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Macintosh IIci: General Description (Discontinued)

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TOPIC ---

This article describes the Macintosh IIci.

DISCUSSION --

The Macintosh IIci is an improved Macintosh IIcx that offers higher
performance and enhanced functionality. Features offered by the IIci that
are not available on the IIcx include:

- A 25 MHz Motorola MC68030 microprocessor and a MC68882 numerics
  coprocessor.
- A Built-In Video connector that allows IIci users to connect specific
  Apple monitors to a IIci without requiring the use of a NuBus video
  card. Monitors supported by Built-In video include:
    + Apple High-Resolution Monochrome Monitor at 2, 4, 16 and 256 grays
    + AppleColor High-Resolution RGB Monitor at 2, 4, 16 and 256
      colors/grays
    + Apple Macintosh Portrait Display at 2, 4 and 16 grays
- A cache connector that supports the use of an optional high-speed cache
  card.
- RAM Parity error detection is offered in IIci parity configurations that
  customers can special order.

Features that are common to the IIci and IIcx include:

- Support for one internal 1440K Apple SuperDrive (formerly Apple FDHD)
  and an external drive port for one external Apple SuperDrive
- Support for one internal 3 1/2" SCSI hard disk, and an external SCSI
  port for additional SCSI devices.
- Three NuBus system expansion slots

- Two serial ports
- One stereo sound port
- Two ADB ports

UPGRADES

For those those who wish to upgrade their Macintosh IIcx units upgrade to
a Macintosh IIci units, upgrades will be offered. This upgrade will
include a new logic board, a new bottom chasis, 1 MB of DRAM, Macintosh
system software 6.0.4, HyperCard 1.2.5, and IIci manuals. (NOTE: Parity
upgrades, IIcx to parity IIci or non-parity IIci to parity IIci, will not
be offered.)

MC68030

The Macintosh IIci uses the Motorola MC68030 at 25 MHz. The CPU speed for
previous members of the Macintosh II family has been 15.6672 MHz. Also,
68030 burst reads to the on-chip data and instruction caches are supported
in the IIci to further increase performance. The MC68030 is Motorola's
second-generation 32-bit microprocessor, and combines a central processing
unit, a data cache, an instruction cache, an enhanced bus controller (NOT
the NuBus controller), and a memory management unit into a single VLSI
device. Internal function blocks of the microprocessor are designed to
operate in parallel, allowing instruction execution to overlap.

The MC68030 integrates the functionality of the MC68020 32-bit
microprocessor with a subset of the MC68851 Paged Memory Management Unit
(PMMU). Commonly called the 030 (pronounced "oh-three-oh"), the MC68030 is
compatible with Macintosh IIx timing and software.

MC68882

The MC68882 numerics coprocessor (also called the Floating Point Unit, or
FPU) provides high speed, extremely accurate, floating-point computation
to IEEE standards.

The processor operates in parallel with the MC68030 and is clocked at 25
MHz. The FPU speed for previous members of the Macintosh II family has
been 15.6672 MHz. Calls to the Apple SANE routines will use the MC68882.
The MC68882, also called the 882 (pronounced "eight-eighty two").

Both processors use the same base instruction set--the major advantage of
the MC68882 is increased speed. With the MC68882, you can perform both
memory moves and chip operations in parallel--as long as they don't
conflict.

Memory Management

Macintosh IIci can support the A/UX operating system without adding the
PMMU, thanks to on-chip memory management by the MC68030. The MC68030
allows true 32-bit address translation with hardware page replacement. The
built-in memory unit is also capable of ignoring the high 8-bits of the

address to allow Macintosh software to run in 24-bit mode.

(NOTE: The MC68030 PMMU is a subset of the MC68851 PMMU, rather than an exact replacement.)

Macintosh IIci Cache Card

The Macintosh IIci Cache Card includes 32K of 25-nanosecond static RAM. With a IIci Cache Card installed, system performance is increased by 20 to 30 percent. As of September 1, 1991 all Macintosh IIci computers include the Apple Macintosh IIci Cache Card.

Apple SuperDrive

The SuperDrive can read from and write to any of the major 3.5-inch disk formats, including Macintosh (GCR 400K, 800K, and MFM 1.44MB), Apple II (800K), MS-DOS and OS/2 (MFM 720 and 1.44MB).

GCR stands for Group Code Recording; MFM stands for Modified Frequency Modulation. MFM and GCR only effect how the bits are placed on the disk, not the directory structure. The drive is supported by the SWIM (Sander, Woz Integrated Machine) chip.

(NOTE: There is special 1.44MB media that should NOT be used in the older 400K or 800K drives.)

SWIM Chip

The SWIM chip is a single-chip combination MFM/GCR controller for internal and external floppy drives. It was designed for the SuperDrive, but is compatible with the current 400K and 800K drives. The SWIM chip replaces the IWM chip, and is pin- and function-compatible with that device.

Logic Board ROM and ROM SIMM

The Macintosh IIci comes with 512K of ROM, which is soldered to the logic board. For update and upgrade purposes, the IIci logic board has a ROM SIMM slot. When the ROMs in a IIci unit are updated or upgraded, a ROM SIMM card with the new ROM chips is placed in the SIMM slot, and the jumper block is removed. Removing this block disables the logic board ROM and enables the ROM SIMM.

Programmer's Switches

The programmer's switches (Reset and NMI) is located in the front of the Macintosh IIci. This allows the IIci to be placed on its side without restrictions regarding user access to the switch. This also makes it easier to move the computer off of the desk to a more convenient location. As long as the user has access to the front of the computer, which is necessary to gain access to the drive port and to view the power-on and HD-activity lamps, the user can reach the programmer's switches.

Internal Hard Disk

As with the Macintosh IIcx, the Macintosh IIci supports an internal hard
disk drive. Since the IIci has less internal space than the II and IIx,
the IIci only supports 3.5-inch mechanisms.

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