Microphone Input: Plug in headphones if desired. With both "speaker 1" and "2" selectors in the off position, output is supplied only to headphones. When using the automatic loudspeaker setup and calibration system (ezset/eQ), plug the microphone in here. B Volume Control: Turn to raise or lower output volume. C Remote Sensor Window: The sensor behind this window receives infrared signals from the remote control. aim the remote at this area and do not block or cover it unless an external remote sensor is installed.

Enter Button: Press to select a parameter for adjustment and to confirm. E Main Information Display: This display delivers messages and status indications to help you operate the amplifier. 4 ConTRols and fUnCTIons Connections 0 Right loudspeaker output, system 2. 1 Right loudspeaker output, system 1. 2 Rs-232 connector for possible future PC update.

Update switch. 3 Input jacks for one or two subwoofer signals from external surround processor. 4 output jacks for two subwoofers. 5 Digital coaxial output jack for digital recording, also permits digital recording of analog sources.

6 Preamplifier output jacks. 7 analog output jacks for tape recording. 8 analog output jacks for CD Recorder analog recording. 9 aUX input jacks, suitable for analog signals from video games, video recorders etc. A TV input jacks for analog sound input from your TV. B TaPe input jacks for analog tape replay. C CDR input jacks, for CD Recorder analog replay. D balanced analog inputs (XIR), for use with all signal sources that output balanced signals. available via the CD Input function only, as an alternative to the unbalanced RCA jacks (Input J). Pin configuration for the XIR Inputs: Pin 1 is Ground, Pin 2 is Plus/Hot, Pin 3 is Minus/Cold.

E left loudspeaker output, system 2. F left loudspeaker output, system 1. G Power lead aC input. H TUnE analog Input jacks. I PRoCessoR analog Inputs. These Inputs go directly to the power amplifier section of the HK 990, bypassing the Volume and Tone Control. Here you can connect the front Channel Pre out L+R signals from an external surround processor, to benefit from the superior power of the HK 990 and control volume from the processor. NOTE: only use the Processor Input with a device that has its own volume control! J CD analog Input jacks. You can select either this Input or the balanced Input as analog Input in the CD Input setup Mode. K Phono Input for record player with Moving Magnet (high output and high impedance) or High-output Moving Coil cartridge.

L Phono Input for record player with Moving Coil (low output and low impedance) cartridge. M If your record player has a separate Ground wire, attach it here to avoid hum noise. N Connect the trigger Input (if available) on one or two subwoofers to these trigger on/off output jacks. When you switch on the HK 990, it sends a trigger signal, which switches on the subwoofer. When switching off the HK 990, the subwoofer also switches off.

O HRs (High-Resolution synchronization) Input. Use the included HRs-cable to connect the HD 990 CD player (or other similarly equipped player) for optimum sound quality. P optical Digital Inputs (Tos-link). Connect any digital device with optical Digital output to one of these Inputs. Push the optical Jack through the hinged door that covers the Input until it clicks into place.

Q Coaxial Digital Inputs. Connect any digital device with Coaxial Digital output to one of these Inputs. Usually, Coaxial Digital transmission is preferable or separate information sheet mean that the product itself, as well as the batteries included or built into the product, should never be thrown away with general household waste. Take them to applicable collection points, where proper treatment, recycling and recovery takes place, in accordance with national or local legislation, or european Directives 2002/96/eC and 2006/66/eC. Correct handling of the product and batteries to be disposed helps saving resources and prevents possible negative effects on the environment or human health. The batteries included with your equipment may be alkaline, Carbon Zink/Manganese or lithium (button cells) type. all types should be disposed of according to the above ins. see below for explanation of the eQ Presets. Level Settings: Press to enter the HK 990 level setting functions. see below for explanation of the level setting process.

Enter: Press to confirm a selection within a HK 990 setup procedure or to switch between selections. see under each setup process for further explanations.

Scroll + : When listening to a Tuner, press + to tune to higher frequency stations and - to tune to lower frequency stations. also see the owners Manual for your harman/kardon tuner. Volume +/- Press to adjust the HK 990 vol: ume up or down. Select: When listening to a tuner, press this button to alternate between auto Tune, Manual Tune or Preset Tune. Pause: When playing a CD, press this button to momentarily pause the disc. Press again to resume play.

Mute: Press this button to momentarily silence the HK 990. "Muted" flashes in the front panel display.

Press again to re-activate sound output. < and > (Search Buttons): Press one of < > these buttons to search fast forward or backward on a CD or Tape. You can hear intermittent sounds from the CD while searching. normal playback resumes when you release the button. | < and > | (Skip Buttons): Press one of < > these buttons to move to the next track or to the previous track on a CD or Tape.

Repeatedly pressing one of the buttons skips more tracks. on a CD, pressing skip forward while playing the last track skips to track 1, and pressing skip back while playing track 1 skips to the last track. Stop: Press this button to stop play of a CD or Tape. Play: Press this button to start playback of a CD or Tape. If the CD drawer is open, the drawer closes and play begins.

Pressing the Play button again pauses play momentarily, same as the Pause button. 10 + and -10: When playing a CD, press the +10 button to skip 10 tracks forward and the -10 button to skip 10 tracks backward from the track you are playing.



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More presses again skips 10 more tracks. Third press exits repeat play. The drawer may also be closed by pressing Play. Audio mode The HK 990 can handle analog as well as Digital signals. The five audio Modes are as follows: 1. 2. 3. 4. 5. Te the minimum load warning above.

The eQ2 Lf + Mf mode is the second Preset available after the ezset/eQ Calibration has been carried out. This Preset is active for the low and mid frequency responses of both the main speakers and the subwoofers when it calibrates the system to the room. as a result, both the subwoofer and main speaker response curves are modified to accommodate the system response to the room. The response curve of the main speakers is corrected up to 1kHz and kept unaffected above this frequency, leaving the rest of the audio spectrum unaffected. EQ3 LF + MF + HF (Low, Mid and High Frequency correction): This Mode should be selected once the ezset/eQ setup has been carried out (see below). The eQ3 Lf + Mf + Hf mode is the third Preset available after the ezset/eQ Calibration has been carried out. This Preset optimises not only the main speaker and subwoofer responses to accommodate the room acoustics, but also corrects the high frequency response of the speaker at the listening position by correcting off-axis response. Please observe that all the five audio Modes described above can be selected independently for all Inputs. Gain The level of different sources may vary. To avoid annoying level changes when switching between Inputs, Gain adjustment from -6 db to +6 db is an option for each Input. The Processor Input has a different range (-24 db to +6 db), to accommodate the output levels of most Processors. Bass and Treble bass and Treble adjustment is only accessible when the audio Mode is not Direct (i.e. is set to DsP, eQ 1, eQ 2 or eQ 3).

When in this mode, you can adjust the bass and Treble from -10 to +10 db below 100 Hz and above 10 kHz. Speaker Setup When pressing the speaker setup button, a Menu opens to offer a choice between Manual mode or ezset/eQ setup. below is a description of both options. Manual Mode If you know your system and your room well and simply want to manage the low frequency response of your system without correcting the frequency response of subwoofers and main speakers, select the Manual Mode. This is a basic bass Manager setup.

once Manual Mode has been selected, follow the steps below: 1. "Subwoofer 1 ON / OFF": select on if a subwoofer is connected to the sUb 1 output, 2. "Subwoofer 2 ON / OFF": select on if a subwoofer is connected to the sUb 2 output, 3. "Crossover Frequency": If either sUb1 or sUb2 is on, you can select the crossover frequency, where the main speakers' lower frequency limit and the subwoofer's upper frequency limit is placed. The setting goes from 40 to 200 Hz in 10 Hz steps. 4. Save and Exit: To save the steps 1 to 3, press enter after each step. EzSet/EQ Mode If you want to benefit from the HK 990's advanced, automatic frequency correction and setup system, select ezset/eQ Mode. The process is described in detail below. Setup process The setup process consists of the following steps: 1.

"Subwoofer 1 ON/OFF": select on if a subwoofer is connected to the sUb 1 output, 2. "Subwoofer 2 ON/OFF": select on if a subwoofer is connected to the sUb 2 output, 3. "Crossover Frequency Automatic/Manual" (Only if at least one Subwoofer is connected to the HK 990): select whether you want to manually set a crossover frequency of your choice, or let the HK 990's algorithm measure your Main speaker limitations automatically. Manual mode: "Crossover frequency": select which crossover frequency you want for the system, between 40 and 200 Hz in 10 Hz steps. When the frequency is adjusted, you will be asked to follow the same steps as below in the automatic mode. Automatic mode: I. II. III. The volume of the sweeps is pre-determined. IV. If no error is found, the system will bring you to step 3. V.

once the sweeps are performed without error, the Display will show "filter Design, please wait...". During this process, the filter parameters are computed and written into the DsP flash memory.

When this is done, the system goes to step 4. IV. "Place mic at 60cm in front of the left speaker" appears in the Display. Position the microphone as prompted, preferably at normal listening height (you may use a photo tripod, there is a threaded hole at the bottom of the microphone for this purpose), then press enTeR. a new sweep will be generated.

If unsuccessful, you will be asked to check the distance or the volume of the system with this message in the Display: "Wrong distance or level, please check and press enTeR". If successful, you will go to step 5. sETUP InsTRUCTIONS 11 ENGLISH Setup Instructions V. "Place mic at 60cm in front of the right speaker" appears in the Display. again, position the microphone as prompted, then press enTeR. a new sweep will be generated. If unsuccessful, you will be asked to check the distance or the volume of the system with this message in the Display: "Wrong distance or level, please check and press enTeR". If successful, you will go to step 6 if at least one subwoofer is connected, or to step 7 in a pure 2.0 system. VI.

There are two possibilities at this stage, depending on the number of subwoofers selected in step 1 of the setup Process: · one subwoofer: The Display shows this message: "Place mic at listening position, press enTeR". Having done this, two sweeps are generated. If successful, you will jump to step 7. If not, the following message is shown: "sub not connected or incorrect level, please check and press enTeR". Check the connection and/or adjust the subwoofer level and press enTeR again. When successful, you will go to step 7. · Two subwoofers: The Display shows this message: "Place mic at 1st listening position, press enTeR". Place the microphone 90cm to the left of your listening position. after pressing enter, four sweeps are generated. Then you will be asked to "Place mic at 2nd listening position, press enTeR".

now place the microphone 90cm to the right of your listening position. after pressing enter, two sweeps are generated. If successful you will jump to step 7. If not, the following message is shown: "sub 1 or 2 not connected or incorrect level, please check and press enTeR". Check the connections and/or adjust the subwoofer levels and press enTeR again.

When successful, you will go to step 7. VII. The setup procedure is now complete, and the Display shows this message: "eQ setup completed, unplug microphone, press enTeR to save eQ setup". Press enTeR as prompted. The Display shows: "saving system equalization".

now the HK 990 goes back to the previous playback mode, and you can test the results of the setup process by going through the various options, pressing the eQ Preset button repeatedly.



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(see below). EzSet/EQ description During the automatic ezset/eQ process, several frequency sweeps were made. Here is a brief explanation of their use. Far Field The first sweeps that occur during step 2 are used to calibrate the speaker system (adjust relative levels and delay, determine the crossover frequency if Manual Crossover frequency was not selected earlier). also, the low frequency response of the speakers is equalized by applying a correction curve (with a range of 20 Hz to 1KHz). This is the curve that is stored during the "filter Design" phase. Near Field The next sweeps measured in front of each speaker (steps 4 and 5) serve to correct the onaxis response of the main speakers. by applying sweeps to each speaker, a correction curve above 1KHz is generated for each speaker. The curves are stored after step 7.

BassQ If at least one subwoofer is connected, the final steps of the ezset/eQ process adjust the low frequency response of the system, taking into consideration the acoustics of the room. The system can correct up to two subwoofers in its processing loop. Using two subwoofers offers the advantage of a more linear low frequency characteristic, limiting the mode effects usually found in this frequency range. The curves are stored after step 7. EQ Preset The HK 990 provides direct access to the three set of filters via the Remote Control through the "eQ Preset" button. Use this button to toggle between these three modes: 1. bassQ (eQ1 lf) 2. bassQ + far field (eQ2 lf + Mf) 3. bassQ + far field + near field (eQ3 lf + Mf + Hf) It will also toggle through the Direct and DsP paths, thus allowing 5 possible settings. note that the eQ Preset button is in fact a short-cut button for the audio Mode function of the Input setup described above. The ezset/eQ measurements are stored in a flash memory, and are not lost even if the amplifier is disconnected from the aC mains. Level settings The level settings Menu permits adjusting the levels of the different activated speakers and subwoofer(s) of the system. Depending on what was adjusted during the speaker setup process, sUb1 and/or sUb2 may or may not be activated. The Level Settings Menu adjustments are: 1. to adjust the balance between left and Right speakers up to 12 db for each side, 2. to adjust the subwoofer 1 level between + and 6 db (when on), 3. @@Press the Power switch 1 to turn on the amplifier. @@@@Press both to hear both speaker pairs at once. To listen to headphones only, press to turn off any active speaker pair. 3. select desired source for listening by pressing the front panel source up or down 4 repeatedly until the name of the source is shown in the Main Information Display or by pressing the desired system on button on the remote control. Please take the time to first associate physical Input jacks to source names, then press the Power button to place the amplifier in standby to have it save your preferences. 4. begin playing the desired source. 5. adjust the Volume control to the desired level. With the Input setup, you may adjust bass and Treble as well as balance if you have not already done this during the setup process. @@@@- 3-head cassette decks with monitoring function can be connected to "Tape" or "CDR" connectors too, but their monitoring function cannot be used. always turn the HK 990 to standby with the Power button before unplugging the Power Cord (or before switching off an external multi-plug).

This saves your current setup in the memory, in addition to safely switching off the power amplifier section of the HK 990. ENGLISH Making a recording You may record any source to tape or to CD-R or to both simultaneously. You may also connect a second tape deck to the CDR inputs and outputs to record from tape to tape (in either direction). To select the desired source for recording (this can be a different source than the one being listened to), press the Record out button, followed by the source selector up or down button on the front panel repeatedly until the indicator for the name of the source to be recorded is shown in the Main Information Display. all Input signals, digital or analog, are available for recording in both digital and analog form. This means that if you wish to copy a vinyl record to a digital recorder, you simply start vinyl play, select Phono as Record source and begin recording on your digital recorder. The built-in analog/digital converters transform the analog Phono signal to digital form. The reverse is also possible: if you Troubleshooting This unit is designed for trouble-free operation; most problems users encounter are due to operating errors. so if you have a problem, first check this list for a possible solution. If the problem persists, consult your authorized HarmanKardon service center.

If the problem is... No lights illuminate when power cord is plugged into AC outlet. No sound is heard.

Sound is not heard from the speaker system on one side. When listening to stereo sound, the left and right sounds are reversed. Intermittent or continuous buzzing or hissing. The remote control and front panel controls don't appear to work. Humming noise when listening to LP Howl or ringing when listening to LP.

Low sound level when listening to LP. LP sound is distorted and too loud. Make sure that... ·Theunitispluggedintoaliveoutlet.

·Speakerswitchescorrespondingtothedesiredspeakersarepressed. ·Correctsourcebuttonhasbeenpressed. ·Volumeisturnedup.

·Speakerwiresareconnectedproperly.

·Hook-upwirestosourcecomponentareconnectedproperly. ·Thespeakerwiresandconnectionwiresareconnectedcorrectly. ·Setthebalancesettingto0

·Thespeakerwiresareconnectedcorrectly. ·Thewiresbetweencomponentsareconnectedcorrectly.

·Theunitisawayfromfluorescentlights,TV,motorsandotherelectricalappliances. ·DisconnecttheAClinecordfromthewallsocket,wait5minutesandthenre-connectit.

·Groundwirefromrecordplayerhasbeenconnectedtgroundterminalonamplifier. ·Cablefromrecordplayerisawayfrompowercordsandspeakercables.

·Recordplayerisnottoclosetospeakers. ·Recordplayerisonstablesurface.

·CablefromrecordplayerisconnectedtothePhonojacks. ·TheMMInputhasnotinadvertentlybeenusedwithanMCphonocartridge

·TheMCInputhasnotinadvertentlybeenusedwithanMMorMCHighOutputcartridge. oPeRaTInG InsTRUCTIons 13 Specifications Continuous Average Power

Per Channel (FTC) 20 Hz - 20 kHz, both channels driven Dynamic Power (IHF, 1 kHz Tone Burst) High instantaneous current capability (HCC) Power

Bandwidth @ Half-Rated output, 8 Frequency response @ 1W (+0/-3dB) Damping factor (20Hz-20k Hz) Signal-to-noise Ratio (Reference rated power

output, A-WTD) Input sensitivity/Impedance 8 ohms: 4 ohms: 8 ohms: 4 ohms: NOMINAL 150 Watts@<0.03%THD 300 Watts@<0.3%THD 220 Watts 440

Watts ±200 amps 20 Hz - 100 kHz 5 Hz - 120 kHz >200 100 db 75 db 350 mV/43k ohms 10 mV/47k ohms 1 mV/100 ohms 2.



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8V 85 mV 8.5 mV  $\pm 10$  db/ $\pm 10$  db aC 230V, 50 Hz 1000 W 1W 440 x 160 x 444 mm 24 kg Overload Tuner/CD Phono (MC): Tuner/CD Phono (MM): Phono (MC): Tuner/CD Phono (MM): Phono (MC): Tone control range, Bass @ 100 Hz/Treble @ 10 kHz Power supply Power consumption Standby power consumption Dimensions (Width x Height x Depth) Depth includes Volume Button and Loudspeaker Terminals Weight 250 Crossways Park Drive, Woodbury, new York 11797 www.harmanardon.com Harman Consumer Group International: 2, Route de Tours, 72500 Château-du-loir, france © 2009 Harman Kardon, Incorporated Part no. 8509 9012 0000 Rev.

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