Apple II
Technical Notes

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Developer Technical Support

Apple IIc
#7:   Existing Versions

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This Technical Note describes the main differences between the five different IIc ROM versions which encompass the original IIc and four revisions.

Original IIc ($FBBF = $FF)

- Can use the IIc external drive only
- No AppleTalk firmware
- `PR#7` boots the second drive
- Mouse firmware maps to slot 4
- Serial firmware does not mask incoming linefeed characters
- Serial firmware does not support XON/XOFF protocol

3.5 ROM IIc ($FBBF = $00)

- Can use the IIc external drive and the UniDisk 3.5 drive
- AppleTalk firmware maps to slot 7
- `PR#7` returns the message "AppleTalk Off Line"
- Mouse firmware maps to slot 4
- Serial firmware defaults to mask all incoming linefeed characters
- Serial firmware supports XON/XOFF protocol

Original "Memory-Expandable" IIc ($FBBF = $03)

- Can use the IIc external drive, the UniDisk 3.5 drive, and the IIc Memory Expansion Card
- Mouse firmware maps to slot 7
- No AppleTalk firmware
- `PR#7` kills the system
- Serial firmware defaults to mask all incoming linefeed characters
- Serial firmware supports XON/XOFF protocol

Revised "Memory-Expandable" IIc ($FBBF = $04)

Same as Original Memory-Expandable, plus:
- Keyboard buffering firmware bug fixed
- Firmware returns correct information when the Memory Expansion Card is not present

Apple IIc Plus ($FBBF = $05)

- Can use the external IIc drive, the UniDisk 3.5 drive, the Apple 3.5 drives, but not the original IIc Memory Expansion Card.
- Contains a Memory Expansion Card connector
- 3.5" internal drive replaces 5.25" internal drive
- Mouse maps to slot 7
- `PR#7` kills the system
- 4 MHz 65C02 microprocessor
- Accelerator chip and static RAM cache permit operation up to 4 MHz
- Keyboard replaced with Apple Standard Keyboard (minus numeric keypad)
- Internal power supply
- Internal modem connector
- Serial ports refitted with mini-DIN 8 connectors
- Headphone jack has been removed
- Volume control relocated above the keyboard
- 40/80 column switch replaced by keyboard (Sholes/Dvorak) switch

Further Reference
- *Apple IIc Technical Reference Manual, Second Edition*
- Apple IIc Technical Note #5, Memory Expansion on the Apple IIc
- Apple IIc Technical Note #6, Buffering Blues
- Apple II Miscellaneous Technical Note #2, Apple II Family Identification Routines 2.1
- Apple II Miscellaneous Technical Note #7, Apple II Family Identification
- Apple II Miscellaneous Technical Note #8, Pascal 1.1 Firmware Protocol ID Bytes