AppleCD 300i: Specifications

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TOPIC ----------

This article provides the specifications for the AppleCD 300i internal CD-ROM drive, available as an option on the Macintosh Performa 600 computer.

DISCUSSION ----------

Disc

• Data surfaces	1
• Disc diameter	12 cm
• Disc center hole	15 mm
• Thickness	1.2 mm
• Track pitch	1.6 microns (15,875 tracks per inch)
• Scanning velocity	1.2 - 1.4 meters per second
• Rotation speed	varies over radius
Normal speed	~530 to 230 rpm
Double speed	~1060 to 460 rpm
• Latency (average)	varies over radius
Normal speed	~55 to 130 milliseconds
Double speed	~27.5 to 65 milliseconds
• Blocks per rotation	~8.4 to 19.5 variable
• Average access time	
Normal speed	350 milliseconds
Double speed	295 milliseconds

Data

- Data capacity — 656MB (mode 1)
  748MB (mode 2)
- Blocks per disc — 270,000 (typical)
- Data per block — 2048 bytes (mode 1)
  2336 bytes (mode 2)
- Address description — minutes, seconds, frames

Audio Capacity

- Playing time — 74 minutes and 42 seconds

Data Streaming and Transfer Rates

- Blocks per second — 75
- User bytes per second — 150KB (mode 1)
  171.1KB (mode 2)
- SCSI bus transfer rate — 1.5MB per second

Modes Supported

- CD-Audio
- CD-ROM, modes 1 and 2
- CD-ROM XA — mode 2 form 1
  mode 2 form 2

Noise

- Drive on (seek) — <50 dB
  Drive on (non-seek) — <46 dB

Environment

- Operating temperature — +5° C to 40° C (+41° F to +104° F)
- Storage (6 months) — -30° C to 50° C (-22° F to +122° F)
- Transit (72 hours) — -40° C to +65° C (-40° F to +149° F)
- Operating Humidity — 10% to 90% noncondensing
- Storage Humidity — 5% to 95% noncondensing

Power Requirements

• AC input (Universal) 100 to 240 V AC, 50 to 60 Hz

Power Consumption

• Drive on 0.28 A

Interface

• SCSI Two 50-pin connectors

PhotoYCC Conversion Formulas

From "Kodak Photo CD System: A Planning Guide for Developers" (August 1991).

Nonlinear Transformation

The nonlinear transformation corresponds to the opto-electronic transfer characteristic defined in CCIR 709. The following mathematical equations express the nonlinear transformation of scanned image color data:

For R, G, B ≥ 0.018:
    R‘ = 1.099 R (superscript 0.45) - 0.099
    G‘ = 1.099 G (superscript 0.45) - 0.099
    B‘ = 1.099 B (superscript 0.45) - 0.099

For R, G, B ≤ 0.018:
    R‘ = -1.099 |R| (superscript 0.45) + 0.099
    G‘ = -1.099 |G| (superscript 0.45) + 0.099
    B‘ = -1.099 |B| (superscript 0.45) + 0.099

For -0.018 < R, G, B < 0.018:
    R‘ = 4.5R
    G‘ = 4.5G
    B‘ = 4.5B

Conversion To Luma/Chroma Components

The luma and chroma encoding equations correspond to CCIR Recommendation 601-1. The following equations define the conversion from RGB data to luma and chroma data:

Luma = 0.299R‘ + 0.587G‘ + 0.114B‘
Chroma1 = -0.299R‘ - 0.587G‘ +0.886B‘
Chroma2 = 0.701R‘ - 0.587G‘ - 0.114B‘

Conversion To 8-bit Data

Conversion of the luma and chroma values is accomplished by the following equation:

Luma (8-bit) = (255/1.402) Luma
Chroma1 (8-bit) = 111.40 (Chroma1) + 156
Chroma2 (8-bit) = 135.64 (Chroma2) + 137

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