Ordering Information (continued)	Macintosh IIfx 4/160 CPU	Order No. M5520LL/A	With your order, you'll receive: · Macintosh IIfx personal computer with 4 megabytes of RAM, a built-in 1.4-megabyte SuperDrive, and a 160-megabyte internal hard disk drive · Mouse · Documentation set · System software and Hyper-Card software · Training disks · Limited warranty statement
	Macintosh IIfx 4/80 CPU with A/UX	Order No. M5523LL/A	With your order, you'll receive: · Macintosh IIfx personal computer with 4 megabytes of RAM, a built-in 1.4-megabyte SuperDrive, and an 80-megabyte internal hard disk drive containing A/UX · Mouse · Documentation set · System software and Hyper-Card software · Training disks · Limited warranty statement
	Macintosh IIfx 4/80 CPU with Parity Support	Order No. M5524LL/A	With your order, you'll receive: · Macintosh IIfx personal computer with 4 megabytes of parity error detection RAM, a built-in 1.4-megabyte SuperDrive, and an 80-megabyte internal hard disk drive · Mouse · Documentation set · System software and Hyper-Card software · Training disks · Limited warranty statement
	Macintosh IIfx 4MB Memory Expansion Kit*	Order No. M0376LL/A	With your order, you'll receive: · 4-megabyte DRAM upgrade
	Macintosh IIfx 4MB Parity Memory Expansion Kit*	Order No. M0377LL/A	With your order, you'll receive: · 4-megabyte parity DRAM upgrade

*Dealer installation required.

Technical Specifications (continued)	SCSI/DMA Controller · Standard cell implementation of 53C80 SCSI chip and DMA control logic. The SCSI/DMA chip manages the SCSI bus. Interfaces · Six internal NuBus slots support full 32-bit address and data buses · Processor Direct Slot (PDS) provides high-speed, 32-bit access to the system bus · Two mini-8 serial (RS-232/RS-422) ports · Two Apple Desktop Bus ports allow daisy-chaining of multiple peripheral devices · SCSI interface uses a 50-pin internal connector and a DB-25 connector for the first external device; all subsequent SCSI-based peripherals use standard SCSI-to-	SCSI interface cables · Stereo sound jack Mouse · Mechanical tracking: Optical shaft encoding at 3.9 ± 0.39 pulses per millimeter (100 ± 10 pulses per inch) of travel Sound Generator · Apple's custom digital sound chip provides 8-bit stereo sampling at 44.1 kilohertz, and includes four-voice wave-table synthesis–capable of driving stereo head-phones or other stereo equipment through the sound jack Electrical Requirements · Line voltage: 100 to 240 volts AC, automatically configured · Frequency: 48 to 62 hertz,	single phase · Maximum power: 230 watts, not including monitor power Size and Weight Main unit: · Height: 5.5 in. (14.0 cm) · Width: 18.7 in. (47.4 cm) · Depth: 14.4 in. (36.5 cm) · Weight: 24 lb. (10.9 kg)* Mouse: · Height: 1.1 in. (2.8 cm) · Width: 2.1 in. (5.3 cm) · Depth: 3.8 in. (9.7 cm) · Weight: 6 oz. (.17 kg) *Weight will be greater with internal hard disk drive.
Ordering Information	Macintosh IIfx CPU	Order No. M5510LL/A	With your order, you'll receive: · Macintosh IIfx personal computer with 4 megabytes of RAM and a built-in 1.4-megabyte SuperDrive · Mouse · Documentation set · System software and Hyper-Card software · Training disks · Limited warranty statement
	Macintosh IIfx 4/80 CPU	Order No. M5515LL/A	With your order, you'll receive: · Macintosh IIfx personal computer with 4 megabytes of RAM, a built-in 1.4-megabyte SuperDrive, and an 80-megabyte internal hard disk drive · Mouse · Documentation set · System software and Hyper-Card software · Training disks · Limited warranty statement

Product Details

68030 Processor
· Full 32-bit 68030 microprocessor runs at 40 megahertz.
· The 32-bit address bus provides up to 4 gigabytes of data space.
· 256-byte, on-chip address and instruction caches provide high levels of performance.
· Built-in PMMU supports virtual, shared, and protected memory in operating systems that have been designed for it.
· Burst mode RAM access enables groups of instructions and data to be read in fewer clock cycles than are required in normal access mode.

68882 Math Coprocessor
· The 32-bit 68882 math coprocessor runs at 40 megahertz and accelerates the execution of complex math functions, including trigonometric and logarithmic series.

Optional Parity Support
· Parity DRAM and a parity controller can be built into the Macintosh IIfx system as an option.

ROM
· A 512K ROM SIMM socket on the logic board provides an easy upgrade path to future versions of ROM SIMMs.

Static RAM Cache
· A built-in zero-wait-state 32K Static RAM Cache provides high levels of zero-wait-state CPU performance.

RAM
· RAM in the Macintosh IIfx can be increased to 8 megabytes. The Macintosh IIfx uses 80-nanosecond RAM.
· As denser, 4-megabit and 16-megabit RAM chips become available, RAM can be increased to 32 and 128 megabytes, respectively.

Input/Output Processors
· Two dedicated I/O processors manage low-level I/O tasks for the serial ports, floppy disk drive(s), and Apple Desktop Bus, providing higher levels of overall system performance.

NuBus Expansion Slots
· NuBus provides a multiplexed 32-bit address bus and data bus on a single 96-pin connector.
· NuBus is self-configuring. Cards can be plugged into any slot and the system will automatically identify and configure each card, without DIP switches or jumper wires.
· The NuBus architecture supports data transfer rates of up to 37.5 megabytes per second. SCSI (Small Computer System Interface)
· SCSI is a high-performance interface bus used to connect hard disks and other SCSI-based devices, such as the Apple CDSC® CD-ROM drive and the Apple Scanner, to the Macintosh IIfx. Up to seven SCSI peripherals, including an internal hard disk, can be connected.
· The Macintosh IIfx SCSI subsystem is managed by a dedicated SCSI/DMA controller, which increases system efficiency.
· The SCSI/O subsystem can provide data transfer rates in excess of 3 megabytes per second.

Network Support
· The Macintosh IIfx provides full ROM support for all AppleTalk protocols, and includes built-in serial ports for LocalTalk network connections.

Operating System Support
· Macintosh system software includes:
--System Tools Version 6.0.5 or greater (the Macintosh operating system)
--Printer disk (printer drivers for all Apple printers)
--Utilities disks (include utilities such as the Apple File Exchange, HD SC Setup, CloseView, Disk First Aid§, and Font/DA Mover)
· HyperCard® Version 1.2.5 (or greater) is included.
· A/UX Version 2.0 (optional) is compatible with the Macintosh IIfx.

Technical Specifications

Processor
· 68030, 32-bit architecture
· 40-megahertz clock speed
· Burst mode RAM access
· Two 256-byte, built-in instruction and data caches (Harvard architecture)

Coprocessor
· 68882 floating-point coprocessor (IEEE standard--80 bits precision)
· 40-megahertz clock speed

Static RAM Cache
· Built-in zero-wait-state 32K Static RAM Cache memory architecture

DRAM
· 80-nanosecond, fast-page mode, 64-pin SIMMs
· 1-megabit DRAM package
· 4- or 8-megabyte memory configurations

Optional Parity Support
· Installation of parity generating chip and parity DRAM (9-chip SIMM) provides parity error detection

Memory Subsystem
· Supports overlapping reads from Cache/ROM and writes to DRAM

Input/Output Processor (IOP) Chips
· Two IOP chips are standard cell implementations of a 2-megahertz 6502. The IOP chips manage the floppy disk drive(s) (SWIM chip), the Apple Desktop Bus, and the serial ports (SCC chip).

Features

Benefits

Features	Benefits
· Full 32-bit 68030 microprocessor, running at 40 megahertz – Built-in Paged Memory Management Unit (PMMU)	· Offers increased levels of performance and system responsiveness over other Macintosh II systems. · Supports multitasking operating systems such as A/UX®, Apple's implementation of the AT&T UNIX® operating system.
· 68882 floating-point math coprocessor, running at 40 megahertz	· Provides fast processing of complex mathematical functions while complying with IEEE 80-bit floating-point standards.
· Built-in zero-wait-state 32K Static RAM Cache	· Accelerates system performance.
· Two dedicated I/O processors	· Improves system efficiency by handling low-level tasks previously carried out by the 68030 microprocessor and associated with the floppy disk drive(s), Apple Desktop Bus, and serial ports.
· SCSI/DMA controller	· Increases performance of the SCSI bus.
· Built-in Processor Direct Slot (PDS)	· Provides a fast, 32-bit direct interface to the system bus for high-speed, third-party option cards.
· SuperDrive floppy disk drive	· Provides 75 percent more storage capacity than 800K disk drives. · Allows convenient transfer of data files between Macintosh, OS/2, MS-DOS, and Apple II systems on the same 3.5-inch disk, using the Apple File Exchange utility.
· Support for up to 160 megabytes of internal hard disk storage	· Accommodates either a 5.25-inch half-height hard disk drive or a 3.5-inch hard disk drive in several capacities.
· Six NuBus expansion slots	· Makes it easy to create custom configurations to meet specific needs. (Cards are self-configuring--they require no DIP switches, and can be placed in any slot.)
· Six built-in ports: – Two serial ports – Two Apple Desktop Bus ports – One SCSI port – One sound port	· Provides support for popular peripherals without using NuBus expansion slots. · Provides access to LocalTalk networks, which allow users to connect Macintosh IIfx systems to other computers and to LaserWriter® printers through the AppleTalk® network system. · Supplies high-quality, four-voice digital sound that is compatible with all applications that use Macintosh sound.

Features   Benefits

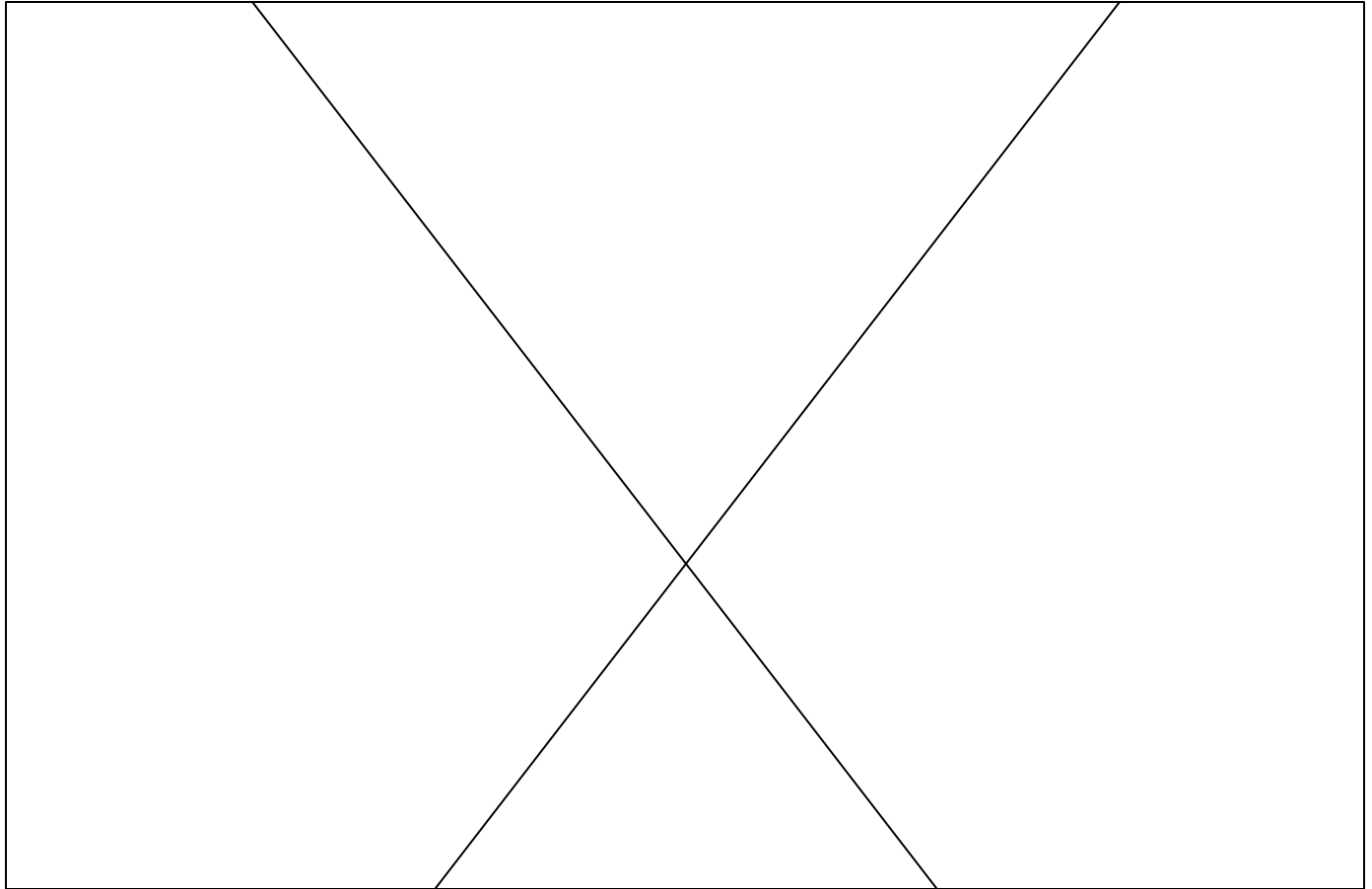| Features	Benefits
· 4 megabytes of on-board RAM, expandable to 8 megabytes	· Provides a simple growth path for users as they need additional memory. · Allows multiple applications to be opened concurrently under the MultiFinder® operating system. · Provides memory space for manipulation of large amounts of data, such as large spread-sheets, complex CAD drawings, scanned images, and sound files.
· Optional parity support	· Provides detection of DRAM (dynamic RAM) parity errors for increased data integrity.
· 512K of ROM on a SIMM (Single In-Line Memory Module), including: – 32-bit addressing – Hierarchical File System – 32-bit Color QuickDraw⁵	· Enables future 32-bit versions of the Macintosh operating system to address up to 4 gigabytes of memory. · Organizes document storage and allows easy access to files. · Provides a consistent user interface throughout the Macintosh family and enables color systems to display up to 16 million colors simultaneously.
· Macintosh user interface, including mouse, icons, windows, and pull-down menus	· Makes most applications intuitive and easy to learn. · Reduces training and support costs. · Provides a consistent user interface across applications.
· MultiFinder operating system	· Allows multiple applications to be opened concurrently. · Lets users easily cut and paste information between applications. · Allows background tasks to be run while users interact with applications in the fore-ground.
· Software compatibility	· Lets users run virtually all Macintosh software.
· Variable-speed fan controller	· Provides quiet system operation.

Macintosh IIfx

Overview

The Apple® Macintosh® IIfx is an extremely high-speed and elegantly engineered personal computer that has been designed for people who need the ultimate in Macintosh responsiveness as well as new Macintosh capabilities.

To provide maximum Macintosh performance and responsiveness, the Macintosh IIfx incorporates a high-speed, 40-megahertz 68030 microprocessor, a 32K Static RAM Cache memory subsystem, and a 68882 floating-point coprocessor for high-speed processing of complex mathematical functions.

The Macintosh IIfx also incorporates, for the first time, dedicated I/O (input/output) processors. These custom-designed ASICs (application-specific integrated circuits) boost system efficiency by managing low-level I/O tasks--for the Apple Desktop Bus§, floppy disk drives, and serial ports-- that were previously carried out by the 68030 processor. In addition, the

Macintosh IIfx contains a dedicated SCSI/DMA (Small Computer System Interface/Direct Memory Access) controller that improves SCSI performance.

Users who need maximum system expandability will especially appreciate the versatility of the Macintosh IIfx. First, system memory can be expanded from 4 to 8 megabytes for high-performance applications that demand superior system responsiveness.

Second, the Macintosh IIfx includes six NuBus§ expansion slots that can accommodate a wide range of Apple and third-party expansion cards, such as additional network interface and graphics cards. A new Processor Direct Slot (PDS) provides a direct interface for third-party hardware options. And six external interface ports accommodate peripherals such as hard disks and printers, LocalTalk§ network connections, and Apple Desktop Bus devices.

For floppy disk storage, the Macintosh IIfx uses the 1.4-megabyte Apple SuperDrive§ disk drive, which allows users to read from and write to 3.5-inch Macintosh floppy disks as well as 3.5-inch disks used in a variety of other personal computers. The Macintosh IIfx can also be configured with up to 160 megabytes of internal hard disk storage, and it will accommodate a second SuperDrive.

Best of all, the Macintosh IIfx is a Macintosh, which means that it still offers all of the benefits of earlier Macintosh systems: access to more than 3,000 of the most powerful, graphics-based applications available; ease of learning and ease of use through a consistent, graphics-based interface; choice without confusion in hardware and software; the convenience of "plug and play" compatibility; and the assurance that all Macintosh components will work together smoothly.