



Overview

The Apple® Macintosh® Portable personal computer offers complete Macintosh functionality in a portable design. It runs virtually all current versions of Macintosh software and provides full compatibility with other Macintosh hardware.

In addition, the all-in-one design of the Macintosh Portable makes it ideal for users who want to take their work with them. Everything a user needs—CPU, screen, keyboard, pointing device, battery, and disk storage—is integrated into a single, easy-to-carry package.

The Macintosh Portable also delivers the superior graphics that people have come to

associate with the Macintosh. Its high-contrast Active Matrix Liquid Crystal Display has such a fast response rate that the Macintosh interface looks and feels just the way it does on any other Macintosh computer. It also displays the full width of a letter-size page, and makes the screen easy to see in almost any lighting condition and from almost any angle.

Customers will especially appreciate the long battery life and intelligent power management provided by the Macintosh Portable. Unlike most battery-powered computers, which operate for two to three hours before batteries need recharging,

the Macintosh Portable can provide 6 to 12 hours of operation, depending on the system configuration and usage.

To conserve power and extend battery life, the Macintosh Portable includes a special microprocessor that manages power use. And a Battery desk accessory monitors and displays battery power levels.

The Macintosh Portable comes standard with 1 megabyte of RAM, and is available in two configurations: with a built-in Apple FDHD™ SuperDrive™ or with an Apple FDHD SuperDrive and an internal 40-megabyte hard disk drive.

Features

- ▶ Full Macintosh software and hardware compatibility

- ▶ Macintosh user interface: icons, windows, and pull-down menus

- ▶ CMOS 68000 processor, operating at 16 megahertz

- ▶ Active Matrix Liquid Crystal Display, 640 by 400 pixels

- ▶ Intelligent power-management operations:
 - Dedicated microprocessor for power management

- Control Panel settings

- Replaceable lead acid battery

- Battery desk accessory

- Automatic low-power warnings

- Power adapter for 70 to 270 volts, 40 to 70 hertz

- ▶ All-in-one design with built-in display, trackball, disk drive, and keyboard

- ▶ Standard Macintosh keyboard layout

Benefits

- ▶ Allows you to run virtually all current versions of Macintosh software.
- ▶ Lets you connect your computer to Macintosh-compatible peripherals and networks.

- ▶ Makes applications intuitive and easy to learn.
- ▶ Provides a consistent interface across applications.
- ▶ Reduces training and support costs.

- ▶ Conserves power and extends battery life.
- ▶ Provides rapid processing for spreadsheets, databases, and other applications.

- ▶ Delivers superior graphics capabilities.
- ▶ Provides a fast response rate that enables the Macintosh Portable to display the Macintosh graphics-based user interface and graphical programs.
- ▶ Lets you work in a wide range of lighting conditions, from low to bright light.
- ▶ Permits you to see the screen clearly from almost any viewing angle.
- ▶ Allows you to view the full width of a letter-size page, for working with documents more easily.

- ▶ Provides long battery life, allowing you to work for 6 to 12 hours before recharging the battery.
- ▶ Lets you control power use by specifying how much time will elapse before the system automatically turns off the power.
- ▶ Lets you recharge the battery at any time, without requiring a deep-discharge cycle.
- ▶ Allows you to replace the battery while the computer is turned on.
- ▶ Lets you quickly check the battery charge and plan power use accordingly.
- ▶ Reduces the possibility of accidentally running out of power, by notifying you when power is low.
- ▶ Allows you to use the computer in almost any country without using transformers (needs only a simple plug adapter).

- ▶ Makes it easy to quickly pack, carry, set up, and use the system almost anywhere.
- ▶ Eliminates the need for a mouse pad or flat surface, while providing the functionality of a mouse.

- ▶ Eliminates the need to learn a new keyboard, because all of the keys are in a familiar location.

Product Details

Configuration

► Two Macintosh Portable systems are available:

—The Macintosh Portable CPU includes the CPU, Active Matrix Liquid Crystal Display, keyboard, trackball, mouse, 1 megabyte of RAM, and a built-in 1.4-megabyte FDHD SuperDrive.

—The Macintosh Portable Hard Disk 40 CPU includes all the features of the Macintosh Portable CPU, as well as an internal 40-megabyte hard disk.

CMOS Microprocessor

► The Macintosh Portable contains a special version of the Motorola 68000 microprocessor that conserves battery power and yet provides high-performance processing. The complementary metal oxide semiconductor (CMOS) 68000 microprocessor consumes less power than its non-CMOS counterpart, and operates at 16-megahertz clock speed—twice that of the 68000 in the Macintosh SE computer.

Active Matrix Liquid Crystal Display

► The Macintosh Portable Active Matrix Liquid Crystal Display (LCD) provides very high contrast—up to five times that of standard LCD screens—to offer the superior graphics capabilities that support Macintosh applications, including animated graphics. And because of the fast response rate of the Active Matrix LCD, Macintosh Portable users can see the cursor move when they drag it across the screen with the mouse or trackball; with other battery-operated computers, the cursor is harder to follow because it disappears when moving.

The Macintosh Portable screen also can be viewed clearly in most lighting conditions—especially in bright light—and from almost any angle. A transistor under every pixel of the Active Matrix LCD provides the fast response for the Macintosh user interface.

Power Management

► Most battery-powered computers provide only a few hours of usage before they need recharging, and include no options for managing the computer's power consumption. The Macintosh Portable, however, provides better power management and operates longer between recharges than comparable computers because of its Active Matrix Liquid Crystal Display, dedicated microprocessor (which serves as a power manager), low-power RAM, and lead acid batteries.

The power manager monitors and controls power allocation, and automatically puts the system into a standby "rest" mode or "sleep" mode when it has been inactive for a preset period. During rest mode, the system operating speed decreases from 16 megahertz to 1 megahertz—a change that is unnoticed by the user but saves significant power. During sleep mode, power is turned off but memory contents are retained. The user simply presses any key to instantly "wake up" the computer from either mode.

Processor Direct Slot (PDS)

► The PDS is a high-performance slot connected to the microprocessor bus that will support one expansion card. (Note: The PDS is not compatible with the SE, SE/30, or NuBus expansion slots.)

Low-power RAM

► To maximize battery life, the Macintosh Portable contains special low-power RAM, which consumes less power than standard dynamic RAM (DRAM). RAM can be upgraded from 1 megabyte to 2 megabytes by installing the Macintosh Portable 1MB Memory Expansion Kit in the RAM expansion slot. When higher-density chips become available, the Macintosh Portable will be able to support up to 9 megabytes of memory.

Lead Acid Batteries

► The Macintosh Portable uses lead acid batteries because they provide long operating life and can be recharged more fully and more often than nickel cadmium

batteries. And since the battery voltage of a lead acid battery diminishes gradually as power is used up, the computer can provide users with information about the power level, as well as posting low-power warnings.

Read-Only Memory (ROM) Slot

► This connector allows installation of up to 3 megabytes of ROM for permanent storage of custom applications or data.

Network Support

► The Macintosh Portable serial ports provide full support for LocalTalk™ network connections.

► The Macintosh Portable provides full ROM support for all AppleTalk protocols.

Stereo Sound

► The Apple Sound Chip supports stereo sound at a sampling rate of up to 44.1 kilohertz.

SCSI (Small Computer Systems Interface)

► SCSI is a high-performance interface for connecting the computer to hard disks and other mass-storage peripherals. Up to seven SCSI peripherals (including an internal hard disk) can be connected to the Macintosh Portable.

► SCSI provides data transfer rates of up to 1 megabyte per second.

Operating System Software

► Macintosh system software includes:

—System Tools Version 6.0.4 or greater (the Macintosh operating system)

—Printer disk (the printer drivers for all Apple printers)

—Utilities disks, which include utilities such as the Apple File Exchange, HD SC Setup, CloseView, Disk First Aid™, and Font/DA Mover

► The Macintosh system software is preinstalled on the Macintosh Portable Hard Disk 40 CPU.

HyperCard

► The HyperCard® software and manual are included. HyperCard is preinstalled on the Macintosh Portable Hard Disk 40 CPU.

Technical Specifications

Processor

- ▶ CMOS 68000
- ▶ 16-megahertz clock speed

Memory

- ▶ 1 megabyte of low-power RAM, expandable to 2 megabytes through the installation of a memory card in the RAM slot, and to up to 9 megabytes when higher-density chips become available

Screen

- ▶ Active Matrix Liquid Crystal Display
- ▶ Full page width
- ▶ 640 by 400 pixels

Disk storage

- ▶ Two standard configurations:
 - One built-in double-sided FDHD SuperDrive that uses 1.4-megabyte high-density floppy disks; reads, writes, and formats Macintosh, MS-DOS, OS/2, and Apple II ProDOS® disks
 - One built-in double-sided FDHD SuperDrive that uses 1.4-megabyte high-density floppy disks, and an internal 40-megabyte hard disk drive

Keyboard

- ▶ Built-in keyboard with standard Macintosh layout
- ▶ 63 keys

Trackball

- ▶ 1.3-inch-diameter trackball pointing device
- ▶ Left- or right-handed placement
- ▶ Can be replaced with the numeric keypad

Numeric keypad (optional)

- ▶ 18 keys
- ▶ Can be installed as an alternative to the trackball

Mouse

- ▶ Low-power Apple Desktop Bus mouse
- ▶ Mechanical tracking: optical shaft encoding at 3.54 pulses per mm (90 pulses per inch) of travel

Interfaces

- ▶ One external disk drive interface
- ▶ One SCSI interface: uses a 50-pin connector (internal) and a DB-25 connector (external)

- ▶ One Apple Desktop Bus port allows daisy-chaining of multiple peripheral devices
- ▶ One audio port
- ▶ One power adapter port
- ▶ One printer port
- ▶ One external modem port
- ▶ One video port

Expansion connectors

- ▶ RAM expansion slot
- ▶ Modem connector
- ▶ Processor Direct Slot
- ▶ ROM expansion slot

Sound generator

- ▶ Apple custom digital sound chip provides 8-bit stereo sampling at 44 kilohertz, and includes four-voice wave-table synthesis. Capable of driving stereo headphones or other stereo equipment through the sound jack.

Electrical requirements

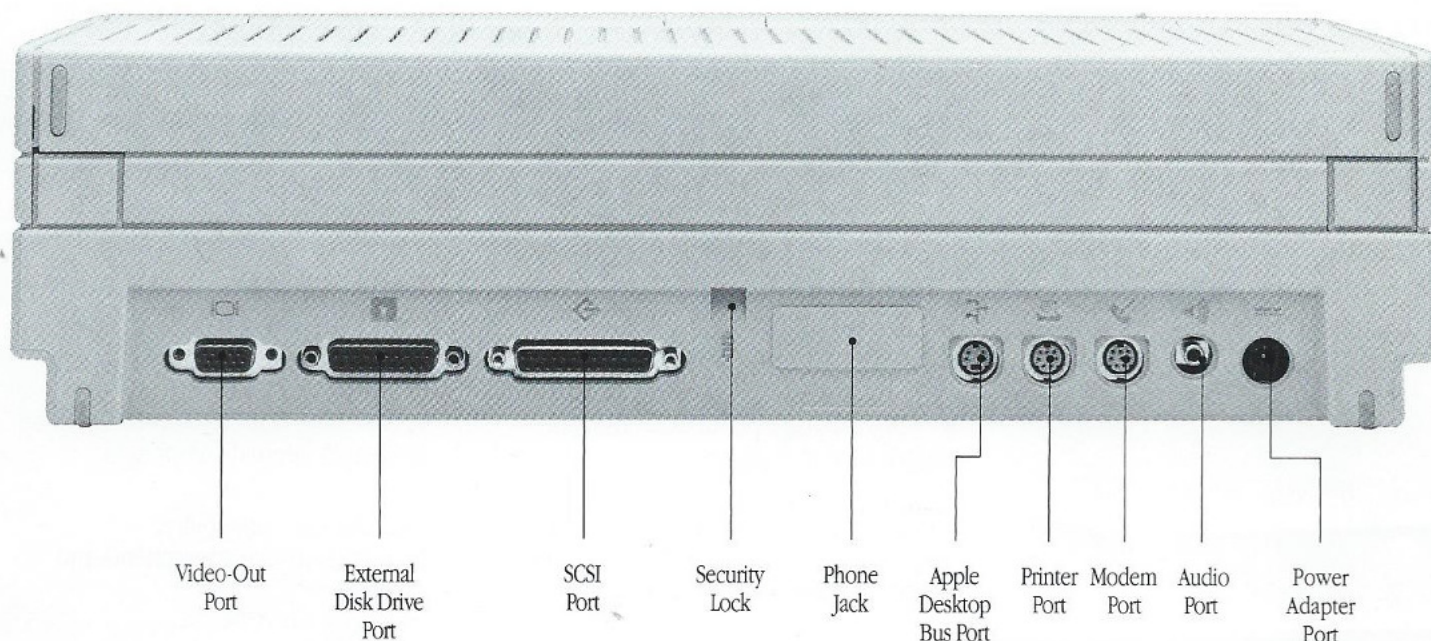
- ▶ Line voltage: 85 to 270 volts AC, 48 to 62 Hz
- ▶ Power: 15 watts maximum

Environmental requirements

- ▶ Operating temperature: 50° to 104° F (10° to 40° C)
- ▶ Storage temperature: -40° to 140° F (-25° to 60° C) for a period not to exceed 3 days; storage for a longer period must be within operating temperature range
- ▶ Relative humidity: 5% to 95%
- ▶ Altitude: 0 to 10,000 ft. (0 to 3,048 m)

Size and weight

- ▶ Height
 - Rear panel: 4.05 in. (10.29 cm)
 - Front panel: 2.1 in. (5.33 cm)
 - From base to highest point with display open: 11.0 in. (27.9 cm)
- ▶ Width: 15.25 in. (38.74 cm)
- ▶ Depth: 14.83 in. (37.69 cm)
- ▶ Weight (including battery)
 - Without hard disk: 13.75 lb. (6.25 kg)
 - With hard disk: 15.75 lb. (7.16 kg)



Features

Benefits

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| <ul style="list-style-type: none">▶ Flexible keyboard configuration | <ul style="list-style-type: none">▶ Lets you work the way you like, with the trackball or numeric keypad installed on either side of the keyboard, for left- or right-handed use.▶ Allows replacement of the trackball with a keypad for number-intensive applications. |
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| <ul style="list-style-type: none">▶ 1 megabyte of low-power-consumption RAM, expandable to 2 megabytes* | <ul style="list-style-type: none">▶ Minimizes power consumption, allowing you to work for a long time between battery charges.▶ Retains the contents of memory while the system is in sleep mode. |
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| <ul style="list-style-type: none">▶ Built-in Apple FDHD SuperDrive (a second internal FDHD floppy disk drive can also be installed) | <ul style="list-style-type: none">▶ Provides 75 percent more storage capacity than existing 800K disk drives.▶ Allows you to transfer data files conveniently between Macintosh, OS/2, MS-DOS, and Apple II systems on the same 3.5-inch disk, using the Apple File Exchange utility. |
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| <ul style="list-style-type: none">▶ Optional 40-megabyte hard disk | <ul style="list-style-type: none">▶ Gives you fast and easy access to multiple applications and large data files. |
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| <ul style="list-style-type: none">▶ Eight built-in ports<ul style="list-style-type: none">—External disk drive—SCSI—Apple Desktop Bus™—Printer—Modem—Audio—Power adapter—Video port | <ul style="list-style-type: none">▶ Lets you connect the Macintosh Portable with existing Macintosh peripherals.▶ Supports up to seven high-speed SCSI peripherals.▶ Provides connection for Apple Desktop Bus devices such as a mouse, graphics tablet, or keyboard.▶ Provides access to an AppleTalk® network system for file sharing, data transfer, and peripherals sharing.▶ With the Macintosh Portable Video Adapter, makes it easy to connect the Macintosh Portable to external monitors and projection devices. |
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| <ul style="list-style-type: none">▶ Internal connector for modem | <ul style="list-style-type: none">▶ Lets you install a modem for connection to numerous on-line databases and corporate computer systems, without using additional cables or connectors. |
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| <ul style="list-style-type: none">▶ Apple stereo sound chip | <ul style="list-style-type: none">▶ Provides high-quality digital sound.▶ Offers compatibility with all applications that use Macintosh sound. |
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| <ul style="list-style-type: none">▶ Polycarbonate plastic housing with rugged hard disk design | <ul style="list-style-type: none">▶ Reduces the need for special handling by protecting internal components. |
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| <ul style="list-style-type: none">▶ Carrying case with protective foam and pockets for items such as a battery charger, an extra battery, disks, and papers | <ul style="list-style-type: none">▶ Provides easy portability.▶ Protects sensitive components and accessories. |
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*The Macintosh Portable architecture will support up to 9 megabytes of RAM when higher-density chips become available.



Macintosh Portable

Ordering Information

Macintosh Portable CPU

Order No. M5350

With your order, you'll receive:

- ▶ Macintosh Portable personal computer with built-in Active Matrix Liquid Crystal Display, trackball, keyboard, and 1.4-megabyte FDHD SuperDrive
- ▶ Mouse
- ▶ Carrying case
- ▶ *The Macintosh Portable Owner's Guide*

▶ *The Macintosh Portable Handbook*

- ▶ System software
- ▶ HyperCard software
- ▶ Inside the Macintosh Portable HyperCard stack
- ▶ Macintosh Portable Product Sampler HyperCard stack
- ▶ Limited warranty statement

Macintosh Portable Hard Disk 40 CPU

Order No. M5351

With your order, you'll receive:

- ▶ Macintosh Portable personal computer with built-in Active Matrix Liquid Crystal Display, trackball, keyboard, 1.4-megabyte FDHD SuperDrive, and internal 40-megabyte SCSI hard disk drive
- ▶ Mouse
- ▶ Carrying case
- ▶ *The Macintosh Portable Owner's Guide*

▶ *The Macintosh Portable Handbook*

- ▶ System software
- ▶ HyperCard software
- ▶ Inside the Macintosh Portable HyperCard stack
- ▶ Macintosh Portable Product Sampler HyperCard stack
- ▶ Limited warranty statement

Peripherals Options

Macintosh Portable Numeric Keypad Module

Order No. M0239

Requires installation by an authorized Apple service provider.

Macintosh Portable 1MB Memory Expansion Kit

Order No. M0248

Macintosh Portable Data Modem 2400

Order No. M0250

Macintosh Portable Video Adapter

Order No. M0251

Required to drive an external monitor or projection system.

Macintosh Portable Internal FDHD SuperDrive Upgrade

Order No. M0262

To upgrade from one floppy disk drive to two floppy disk drives. Requires installation by an authorized Apple service provider.

Macintosh Portable Internal 40SC Hard Disk

Order No. M0268

To upgrade from one floppy disk drive to a 40-megabyte hard disk and a floppy disk drive. Requires installation by an authorized Apple service provider.

Macintosh Portable Battery Recharger

Order No. M0275

Includes power adapter.

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September 1989. Product specifications are subject to change without notice. Printed in U.S.A.
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