UNIVERSITY OF EDINBURGH
Edinburgh Regional Computing Centre

User Note 49

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Title: Microcomputer - System Descriptions

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Software Support Category: n/a

Synopsis

This note contains a brief description of the three currently recommended microcomputers.

Keywords

Apple II, Kaypro II, Sirius 1

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SIRIUS 1 - System Description

The Sirius 1 has two 5.25 inch disk drives, a detachable keyboard and a screen which can be tilted and swivelled to the desired angle.

Processor Unit:	Intel 8088, 16 bit Microprocessor 128 Kbyte of dual-port RAM
Memory Options:	Expansion to three quarters Mbyte internally 128k RAM card 384k RAM card
Mass Storage:	2 x 5.25 inch single sided drives Total capacity 1.2 Megabyte
Options:	2 x 5.25 inch double sided drives Total capacity 2.4 Megabyte 10 Megabyte Winchester Disk
Additional Processor:	Intel 8087
Interfaces:	Codec audio controller Serial: two RS-232 (V-24) ports asynchronous or synchronous Parallel: 8-bit or 12-bit IEEE 488 User Port.
Display:	12" Green Phosphor P-39 with anti-glare optical filter 25 x 80 in normal mode or 50 x 132 on graphics screen. Graphics at 800 x 400 pixels resolution. Vertical tilt 0-11 degrees. Swivel 42 degrees each way.
Keyboard:	Software definable key codes. Sloped and sculptured keytops. 17 key calculator section. 7 programmable function keys.
Software:	The system is delivered with CP/M-86, MS-DOS and a BASIC interpreter. The UCSD p-System version IV and packages for the other operating systems are available as options.

SIRIUS 1 - University Configuration

128 Kbyte Sirius 1 system with

- 1.2 Mbyte total disk capacity

and the UCSD p-System with

- Documentation
- Pascal Compiler
- Turtlegraphics
- Native Code Generator

SIRIUS 1 - Advantages and Disadvantages

Advantages - Economically designed
Good screen and keyboard
Integral graphics on a high resolution screen 800 x 400
User definable character sets
Large capacity disks
Software definable key codes

Disadvantages - Lack of off-the-shelf interface cards at present

SIRIUS 1 - Prices and Discounts

The ERCC will negotiate bulk orders with distributors and so get the best prices for the University: contact Mr J. Robertson, ERCC, The King's Buildings (031-667 1081 ext. 2613).

The following prices are for budgetary purposes only and are exclusive of VAT.

As at September 1983; all prices in pounds:

Sirius 1 (128K) (1.2 Mbyte)	1911
Sirius 1 (128K) (2.4 Mbyte)	2342
Sirius 1 (256K) (1.2 Mbyte + 10 Mbyte Winchester)	3547
128K RAM card	386
256K RAM card	575
384K RAM card	777
Intel 8087 maths processor	581
UCSD p-System version 4.1 with Pascal compiler, Turtlegraphics, native code generator and documentation (Orders should specify "ERCC package".)	426
Xeno file	72
Fortran Compiler (includes manual)	136
BASIC Compiler	136
Advanced System Editor (ASE)	106
Procalc	200

SIRIUS 1 - Maintenance

The ERCC organize a University Maintenance contract, which Departments can be added to if they wish: contact the Service Support Unit, ERCC, The King's Buildings (031-667 1081 ext. 2641).

APPLE - System Description

APPLE II PLUS - This system is supplied with Applesoft extended BASIC (including hi-res. graphics routines), disassembler, and new Auto-Start system control firmware in ROM. Demo programs and manuals are oriented around Applesoft extended BASIC.

The APPLE is a self-contained computer based on the 6502 micro-processor. Standard features include: colour graphics hardware, sockets for up to 48 Kbyte RAM, cassette interface, I/O connectors, typewriter-style ASCII keyboard, high-efficiency switching power supply, and rugged structural foam case.

Please key: 1 BASIC
2 Video Display
3 Memory
4 Inputs and Outputs
5 Built-in System Control
6 Disk II Floppy Disk Subsystem

APPLE II - BASIC

Both BASICs are available on the APPLE. Applesoft is included in the APPLE II Plus. Integer BASIC is available as a plug-in card option. In addition, PASCAL and both BASIC languages are provided for use with the APPLE Language System. Integer BASIC is a fast language that is ideal for games and high speed graphics. Applesoft BASIC is an expansion of Microsoft's popular floating-point BASIC that includes 9-digit arithmetic for business and scientific applications plus easy-to-use, high-resolution graphics commands.

APPLE II - Video Display

VIDEO DISPLAY - The APPLE displays text, colour graphics, or high-resolution graphics - software selectable. Its graphics commands allow either of two screen "pages" to be displayed, with 4 lines of text below the display area.

TEXT MODE
a) 40 characters/line, 24 lines
b) 5 x 7, upper case characters
c) Normal, inverse or flashing characters
d) Extensive display control software in ROM
e) Full cursor control - protected screen feature
f) Fast display - 1000 cps

COLOUR GRAPHICS MODE
a) 40h x 48v resolution (40h x 40v with 4 lines text)
b) 15 colours

HIGH RESOLUTION GRAPHICS MODE
a) 280h x 192v resolution (or 280h x 160v with 4 lines text).
Six colours: black, white, violet, green, blue, orange
b) Software character generator available for lower case characters and labelled displays.

APPLE II - Memory

User memory (RAM) is organized in 16 Kbyte increments, and may be easily expanded to 48 Kbyte of total RAM by inserting the memory elements into plug-in sockets on the motherboard. Language (ROM) memory is organized into six blocks of 2 Kbyte each.

System Control is a standard feature and uses 2 Kbyte. The APPLE II Plus uses the remaining 10 Kbyte to store Applesoft BASIC

The APPLE Language Card may be used to replace the BASIC ROMs with extra RAM space used to hold the UCSD System, Integer BASIC or Applesoft BASIC (down loaded at BOOT time from disk).

APPLE II - Inputs and Outputs

All APPLEs include as standard an ASCII keyboard, audio cassette interface, 8 peripheral board connectors, speaker, I/O connector and two hand controllers.

a) Reliable, typewriter-style keyboard
b) Fast cassette interface - 1500 bps
c) Peripheral board connectors. Fully buffered, with interrupt and DMA priority structure
d) 4 analog (0-150 Kohm resistive) control inputs
e) 3 TTL inputs and 4 TTL outputs

APPLE II - Built-in System Control

The APPLE system control ROM brings your computer to life quickly and easily upon power-up. It offers these additional features:

a) Automatic Input/Output device assignment
b) Keyboard and screen editing features
c) Register examine/modify and read/write cassette routines
d) Hex add/subtract for relative branch calculations
e) Simulated single-step and trace modes; breakpoint handling (APPLE II only)
f) Automatic start-up on power-on
g) Automatic execution of disk programs on start-up

APPLE II - Floppy Disk Subsystem

a) Disk operating software supports up to 6 drives
   - Name access to files for ease of use
   - BASIC program chaining to link software together
   - Random or sequential file access to simplify programming
   - Dynamic disk space allocation for efficient storage
b) Individual file write-protection eliminates accidental file alterations
c) Loads an 8 Kbyte binary image in 6.5 sec. in BASIC or 1.2 sec. in Pascal
d) Storage capacity of 143 Kbyte with Pascal on standard 5.25" diskettes
e) Powered directly from the APPLE (up to 6 drives) for convenience and high reliability
f) Packaged in heavy-duty, colour-coordinated steel cabinet

APPLE II - Specifications

PARAMETERS	DESCRIPTION
Access Method	Random or Sequential-arbitrary record length
Track Access Time	Varies with number of tracks crossed. 200 msec (avg.), 600 msec (max. across 35 tracks)
Disk Capacity	Soft-sectored (143 Kbyte with Pascal)
Controller	Up to two drives per controller. Multiple controllers can be used.
Min. System Config.	32K RAM Apple II Plus.

APPLE II - Typical University Configuration

(approx. 1400 pounds plus VAT or 1700 pounds with colour)

48K Apple II plus

16K language/Pascal card

Disk drive + controller (140 Kbyte)

Add-on disk drive (140 Kbyte)

RS 232 interface card (CCS 7710a recommended)

UHF modulator (perhaps with colour card) + television set

or black and white VDU monitor

APPLE II - Advantages and Disadvantages

Advantages:

Inexpensive packaged system
Many inexpensive, interesting peripherals can be added
Black and white (or colour) raster scan graphics
Apple have commitment to the Pascal system

Disadvantages:

Type ahead not allowed
* Upper case input only
* Only a 40 character 'window' into the 80 character display can be viewed at any time
Relatively small discs (but 6 can be added)

* unless external VDU used as a console device

KAYPRO II - System Description

Processor Unit:	Zilog Z80 running at 2.5 MHz 64 Kbyte of RAM 2 Kbyte of screen memory
Mass Storage:	2 x 5.25 inch single sided, double density drives. Total capacity 360 Kbyte.
Interfaces:	Serial: RS-232C port. Parallel: Centronics compatible port.
Screen:	80 x 24 green phosphor display with brightness control.
Keyboard:	Detachable keyboard with sculptured keytops. 14 key calculator section.
Dimensions:	18(W) x 8(H) x 15.5(D) inches. Weight is approximately 28 lb.
Software:	UCSD p-System Version IV.12 is available as an option for the KAYPRO II. The system is delivered with a range of standard software including CP/M and S-BASIC.

KAYPRO II - University Configuration

64K KAYPRO II Microcomputer
UCSD p-System Version IV.12

KAYPRO II - Advantages and Disadvantages

Advantages
- relatively inexpensive
- ergonomically designed keyboard
- transportable

Disadvantages
- relatively small disk capacity
- minimal support offered by ERCC, users expected to have access to a network port to download software from EMAS.

KAYPRO II - Prices and Discounts

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As at March 1984; prices in pounds:

UCSD Version IV.12 (Editor & Filer)	60
Full UCSD development system	375

KAYPRO II - Maintenance

There is a 12 months warranty.
GEC Traffic Control are contracted to do the maintenance.