



Technical Information for the PowerBook Duo 230, 280, and 280c

General specifications

Processor

- *PowerBook Duo 280 and 280c:*
68LC040; 66/33 MHz clock frequency
- *PowerBook Duo 230:*
68030; 33 MHz clock frequency

Memory

- *PowerBook Duo 280 and 280c:*
4 MB RAM, expandable to 40 MB
1 MB ROM
- *PowerBook Duo 230:*
4 MB RAM, expandable to 24 MB
1 MB ROM

Note: Some configurations may ship with an additional RAM card installed.

Disk drive

- *PowerBook Duo 280 and 280c:*
Internal 200, 240, or 320 MB hard disk drive
- *PowerBook Duo 230:*
Internal 80, 120, or 160 MB hard disk drive

Note: Some other hard drive configurations may be available.

Video display

- *PowerBook Duo 280c*:
640 x 480 active matrix (TFT), 256 colors (also supports 640 x 400, thousands of colors)
- *PowerBook Duo 280*:
640 x 400 active matrix (TFT), 16 grays
- *PowerBook Duo 230*:
640 x 400 backlit Supertwist (FSTN), 16 grays

Battery

- *PowerBook Duo 280c*:
Type III nickel-metal-hydride rechargeable battery; provides 2 to 4 hours of operation, depending on battery-saving features used
- *PowerBook Duo 280*:
Type II nickel-metal-hydride rechargeable battery; provides 2 to 4 hours of operation, depending on battery-saving features used
- *PowerBook Duo 230*:
Type I nickel-metal-hydride rechargeable battery; provides 2 to 4 hours of operation, depending on battery-saving features used

Interfaces

- 152-pin PDS connector for attaching a PowerBook Duo Dock, MiniDock, Floppy Adapter, or other expansion device
- One serial port for a printer, modem, AppleTalk network, or other serial device (RS-422 or mini-DIN8)
- One internal modem telephone jack (RJ-11 in U.S., mini-DIN-8 elsewhere) if optional modem is installed

Sound generator

- 4-voice sound with 8-bit digital-analog conversion recording at 11 kHz or 22 kHz sample rate

Power adapter

- *PowerBook Duo 280c:*
Input: AC 100–240 V, 50/60 Hz
Output: DC 24 V, 1.5 A, 36 W
- *PowerBook Duo 280 and 230:*
Input: AC 100–240 V, 50/60 Hz
Output: DC 24 V, 1.0 A, 25 W

Note: Your PowerBook Duo can be used anywhere in the world with a plug adapter.

Clock/calendar

- CMOS custom chip with long-life, rechargeable lithium battery

Keyboard

- 2.5 mm travel keyboard
18 mm vertical pitch, 18 mm horizontal pitch

Trackball

- 19 mm diameter

Express Modem (optional on some configurations)

- 14,400-bps data transmission, with 14,400-bps fax send and receive capability
- Supports two error-correction and data-compression protocols:
MNP classes 2 to 5 and CCITT standard V.42/V.42bis

Weight

- *PowerBook Duo 280c:*
2.2 kg (4.8 lb.)
- *PowerBook Duo 280 and 230:*
1.9 kg (4.2 lb.)

Dimensions

- *PowerBook Duo 280c:*
277 mm x 216 mm x 38 mm (10.9 in. x 8.5 in. x 1.5 in.)
- *PowerBook Duo 280 and 230:*
277 mm x 216 mm x 36 mm (10.9 in. x 8.5 in. x 1.4 in.)

Apple Desktop Bus power requirements

- Maximum current draw for all ADB devices is 100 mA (PowerBook Duo MiniDock or PowerBook Floppy Adapter) or 500 mA (PowerBook Duo Dock)

Note: The maximum number of ADB devices recommended in a daisy chain connected to the ADB port is three.

RAM configurations

The Powerbook Duo 280 and 280c ship with 4, 8, or 12 MB of RAM, and can be expanded up to 40 MB by means of a memory expansion card. The PowerBook Duo 230 ships with 4 MB of RAM, and can be expanded up to 24 MB. RAM chips must be rated at 70 ns access time or faster. If you have more than 4 MB of RAM you can create a RAM disk to help maximize battery life. (See the *Getting Started* manual that came with your PowerBook Dup for instructions.)

IMPORTANT Don't install your own RAM card unless you are comfortable working with electronic equipment. Installation instructions are provided with Apple's RAM cards for people who want to install the card themselves. If you don't want to install your own card, any Apple-authorized dealer or service provider can install it.

WARNING Opening the computer's case for any purpose other than to install a RAM card will void your warranty. Do not modify any other components or attempt to repair the computer yourself.

Microphone/sound

- The internal microphone is an electret type, omnidirectional microphone that is powered by the computer. Microphone output voltage is 4 mV peak to peak at normal speaking volume.

Note: You can also use adapters to input sound from audio equipment with line level outputs, but the line level signals must be attenuated before reaching the dock's sound input port. An attenuation of 500:1 is recommended when inputting line level signals. Appropriate attenuation cables and adapters are available from most electronics stores.

Environment

Operating temperature: 10° C to 40° C (50° F to 104° F)

Storage temperature

- -25° C to 60° C (-13° F to 140° F)

Relative humidity

- 20% to 80% noncondensing

Altitude

- Operating: 3048 m (10,000 ft.) maximum
- Shipping (non-operating): 4572 m (15,000 ft.) maximum