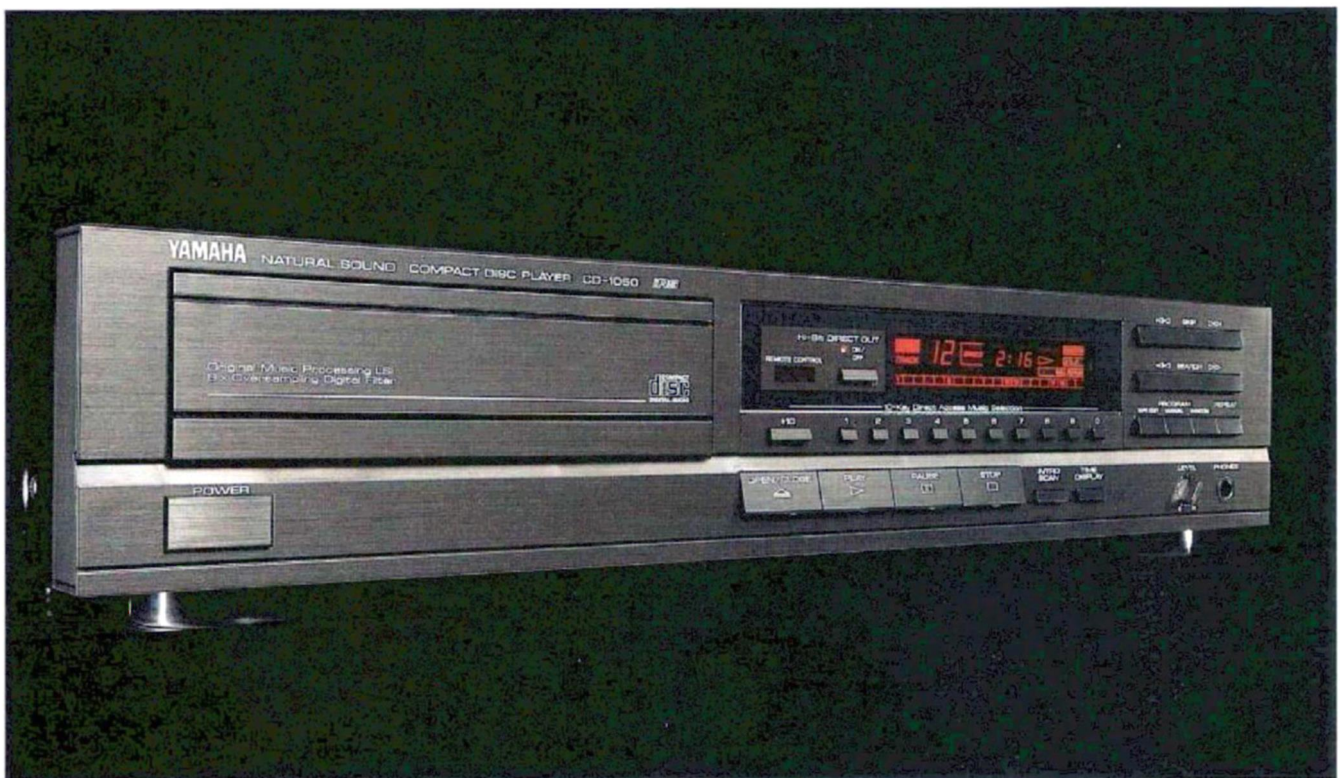


YAMAHA

CD-1050 *RS* CD-950

Natural Sound Compact Disc Players

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Archiv Michael Otto





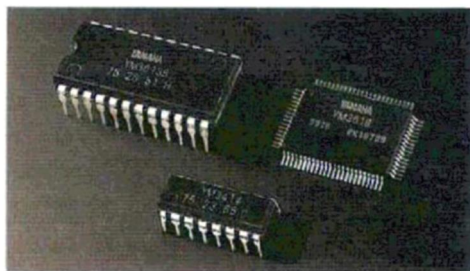
CD-1050

Yamaha Gives You More Precise Digital Sound, with Less Difficult Operation

Yamaha's newest CD players, the CD-1050 and CD-950, are creations that combine some of the most advanced digital audio technology with astoundingly simple operations. Both of these facets guarantee that these players will give you the superb performance only Yamaha audio components can deliver.

Both the CD-1050 and CD-950 incorporate the results of Yamaha's extensive research and development in audio reproduction to bring you the highest quality and most precise digital sound. For example, both have left and right independent Twin D/A Converters. And the digital-to-analog converter for the CD-1050 was specially designed to match the high-speed capabilities of the Hi-Bit digital filter while the CD-950 has a 16-bit—providing a purer audio signal. Additionally, Yamaha has included a newly-designed floating suspension system to maximize tracking accuracy and deliver consistently high performance. This suspension system is further enhanced by the over all anti-resonance and anti-vibration design of the chassis. To further improve the output signal waveform, Yamaha has isolated the digital and analog portions of

the circuitry to minimize interference, and has incorporated a new 3-beam laser pick-up and 2-way microcomputer controlled servo system for more reliable and precise performance.



Of course precise digital technology is only a part of the Yamaha design. The CD-1050 and CD-950 also incorporate the most convenient and easy-to-use operational features possible. These include easy-to-reach front panel controls, a large easy-to-read 8-digit LCD display, 24-Track Random Access Programming, 5-Way Repeat Play, and 8 cm (3") CD single compatibility.

In order to take advantage of all these digital audio features, the CD-1050 uses the Hi-Bit 8-Times Oversampling Digital Filter, a new advance in Yamaha's

original Hi-Bit digital technology. This filter minimizes the need for analog low-pass filter treatment by achieving a signal waveform that has analog-like smoothness and no phase deviation. This output signal has incredible integrity—in fact, it's so good that Yamaha included a Hi-Bit DAC Direct Output Switch so that you can completely bypass the analog filters and listen directly to the pure digital sound.

At a more affordable price, the CD-950 uses most of the same technology but has the somewhat simpler Double Resolution 16-bit Digital Filter. This unique filter system is on one IC chip, but still ensures high-quality sound. The precise sound from this filter is further enhanced through the use of Twin Hi-Speed D/A Converters. A feature usually found only on high-end CD players.

More Precise Hi-Bit 8-Times Oversampling Digital Filter (CD-1050)



Yamaha digital audio technology is used to reproduce the purity of the original audio signal before the analog-to-digital encoding. Digital processing is not, however, the complete answer to analog system performance problems. It has introduced

Only in a Yamaha *The reproduction of sound is a commitment that begins and ends with music. A challenge that is met not only in the laboratory, but in the recreation of the human feelings and emotion that are the ultimate test of music.*

At Yamaha, we take the commitment seriously. That's why we're specialists in contemporary technologies. We custom design and manufacture LSIs that are the standard of quality for digital sound in both electronic musical instruments and compact disc players. We develop new metals and synthetic materials that recreate the rich acoustic properties of more traditional materials, meeting the stringent requirements of high-performance electronics. And we draw on our skill in craftsmanship, the result of a century of experience in making fine musical instruments, to ensure a special standard of quality in both sound and styling.

A standard of quality found only in a Yamaha.

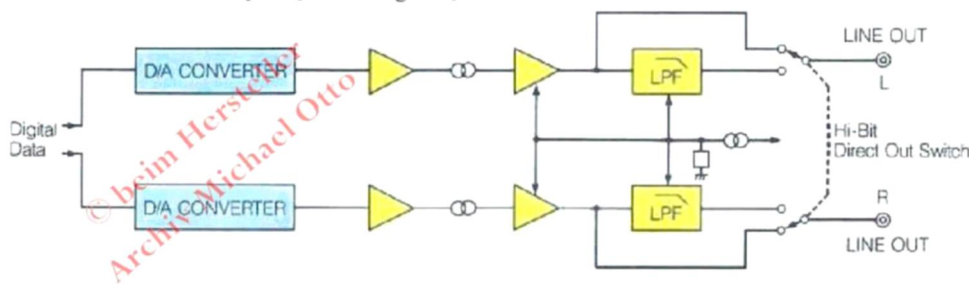


CD-950

difficulties as well as incorporated innovative advantages.

One problem is that unwanted noise is introduced in the high frequencies above 20 kHz by the digital signal sampling and conversion process. This noise is usually removed with a conventional analog low-pass filter after D/A conversion. Unfortunately, this degrades the sound quality. Yamaha overcame this problem with the Hi-Bit digital filter design used in the CD-1050. This Hi-Bit digital filter raises

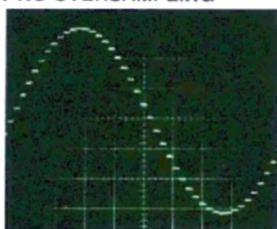
Hi-Bit DAC Direct Output System Diagram (CD-1050)



Comparison Oversampling Waveform Resolution

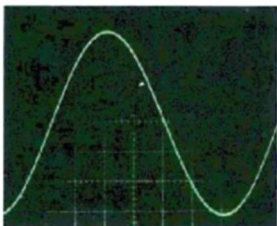
16-BIT NO OVERSAMPLING

D/A CONVERTER OUTPUT



HI-BIT 8 TIMES OVERSAMPLING AT 352.8 kHz

D/A CONVERTER OUTPUT



the sampling noise frequency far above the audio spectrum. The result is a much lower burden on the analog low-pass filter and a more pure, precise sound.

For an even more pure and precise signal output, much closer to the original sound, the 18-bit operation also quadruples the sampling density. This further reduces the sampling noise, to a figure far above the maximum of 96 dB that conventional 16-bit filters have. An 18-bit filter also lowers the passband ripple to ± 0.0001 dB. This Hi-Bit digital filter has reached virtual perfection.

Hi-Bit DAC Direct Output (CD-1050)

Because the CD-1050 is equipped to output the signal directly from the D/A converters this results in pure digital sound, with absolutely no phase deviation. This is



Hi-Bit Direct Out Switch

Digital Out Terminal

also capable of 3rd order analog low-pass filtered signal output which allows you to have a selection between Hi-Bit DAC direct output and low-pass analog filter output.

Coaxial Digital Output Terminal (CD-1050)

The CD-1050 is equipped with a coaxial digital output terminal to route the digital signal directly to the digital input of an amplifier.

Double Resolution Digital Filter (CD-950)

To maintain a superior audio signal, Yamaha has incorporated a Double Resolution Digital Filter into the CD-950. This digital filter on a chip removes sampling noise through 16-bit oversampling at 88.2 kHz. By raising the noise above the audio spectrum, an analog low-pass filter with a gentle cut-off slope can be used—thus ensuring clear and precise high-quality sound.

Precisely Matched Hi-Speed Twin D/A Converters

Both the CD-1050 and CD-950 incorporate a pair of high-speed D/A converters. For the CD-1050, the converters were specially designed to perfectly match its Hi-Bit digital signal processing capabilities. The digital output from the converters is so pure and so close to the original sound that analog filters are not really necessary.

On the CD-950, the Double Resolution Digital Filter, in combination with the twin converters provide very pure digital signals to the analog low-pass filters. This combination of filter and converter results in precise signal waveform resolution accuracy for the ultimate in analog audio purity.

New Floating Suspension System, For Precise Tracking

Because external vibrations can cause tracking errors and modulate the signal, Yamaha has incorporated a new design Floating Suspension System in both the CD-1050 and CD-950. This system completely isolates the disc loading and rotational mechanism within the player for less signal interference and more precise tracking.

New 3-Beam Laser Pickup

The new 3-beam laser pickup includes a built-in head amplifier. This design significantly improves the signal-to-noise ratio of the servo and produces precise, reliable performance.

Microcomputer-Controlled 2-Way Servo System

To maintain highly accurate tracking, even when playing soiled or scratched discs, Yamaha uses a Microcomputer-Controlled 2-Way Servo System. This 8-bit microcomputer system improves traceability and reduces signal disturbance by continuously calculating the response speed.

Convenient 5-Way Repeat Play

You have a choice on how to repeat play your CD—5 of them in fact. You can

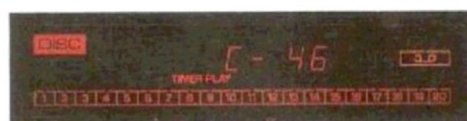
play the entire disc, a single selection, a programmed portion, selections at random or by intro scan.

Intro Scan

The Intro Scan function allows you to scan through the track selections on your compact disc. At a touch of a button, you can hear a 10 second introduction of each selections on your disc.

Tape Edit Program

The tape edit program allows automatic or manual selection and programming of certain selections on a compact disc to fit within the recording time of a cassette tape. Simply input the tape length, then the CD-1050 or CD-950 will fill the tape, and even put a pause between the sides, allowing you to turn the cassette over. In the manual mode, you can program the selections and the CD-1050 or CD-950 will give you the remaining recording time.



Set the length (time) of the tape.



Program the selections for Side A on the tape. Continue the process for side B.

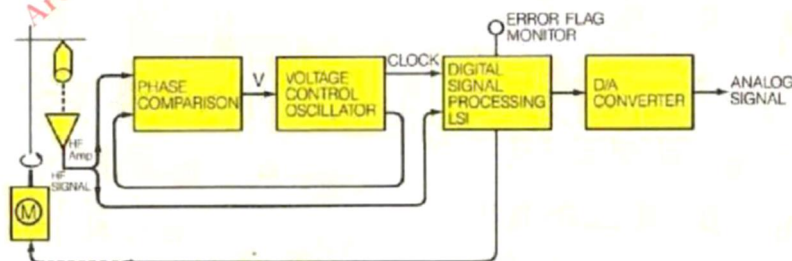
Large, Easy-to-Read 8-Digit Multi-Function LCD Display

To make it easy to see what the CD-1050 or CD-950 is doing, Yamaha has included a large 8-digit display. This fluorescent display panel comprehensively shows information about the disc, as well as the player status. This information includes an Intro Scan Display, track number and time displays, and operation indicators. The four different available time displays are: TOTAL which shows the entire track time, TOTAL REMAIN which shows the remaining time from the present track to the last track, SINGLE which shows the present track time and SINGLE REMAIN which shows the remaining time of the present track.

Other Features

- 24-Track Random Access Programmable Playback
- Index Search
- Direct Track Access
- 3-Way Music Search
- Auto Space Insert during program playback
- 3-Way Timer Playback (All/Program/Random)
- 4-Mode Time Display (Total/Total Remaining/Single/Single Remaining)
- 8 cm (3") CD Single Compatibility
- Front Panel Headphones Jack (with Output Level Control for the CD-1050)
- Anti-Resonance and Vibration-Free Design
- 22-Key Wireless Remote Control Unit (CD-1050)
- RS Integrated Remote Control Compatibility (CD-1050)



Schematic Drawing of 2-Way Servo System



CD-1050/CD-950 SPECIFICATIONS

	CD-1050	CD-950
Frequency Response	5—20,000 Hz, ±0.5 dB	5—20,000 Hz, ±0.5 dB
Harmonic Distortion + Noise	0.005% (1 kHz)	0.005% (1 kHz)
De-Emphasis Deviation	±0.5 dB	±0.5 dB
Dynamic Range	96 dB	96 dB
Signal-to-Noise Ratio	106 dB	106 dB
Wow & Flutter	Unmeasurable	Unmeasurable
Channel Separation	90 dB (1 kHz)	90 dB (1 kHz)

	CD-1050	CD-950
Output Voltage/Impedance	2 Vrms/2.2 k-ohms	2 Vrms/2.2 k-ohms
Headphones Jack Rated		
Output	620 mV	620 mV
Dimensions (W x H x D)	435 x 101 x 297 mm (17-1/8" x 4" x 11-11/16")	435 x 101 x 297 mm (17-1/8" x 4" x 11-11/16")
Weight	4.5 kg (9 lbs. 15 oz.)	4.5 kg (9 lbs. 15 oz.)

Specifications subject to change without notice.
The  symbol indicates compatibility with all Yamaha  integrated remote system control receivers and integrated amplifiers.

For details please contact:

YAMAHA
YAMAHA CORPORATION
P.O. Box 1, Hamamatsu, Japan