CD55 CD Player

Owner’s Manual
Warranty Registration

SAVE YOUR SALES SLIP AND MAIL WARRANTY REGISTRATION TO RESOLUTION AUDIO

- You must be able to show evidence of purchase date to obtain warranty parts and service.
- Warranty registration of your unit ensures that you will be contacted immediately if there should be a safety inspection, modification, or other product recall under applicable laws or regulations or otherwise.

Model: CD55 CD Player
Serial Number: ___________________
Purchase Date: ___________________
Purchased From: ___________________

Safety Precautions

The lightning flash with an arrowhead symbol, within an equilateral triangle, is intended to alert the user of 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 of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

- Check that the operating voltage of your unit is identical with the voltage of your local power supply.
- Replace fuses only with identically rated fuses.
- To reduce risk of electric shock keep unit dry and grounded. Do not operate the unit near water.
- If the unit causes RF interference with another product, move one unit or both until the interference is eliminated. If interference cannot be sufficiently reduced, cease operation and consult your dealer.
- Clean the chassis, faceplate, and controls with a soft cloth lightly moistened with mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzine.
- Do not discard the original box and packing material. When shipping the unit to another location or for repair work, repack in original material and double box the contents.
- Do not attempt to service this product. All servicing should be referred to qualified service personnel.
- Do not install the unit in a location near heat sources such as radiators or heat ducts, or in a place subject to mechanical vibration or shock.

Warranty

Resolution Audio warrants all products against faulty workmanship or defective materials for a period of three (3) years from date of shipment, with the exception of transport mechanisms. Transport mechanisms are covered for one (1) year. If a defect occurs within this period, Resolution Audio will repair, replace or issue credit for the unit at our discretion. Prior return authorization is required. All merchandise must be returned in the original packing material and double boxed. If a product is recalled and the product is not returned within 60 days, the warranty is void. This warranty is not transferable. Resolution Audio assumes no responsibility for defects resulting from misuse, neglect, improper installation, unauthorized repair, alteration, inadequate packing, or accident. No other obligations expressed or implied shall be assumed by Resolution Audio.
CD55 CD Player

Thank you for purchasing the CD55 CD Player. When Resolution began design of the CD55, we sought to offer true high-end performance in a single-box player. Accordingly, the CD55 utilizes quality components throughout the unit. For the CD drive mechanism we selected the Philips P10500, their latest high-end offering. This mechanism has greater reading capability than their previous designs and can also read unfinalized CD-RWs. Digital filtering is implemented through a custom programmable DSP. Our filter is also HDCD® compatible. The digital-to-analog conversion is accomplished by four Burr-Brown 1704 (96/24) DACs in a balanced configuration. The DAC output is then fed to an ultra-low noise analog output stage with analog volume control. Every aspect of the player was designed for maximum performance. We are very pleased with the CD55 and hope that you will enjoy listening to it as much as we do.

Front Panel and Controls

1) Main Display – Indicates track and time information. Also shows status for Repeat, Program, and Shuffle functions.
2) Invert – Indicates normal phase (0 degrees) when dark and inverted phase (180 degrees) when lit.
3) Volume Display – Indicates volume level from 0 (mute) to 99 (full scale).
4) Volume Controls – These buttons are used to increase or decrease volume level.
5) HDCD® – Indicates HDCD® decoding when lit.
6) Track Forward – This button advances one track with each press. Holding this button advances tracks rapidly.
7) Track Backward – This button successively backs up one track with each press. Holding this button will rapidly back through tracks.
8) Stop – This button stops play.
9) Pause – This button pauses play at current point in track. To resume, push Pause again.
10) Play – This button commences playback.
11) Open / Close – This button activates the drawer. Do not push the drawer to close it.

HDCD® is a registered trademark of Pacific Microsonics, Inc.
Rear Panel and Connections

1) DIN Connector – Analog output connector for connection to European products.
3) Balanced Analog Outputs – XLR connector.
4) Power Entry – IEC power connector, double fused.

Remote Control

Keypad – These keys, 0-9, can be used to enter a track number directly. For example, to play track three press the three key and then press PLAY. To play track ten, press the one key, then the zero key, then press PLAY.

Standby – The STANDBY button instructs the CD55 to toggle between power-up and standby. When the unit is in standby, the display will be turned off. Volume control settings will be retained.

Phase – Pressing this button will toggle between normal phase (0 degrees) and inverted phase (180 degrees).

Store – This button can be used to store tracks for programmed playback. To program tracks, enter the track number, followed by STORE. Repeat for each track programmed. When complete, press PLAY to begin playback.

Repeat – Pressing this button will toggle the player through three states: No Repeat (normal play), Repeat-1 (same song), and Repeat All (entire disc).

Time – Pressing this button will toggle the display through three display modes: time elapsed into track (normal play), time elapsed into disc, and time remaining on disc.

Shuffle – Pressing this button will invoke random play until all selections have been played.
Basic Operation

Setup requires three steps:

1) Plug power cord into IEC inlet.
2) Connect analog outputs to preamplifier or amplifier.
3) Activate power switch on rear panel.

The eight front panel switches can control basic functions. Other features can be accessed using the remote control.

Open / Close

Press OPEN / CLOSE to insert or remove a disc. Although this button can be pressed during normal play, we recommend pressing STOP prior to activating the drawer. Do not push tray to close it.

Play

Once a disc has been inserted, press PLAY to commence playback. If PLAY is pressed in the middle of a track, playback will commence from the beginning of the same track.

Pause

Press PAUSE during play to stop at a particular point. To resume play, press PAUSE again. If PLAY is pressed, playback will resume at the beginning of the track.

Stopping play

Press STOP to cease playback.

Skipping ahead or back

Press TRACK FORWARD to skip ahead by one track each time the button is pressed.

Press TRACK BACKWARD to skip back by one track each time the button is pressed. If the button is pressed once midway through a track, play returns to the start of the previous track.

Rapid advance (Rapid reverse)

This function can be invoked through the remote control. Press SEARCH FORWARD or SEARCH BACKWARD to move forward or backward within a track. The speed of the advance (reverse) is relatively slow at first, then becomes faster.

Volume Control

Use these buttons to raise and lower volume level. The range has a low of 0 (Mute) to a high of 99 (full scale).

Notes:

• The first time the power switch is activated on the back panel, the unit will power up at a volume level of 50.
• If unit is connected to a preamplifier, set the volume level at 99.
• At level 0 (Mute), volume display will turn off.

Specifications

CD Mechanism: Philips P10500
Master Clock Jitter: Below measurable levels
Digital Filter: 16x hybrid design incorporating custom Resolution software DSP and Pacific Microsonics PMD-100 with HDCD® decoding.
Digital/Analog Converters: Four (4) Burr-Brown PCM1704 24-bit DACs
Current-to-Voltage: Passive
Analog Filter: 3rd Order Passive
Analog Attenuation: 0.5 dB steps from -30 dB to full scale
1.0 dB steps from -69 dB to -31 dB
Analog Outputs: Balanced XLR, Single-ended RCA, DIN
Output Voltage: 3.5 V RMS
Output Impedance: 100 Ohms
Power Requirements: Preconfigured at factory
100-120/200-240 VAC, 50/60 Hz
Power Consumption: 35 Watts
Weight: 25 lbs. / 11.5 kg.
Dimensions: 17.00 W x 12.50 L x 3.50 H (inches)
430 W x 320 L x 90 H (mm)
1) Custom CD Servo PCB – Resolution designs its own circuit boards to control the CD mechanism. By taking control of servo board design, we can insure that the clock circuitry and signal paths are optimized for low noise and jitter. In addition, we are able to keep the interface with the main circuit board consistent, so that if a new mechanism is required later for servicing, compatibility will not be an issue.

2) Philips P10500 Mechanism – This is the latest high-end drive mechanism offered by Philips. The P10500 offers improved disc reading capability compared to their previous designs. It can even read unfinalized CD-RWs. The P10500 is driven by a Hall effect motor and will deliver a long lifetime of reliability.

3) Hybrid Digital Filter Architecture – The CD standard calls for music to be sampled 44,100 times each second. Each of these samples is assigned a value from 0-65,535. This value represents a voltage that is used to reproduce the musical signal. The purpose of an oversampling digital filter is to calculate intermediate data points between each sample. Use of this technique greatly improves the sonic performance of the CD playback system.

Every multi-bit CD player uses digital filter technology. Typically, 8x oversampling is used. In other words, every second 44,100 samples enter the filter and get transformed into 352,800 separate data points. The two primary approaches for implementing digital filters is through dedicated silicon, or software programmable digital signal processors (DSPs). We have pursued a hybrid approach that exploits the best characteristics of both methods.

By using both a Motorola DSP incorporating our own custom code and the Pacific Microsonics PMD-100, we are able to achieve 16x oversampling while preserving the HDCD® decoding process. Because the DSP is reprogrammable, we can update the code at a later time if better filtering algorithms are developed.
4) Low Jitter Master Clock – The CD55 electronics are synchronized by a low jitter master clock. In Resolution CD players, the clock is located close to the D/A converters to keep timing as accurate as possible. By contrast, many common designs locate the master clock at the CD mechanism. These designs must pipe the clock to the converters, sometimes over very long lines, and typically exhibit a great deal of jitter at the D/A converters.

5) Balanced D/A Conversion – The CD55 uses two D/A converters per channel to achieve balanced conversion. The primary benefit of balanced conversion is that it eliminates noise introduced in the conversion process, a phenomenon known as common mode rejection. In short, both the right and left channels are split into plus and minus signals (180 degrees out of phase) prior to conversion and decoded by separate converters. As a result, any noise introduced disappears when the plus and minus phases are later combined.

To enjoy the benefits of balanced conversion, balanced connectors (XLR) are used to connect to the preamplifier. Most units with balanced conversion also offer single-ended outputs (RCA). Many manufacturers will simply discard the minus output of balanced conversion and connect the positive output to the single ended connector. While this approach is inexpensive, it usually results in a sonic difference between the single-ended and balanced connectors. To reduce this difference, Resolution sums the plus and minus signals before connecting to the single-ended connectors. As a result, our single-ended output performs at the same high level as our balanced outputs. Any sonic difference noted between the outputs is often due to the cables or the preamplifier interface.

6) Low Noise Analog Output w/Analog Volume Control – The high resolution of the 24-bit D/A converters requires an equally detailed analog output stage. To keep unnecessary circuitry to a minimum, we chose to use passive current-to-voltage (I/V) conversion. Passive I/V maintains linearity and a constant impedance through the circuit while avoiding problems inherent in active stage designs.

The analog output contains a volume attenuator that provides precision volume control with minimal signal degradation. In contrast to digital-domain volume control, no converter resolution is lost. In addition, the 6 dB boost required for some HDCD® sources is automatically detected and activated using the analog attenuator. While digital-domain attenuation reduces effective converter resolution by 1 bit for non HDCD® sources, and analog-domain approaches require signal switching, this approach avoids both these limitations.

Volume level is indicated on the front panel as a number between 0 (mute) and 99 (full scale). The output level is adjustable by 0.5 dB steps from full scale to -30 dB (40-99). From -31 dB to -69 dB (1-39) the level is adjustable in 1 dB steps.

7) Robust Power Supply – Power supply design is important for two reasons. First, a well designed supply should not contribute any extraneous noise to the system. If power supply noise leaks into the digital decoding or analog output circuitry, the noise floor will be much higher and power supply harmonics will degrade sonic performance.

The power supply must also be able to deliver required power levels to the circuitry over a wide range of voltages (100-240) and 50/60 Hz frequencies. An inadequate supply can cause behavior ranging from poor performance, to system failure. Consequently, we have dedicated three separate transformers to guarantee that the supply is both robust and low-noise. Toroidal transformers are particularly suited for high-end audio applications.

8) A/C Filtering – The power entry module incorporates a master power switch, fusing, and A/C line filtering. The A/C filter serves a dual purpose in that it cleans the incoming power while also preventing digital noise from escaping the unit. The power entry module uses a standard IEC interface to the power cord, allowing the customer to use the player in multiple countries.

9) Miscellaneous – The CD55 also contains many other design features. For example, wiring has been kept to a minimum to improve manufacturability, reliability, and performance. Where wiring is used, lengths are kept short to prevent noise pickup.

From a structural point of view, the chassis and top are fabricated from 16-guage steel. Steel provides a good RF shield that reduces interference. The chassis bottom includes two additional foot mounts that allow the customer to arrange the supports in a tripod configuration, or add isolation accessories using standard 1/4-20 threads.