Owner's Manual

Model Reference CD7

CD PLAYER-DIGITAL TRANSPORT

audio research
HIGH DEFINITION®

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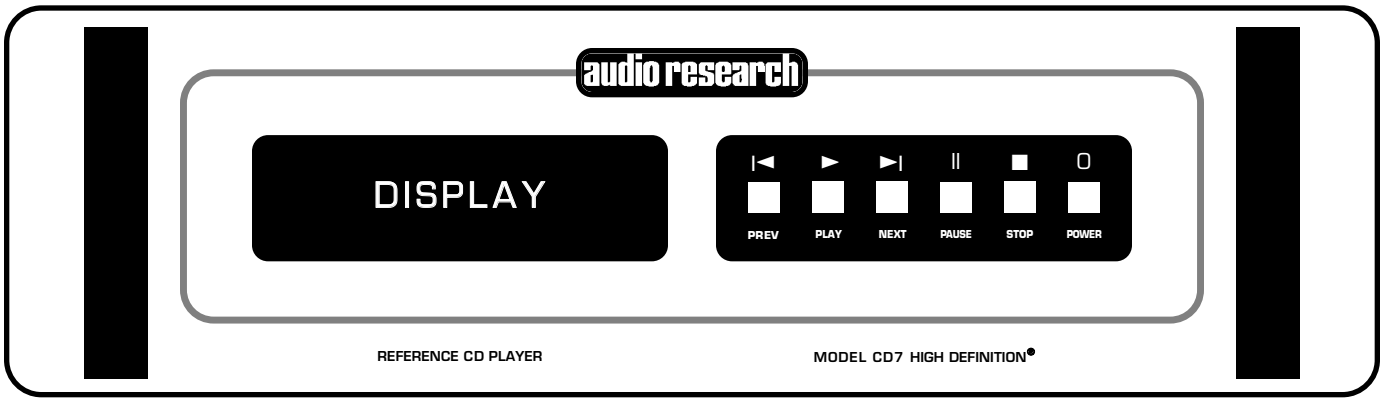

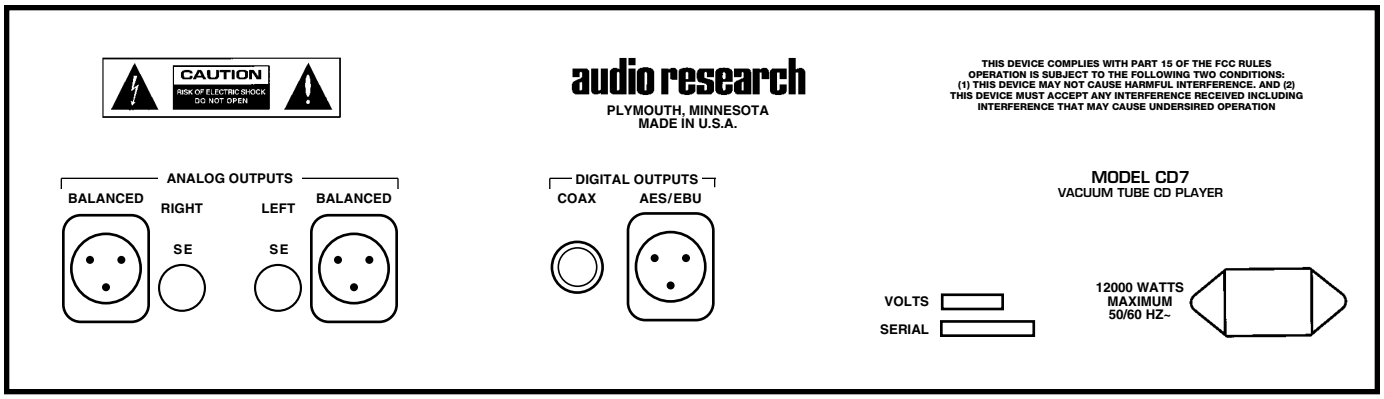

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Preface

Please take the time to carefully read this instruction manual prior to installation or use of your Reference CD7 compact disc player. Because it is a highly advanced electronic instrument, there are several facts and procedures you should know before you place it in operation.

Introduction

We believe the CD7 breaks new ground in the retrieval and transmission of digital data from the CD format. In fact, that's a large part of the fun: just as in the past, when a new cartridge and tonearm combination brought music to life with startlingly improved resolution, subtlety and dynamics, so too you will discover layers of musical information you never knew were there in the mirrored surface of the compact disc.

What's the reason for this superior performance? Well, a look inside the CD7 reveals a wealth of proven Audio Research design philosophy. Circuit boards are Audio Research engineered, with robust construction, careful hand soldering and layouts optimized for lowest digital noise. Sophisticated electronic "jitter stripping" techniques help minimize jitter in the overall circuit. Advanced massive power supply design, with two transformers and extensive regulation, has proved crucial even in digital applications like the CD7. The BNC and XLR digital outputs are transformer coupled and are driven by a high-current balanced line driver. Mechanical damping theory has also been applied to internal mounting of key components and to critical aspects of the transport and chassis structures (including tuned polymer feet), to minimize vibration-induced noise.

Both the analog output stage amplification and the power supply regulation are all-tube and handled by a total of seven class A triode operation 6H30 vacuum tubes (four for the analog stage and three in the power supply).

A bitstream digital-to-analog converter and a high-current pure class A analog output stage allow the CD7 to be used with a line-level preamplifier or integrated amplifier. Both single-ended (RCA) and balanced (XLR) outputs are included. Alternatively, the owner may use the CD7 as a high-quality CD transport in conjunction with an external digital processor.

The CD drive mechanism itself represents the latest thinking from digital engineers, and offers performance clearly superior to older drives. In part, this is because even the servos of the CD7 drive operate fully in the digital domain, whereas older transport models were actually hybrid designs using analog servos, which placed greater demands on power supply reserves. The CD7 laser also has a superior eye pattern for more effective resolution of CD data and, again, lower jitter.

In appearance, the CD7 is pure Audio Research: heavy bevelled front panel, with handles flanking the controls on the right and the readout display on the left. Both controls and display readout are recessed within bevelled openings for a more sculptured appearance. A convenient handheld remote control of all front-panel functions and additional functions is also included.

On the rear chassis panel you will find BNC coaxial and XLR digital outputs. (An RCA/BNC adaptor is included with each unit.) Analog outputs include single-ended (RCA) and balanced (XLR).

Warnings

1. To prevent fire, or shock hazard, do not expose your CD7 to rain or moisture.
2. This unit contains voltages which can cause serious injury or death. Do not operate with cover removed. Refer servicing to your authorized Audio Research dealer or other qualified personnel.
3. The detachable power cord on your CD7 is equipped with a heavy gauge, 3-conductor cable and a standard three-prong grounding plug. For absolute protection, ***do not defeat the ground power plug.*** This provides powerline grounding of the CD7 chassis to provide absolute protection from electrical shock.
4. For continued protection against fire hazard, replace the fuse only with the same type and rating as specified at the fuse holder.
5. ***Do not operate the CD7 player without the supplied CD7 clamp installed on the CD.***
6. Whenever the CD7 is powered up the door covering the drive mechanism/tray area should remain closed after inserting or removing a CD, so as not to block the front-most ventilated area of the top cover. Following this procedure will maintain proper ventilation and also minimize dust intrusion on the lens and drive mechanism.

Packaging

Save all packaging in a dry place away from fire hazard. Your CD7 compact disc player is a precision electronic instrument and should be properly cartoned any time shipment is made. You may not have occasion to return your unit to the factory for service, but if that should prove necessary, or other occasion requiring shipment occurs, the original packaging will protect your CD7 from unnecessary damage or delay.

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Tube Installation Procedure

BEFORE OPERATING THE CD7:

Carefully remove each of the seven 6H30 vacuum tubes from their protective foam blocks and install them in their sockets on the circuit board, matching the "V" number on the tube with each matching numbered tube socket. Note: double damping rings are installed at the factory on each tube for maximum sonic performance.

Installation Instructions

While the CD7 does not dissipate an unusual amount of heat, it is important that it be provided with reasonable airflow to assure long, trouble-free operation. In addition, the following installation guidelines will help insure maximum sonic performance as well as reliable service.

1. Upright and level horizontal mounting is mandatory, preferably on solid, non-resonant shelving. Allow sufficient space for tube convection cooling. Do not block the ventilation holes when the unit is turned on.
2. Do not stack the CD7 on top of another component: not only could this cause overheating, but hum may be introduced into the system.
3. Do not place any objects on top of the CD7; its suspension feet are tuned for the specific weight of the CD7.
4. Do not place or operate your CD7 on a soft or irregular surface such as a rug. This can prevent proper leveling and restrict ventilation
5. Do not operate your CD7 without the top and bottom covers installed. These are required both for safety as well as shielding from interference (except in service operations by qualified personnel).
6. If side-by-side mounting with other equipment is employed, place the CD7 to the left of the other chassis, so as to provide maximum spacing between the transformers of the CD7 and the other component.

Power-up Procedure

Once plugged into the power receptacle, after the tubes have been installed (see above), push the Power switch to turn on the CD7. The central green front panel LED will glow dimly for about a 40 second circuit warm-up interval with the output automatically muted. When the LED glows brightly, the CD7 is ready for operation.

Once powered up and operational, with the CD door fully closed, the unit will default to the operate setting (display, transport and front panel controls are activated).

Because the CD7 reaches its full sonic potential from "cold" in a shorter warm-up time period than a solid state CD player, it is recommended that the CD7 be powered down for any extended time it is not in use. This will save on tube life.

Shut-Down

1. Set preamplifier Mute switch to "Mute" position.
2. Press CD7 Power switch to turn off.

Front Panel Control Functions

(Functions in [ ] indicate labeling abbreviations appearing on remote control unit.)

POWER ⏻: The Power switch turns the CD7 completely on for operation (indicated by the LED being brightly lit), each time preceded by a warm-up interval of about 40 seconds when the LED is dim and the output is automatically muted.

PAUSE ⏸: Interrupts play (display will read "PAUSE"). Release PAUSE by pressing it a second time to resume playing disc.

STOP ■: Stops play. (Number of tracks and total disc track time appear on display.)

PLAY ►: Starts play. ***CD door must first be fully closed.*** Begins to play first track unless another is selected. Restarts track if pressed during play. (Track number and elapsed track time appear on display.)

PREV |◄: Selects the previous track to play. Continue pressing to cycle backward through previous tracks. (Track number will appear on display.)

NEXT ►|: Selects the next track to play. Continue pressing to cycle forward through tracks. (Track number will appear on display.)

Remote Control Functions

The remote control unit includes all of the above described CD7 front panel control functions plus the following additional functions.

0-9 BUTTONS: Pressing numbered button(s) corresponding to the disc track number will advance disc to desired track. Also used to select tracks when compiling a custom disc playback program (see PROGRAM [PROG] function description below).

SCAN: With a stopped CD and the CD door closed, press SCAN and the first 10 seconds of each track will be played in sequence. ("SCAN" will light up on display, then 10 seconds are counted out next to each track number.) To hear a track in full that player is presently scanning, press SCAN button again which will cancel SCAN function.

PROGRAM [PROG]: Allows compiling a custom track selection and playback order of up to 20 tracks on a disc. With the player in STOP mode, enter the desired first track number and then press the PROGRAM button. The word "PROGRAM" will light and the display will show the total number of tracks programmed and total programmed time. If a second track selection is entered, the word "PROGRAM" flashes, indicating that other track(s) have already been stored in the program memory. Press the PROGRAM button to save the second track selection. Repeat procedure to program additional tracks as desired. This programming procedure, with readout of the cumulative total number of programmed tracks and total programming time (including time between tracks), works for any of the first 13 numbered tracks on a disc. You may program track numbers higher than 13, but from then on no track time information will appear on the display. To preview a program before playing it, press PLAY and then use the NEXT ►| and PREV |◄ buttons to cycle through track selections. Pressing PLAY will begin playing program. Pressing STOP once will stop program play. Pressing PLAY again will resume play from beginning of program. To cancel program, press STOP twice.

TIME: Pressing and releasing TIME repeatedly will cycle through the following information on the display: current track time elapsed (default setting initially seen on display), total disc time elapsed, and total disc time remaining.

A/B: Press the A/B button once while music is playing, then press it again; the musical passage in the interval between pressing the button is then repeated in a loop until pressing the A/B button once again to discontinue it. Display reads "A—B" to show activation. Note: you must discontinue the A/B loop before pressing PLAY to resume normal playback.

◄◄: Pressing and holding this button down will fast search backward through the track that is playing until it is released. Rate of search accelerates as button is held down.

►►: Pressing and holding this button down will fast search forward through the track that is playing until it is released. Rate of search accelerates as button is held down.

SHUFFLE [SHUF]: Press SHUFFLE. "SHUFFLE" lights up on display, and tracks will now play in random order. Press SHUFFLE again to return to normal play sequence.

REPEAT [REP]: Press REPEAT once to repeat the entire disc continuously ("REPEAT" lights up on display). Press REPEAT once more to continuously repeat the track now playing ("REPEAT 1" lights up on display). Press REPEAT once again to discontinue repeat mode.

CD Door Functions/Warnings

- ***Do not attempt to play a CD without first installing the supplied CD7 magnetic disc clamp on the CD.***
- Use only the supplied CD7 clamp in your CD7 player.
- CD door must be fully closed for the CD7 to operate.
- All front panel and remote control functions and display are deactivated when CD door is open, to prevent exposure to laser. Do not attempt to bypass this lockout feature. The CD7 will stop playing if the CD door is opened while running.
- If the CD door is closed without a CD in the player and the CD7 is powered up, the display will read "No disc".
- If a CD is inserted in the CD7, the CD door is fully closed and the CD7 is powered up, the CD will spin for a few seconds while the track information is accessed. The number of tracks and total disc time will then be displayed, indicating the CD is ready to play.
- Keep the CD door closed when the CD7 is turned off and not in use to keep dust out of the lens and drive area.

Maintenance

THE CDs

- Keep the shiny surface of the CD clean and free of scratches. Use a soft lint-free cloth and always wipe the CD in a straight line from center to outer edge.
- Never use cleaning agents for conventional records on CDs.
- Detergents or abrasive cleaning agents should not be used on CDs.

PROBLEMS AND THEIR LIKELY CAUSES

If a problem occurs, run through the points listed below before taking your player in for repair.

Check whether:

– condensation has formed on the lens of the laser due to a dramatic change in temperature; this will disappear naturally after some time.

– the CD has been inserted correctly with the printed side up and that there is a CD in the compartment and the cover is fully closed.

– the CD is dirty, badly scratched, warped or defective.

– the player has been inadvertently connected to the PHONO inputs of the preamplifier.

If the problem remains, try to clear it by switching the player off and on again, or unplugging it, waiting 60 seconds, and plugging it in again. If this fails to help, consult your Audio Research dealer.

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Under no circumstances should you attempt to repair or modify the player yourself as this will invalidate the warranty!

Connections

The CD7 offers two standard digital output options. Which option is best for your system will depend on your personal listening preference, the nature of your system installation requirements, and the options allowed by your external digital processor, if one is used.

WARNING: The digital outputs supply only a digital signal and should therefore only be connected to an input which is suitable for this signal. Never connect either of these digital outputs to a non-digital input of a preamplifier (such as those labeled CD, AUX, PHONO, TAPE, etc.) or to a power amplifier. To do so is to risk damage to your system and may void any or all warranties involved.

Digital Outputs

BNC COAXIAL: Use 75-ohm impedance coaxial cable with locking BNC-type connectors. An RCA/BNC adaptor is also supplied.

BALANCED XLR: For connection to digital processors having the AES/EBU-Standard interface.

Analog Outputs

SINGLE-ENDED (RCA): For connection to the inputs of a line-level preamplifier or integrated amplifier,

BALANCED (XLR): For connection to the balanced inputs of a line-level preamplifier.

Servicing

CAUTION: Your CD7 contains sufficient levels of voltage and current to be lethal. Do not tamper with a component or parts inside the unit. Refer any needed service to your authorized Audio Research dealer or other qualified technician.

Should service be necessary, please contact your Audio Research dealer, or Audio Research Customer Service (763) 577-9700.

Cleaning

To maintain the visual appearance of your CD7,occasionally wipe the front panel and top cover surfaces with a soft damp (not wet) cloth to remove dust. A mild, non-alkaline soap solution may be used to remove fingerprints or similar smudges. Cleaners containing abrasives should ***not*** be used as they will damage the brushed grain of the front panel finish, as well as the LED display window. A dry 2-inch pure bristle paint brush works well to remove dust from bevels, reliefs and switches. The CD7 CD compartment may be gently dusted: carefully avoid touching the laser assembly area to prevent possible damage.

FCC Rules

NOTE: 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. These 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 communications. However, there is no guarantee that 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.
- Use interconnect cables of no more then one meter in length.
- 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.

Disposal and Recycling Guidelines

To dispose of this electronic product, do not place in landfill. In accordance with the European Union Waste Electrical and Electronic Equipment (WEEE) directive effective August 2005, this product may contain regulated materials which upon disposal require special reuse and recycling processing.

Please contact your dealer or importing distributor for instructions on proper disposal of this product in your country. Or, contact Audio Research Corporation (763-577-9700) for the name of your importing distributor and how to contact them.

Packing and shipping materials may be disposed of in a normal manner.

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Limited Warranty

Audio Research Corporation products are covered by a 3-Year Limited Warranty, or a 90-Day Limited Warranty on vacuum tubes. This Limited Warranty initiates from the date of purchase, and is limited to the original purchaser, or in the case of demonstration equipment, limited to the balance of warranty remaining after original shipment to the retailer or importer.

In the United States, the specific terms, conditions and remedies for fulfillment of this Limited Warranty are listed on the warranty card accompanying the product in its shipping carton, or may be obtained from the authorized retailer or from the Audio Research Customer Service Department. Outside the United States, the authorized importing retailer or distributor has accepted the responsibility for warranty of Audio Research products sold by them. The specific terms and remedies for fulfillment of the Limited Warranty may vary from country to country. Warranty service should normally be obtained from the importing retailer or distributor from whom the product was purchased.

In the unlikely event that technical service beyond the ability of the importer is required, Audio Research will fulfill the terms and conditions of the Limited Warranty. Such product must be returned at the purchaser's expense to the Audio Research factory, along with a photocopy of the dated purchase receipt for the product, a written description of the problem(s) encountered, and any information necessary for return shipment. The cost of return shipment is the responsibility of the purchaser.

Specifications

OUTPUTS, ANALOG: (Stereo)

1. Balanced XLR 5.4V RMS (+14.6dBv) max.
2. Single-Ended RCA 2.7V RMS (+8.6dBv) max.

OUTPUT IMPEDANCE: (Analog)

660 ohms BAL, 330 ohms SE.

FREQUENCY RESPONSE:

0.5–20,000Hz +0 -1dB.

SIGNAL TO NOISE RATIO: 110dBA

DISTORTION: .005% 1kHz

RESOLUTION: 24 BIT DELTA-SIGMA DAC.

CHANNEL SEPARATION: 95dB 1kHz.

OUTPUTS, DIGITAL: (to external Digital-to-Analog Converter)

1. XLR Balanced AES/EBU 110-ohm 4V P-P.
2. BNC coax SPDIF 75-ohm 0.7V P-P.

SIGNAL FORMAT (disc):

Sampling frequency: 44.1kHz.
Quantization Bit: 16bit linear per channel.
Channel bit rate: 4.3218Mb/sec.
Channel modulation code: EFM (8 –14 modulation).
Error correction: CIRC (cross interleave Reed Solomon Code).

DRIVE MECHANISM (top load):

Wow & Flutter: Unmeasureable (Quartz stability).
Discs: Accepts 5" (12cm) and 3" (8cm) sizes.

OPTICAL PICKUP:

Type: 3-beam LDGU (Laser Diode & Grating Unit), with holographic diffraction light pen.
Laser: GaAlAs semiconductor, 780nm, 0.5mW maximum output.
Servo: Digitally-controlled low-inertia linear positioning actuator.

JITTER REDUCTION: High-stabillity crystal-controlled re-clocking for all outputs.

DISPLAY: Six-digit vacuum fluorescent, with optical filter.

POWER REQUIREMENTS (detachable power cord):

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100-135VAC 60Hz (200-270VAC 50/60Hz), 120 watts maximum. (5 watts maximum when unit is turned off)

COMPLIANCE: RF Interference complies with FCC and CE MARK.

FRONT PANEL CONTROL FUNCTIONS:

PREV |◄ selection
PLAY ► disc
NEXT ►| selection
PAUSE II program
STOP ■ disc
POWER O on/off

INFRARED REMOTE CONTROL FUNCTIONS:
(Standard RC 5 code, 30ft max distance)

0–9 digit entry keys
SCAN ten seconds each track
PAUSE program
REP track/disc
STOP program
PLAY disc
SHUF random sequence play
|◄◄ search, REV
►►| search, FWD
STBY operate/standby mode
PROG enters selection on program list
TIME elapsed, remaining track; remaining disc
A/B repeats segment
|◄ previous track
►| next track

DIMENSIONS : 19" (48 cm) W x 5 1/4" (13.4 cm) H x 15 3/8" (39.0 cm) D. Handles extend 1 1/2" (3.8 cm) forward of the front panel. Rear connectors extend 3/4" (1.9 cm).

WEIGHT: 32.5 lbs. (14.8 kg) Net; 43 lbs. (19.5 kg) Shipping.

Specifications subject to change without notice.