



# Tech Info Library

## Macintosh Quadra 950: CD and Sound

Article Created: 18 May 1992

Article Last Reviewed:

Article Last Updated:

### TOPIC -----

One of the internal storage devices in the Macintosh Quadra 950 computer can be a CD-ROM drive, installed at the front for media access.

### DISCUSSION -----

The CD-ROM drive connects to the internal SCSI bus, and an additional cable takes the audio signals from the CD-ROM to the main circuit board. Therefore audio CDs can be heard through the system speaker. When speakers are connected to the external sound-out on the computer, CD, system beep, and other system sounds will be heard through the speakers as well. This integration of the audio signals into the computer provides three functions that are important for multimedia applications:

- Ability to play audio from the CD-ROM through the internal sound system
- Ability to mix audio from the CD-ROM with computer-generated sound
- Ability to perform digital recording of audio from the CD-ROM

Volume control for an internal AppleCD SC Plus is done through software. The CD Remote DA detects that the CD-ROM drive is internal, and provides volume control. On external drives, the software control isn't visible, and the hardware control is used.

As in the Quadra 900, the AppleCD SC Plus won't be sold as an optional configuration, but the logic still exists, and will work in the Quadra 950.

Note: The existing sound input is 8-bit linear PCM with analog limiting to enhance the power of the signal being digitized. The sample rate may be set for 22 kHz or 11 kHz. Therefore the results won't be significantly better than a low-cost cassette recorder without noise reduction. This level of performance is adequate for voice annotation, but won't produce the best results with music.

To compensate for some of the shortcomings of the sound input system, the

gains for the line input and internal CD input are somewhat higher than normal. This may cause overdrive distortion on loud material, but will boost the signal to mask a lot of digitizing noise on soft material. The user can turn down the input to the digitizer, either by backing off the volume slider on the internal CD control panel or by reducing the volume of the signal driven to the line input jacks. The main point is, some experimentation may be required for best results.

The internal CD drive stereo analog outputs are developed from a source sampled at the CD 44 kHz sample rate. The sound input system samples at 22 kHz or 11 kHz. The sound input system filters the CD signal (and line OR microphone, for that matter) to prevent bothersome aliasing. Therefore, most of the high-end sound is lost. For 22 kHz sampling, the sound is filtered at around 8 kHz, and at 11 kHz the sound is filtered at around 4 kHz. The former may be thought of as "AM radio" quality, the latter as "telephone" quality.

Copyright 1992 Apple Computer, Inc.

Keywords: <None>

=====

This information is from the Apple Technical Information Library.

19960215 11:05:19.00

Tech Info Library Article Number: 10205