



# Alpha Micro Computer Systems

## AM-1000, AM-1000E, AM-1042E, AM-1072, AM-1082 & AM-1092

### ■ PROFILE

**Operating Systems** • AMOS/L, proprietary, multiuser, multitasking, timesharing operating system • CP/M 2.2 on expansion boards.

**Data Management** • available from independent vendors.

**Communications/Networks** • AlphaRJE, IBM 2780/3780 bisynchronous communications package.

**Languages** • AlphaBASIC, AlphaPASCAL, FORTRAN 77, assembler.

**Models** • AM-1000, AM-1000E, AM-1042E, AM-1072, AM-1082, and AM-1092.

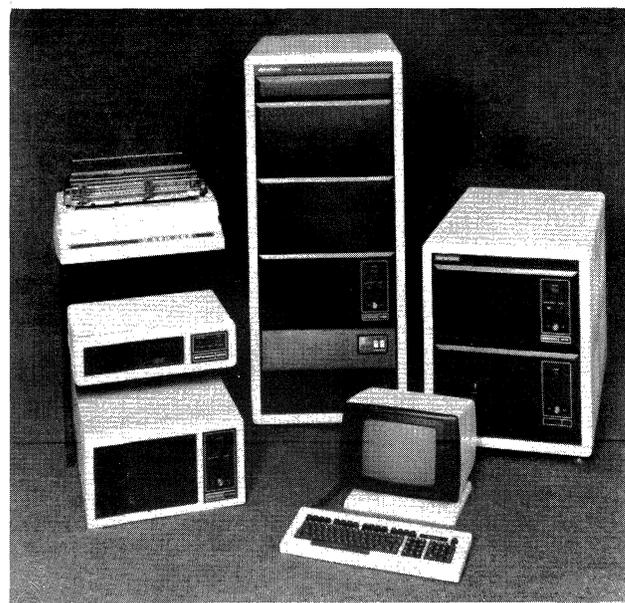
**CPU** • 32-/16-bit Motorola 68000.

**Memory** • 128K to 384K bytes on AM-1000; 256K to 512K bytes on AM-1000E; 512K bytes to 3M bytes on AM-1042E; 512K bytes to 4M bytes on AM-1072, AM-1082, and AM-1092.

**Chassis Slots** • information not available.

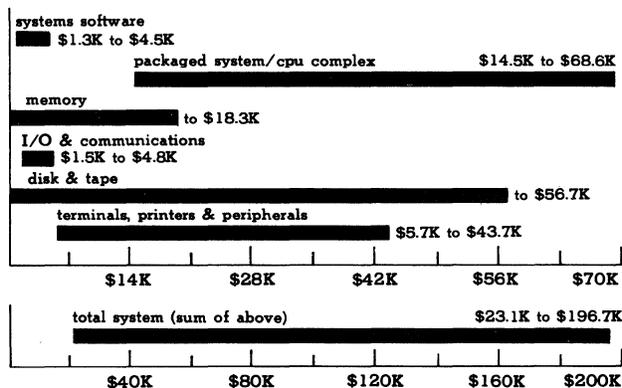
**Ports** • 3 RS-232C ports expandable to 7 RS-232C ports, and 1 parallel port on AM-1000, 1000-E; 2 RS-232C ports expandable to 26 RS-232C ports on other models.

**Mass Storage** • up to 100M bytes on 4 hard disk drives on AM-1000; up to 120M bytes on 4 hard disk drives on AM-1000E; up to 480M bytes on 8 drives on AM-1042E with expansion to 1.44G bytes possible with additional controller boards and drives; up to 560M bytes on 8 drives on AM-1072; up to 1.12G bytes on



### PURCHASE PRICE RANGE

hardware & software



**ALPHA MICRO PURCHASE PRICING** bar graphs illustrate price ranges for small to large systems, with solid bars reflecting software/hardware purchase pricing • **SMALL SYSTEM** is based on AM-1000EVW packaged system (includes CPU, 256K-byte RAM, real-time clock, 3 RS-232C ports, VCR interface, 30M-byte Winchester, 800K-byte floppy) and the following options: AMOS/L operating system, CP/M, AlphaBASIC, AlphaMenu, assembler software; serial expansion board; 3 terminals; letter-quality printer • **LARGE SYSTEM** is based on AM-1092M packaged system (includes CPU, 512K-byte RAM, real-time clock, 2 RS-232C ports, 400M-byte Winchester, magnetic tape backup and the following options: AMOS/L operating system, CP/M, AlphaBASIC, AlphaMenu, FORTRAN 77, assembler, AlphaWRITE, AlphaCalc, AlphaRJE software; additional 2.5M-byte RAM; 2 additional 400M-byte drives; data communications controller, 4 expansion boards; 25 terminals; 5 printers.

8 drives on AM-1082; up to 3.2G bytes on 8 drives on AM-1092.

**Terminals/Workstations** • up to 7 can attach to AM-1000 and AM-1000E; up to 26 on AM-1042E; over 40 on AM-1072, AM-1082, and AM-1092.

**Printers** • 40-cps letter-quality printer available from vendor; attaches to either serial or parallel port.

**First Delivery** • June 1982—AM-1000, 1983—AM-1000E, AM-1042E, AM-1072, AM-1082, and AM-1092.

**Systems Delivered** • over 10,000 worldwide.

**Comparable Systems** • Altos 586, CompuPro 68K, Charles River, Wicat, Plexus, Pixel.

**Vendor** • Alpha Microsystems; 17322 Von Karman, P.O. 18347, Irvine, CA 92714 • 714-957-8500.

**Canada** • distributed in major cities throughout Canada.

**Distribution** • worldwide by approximately 300 domestic and 170 overseas distributors, dealers, OEMs and systems houses; also direct sales to OEMs and Fortune 1000 companies.

### ■ ANALYSIS

Alpha Micro was founded in 1977 as a manufacturer of high-end multiuser microcomputer systems. These systems are sold primarily to the business and professional communities, as well as the scientific, medical, engineering and educational markets. They are also sold to OEMs and as components for various companies' private label programs in vertical markets. These component systems offer a high degree of expandability to



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**TABLE 1: MODEL DIFFERENCES**

MODEL	AM-1000	AM-1000E	AM-1042E	AM-1072	AM-1082	AM-1092
<b>CPU</b>	MC68000	MC68000	AM-100L	AM-100L	AM-100L	AM-100L
<b>MEMORY</b>						
Min	128K	256K	512K	512K	512K	512K
Max	384K	512K	3.072M	4.096M	4.096M	4.096M
<b>I/O</b>						
Standard	3 RS-232C ports	3 RS-232C ports	2 RS-232C ports	2 RS-232C ports	2 RS-232C ports	2 RS-232C ports
Optional	4 RS-232C ports 1 parallel port	4 RS-232C ports 1 parallel port	24 RS-232C ports	58 RS-232C ports	58 RS-232C ports	58 RS-232C ports
<b>MASS STORAGE</b>						
Floppy Drive	800KB to 1.6MB	800KB to 1.6MB	—	—	—	—
Winchester-std	10MB	30MB	60MB	70MB	140MB	400MB
Winchester-max	100MB	120MB	1.44GB	560MB	560MB	3.26B
Backup	VCR	VCR	VCR, 20MB tape	VCR, 20MB tape	VCR, 0.5-inch tape	VCR, 0.5-inch tape
<b>MAX USERS</b>	7	7	26	40	40	40

the user. This expansion is available within each system and between systems.

All of the Alpha Micro small-business computers are based on the MC68000 microprocessor, use the same proprietary operating system, and are software compatible. The systems differ primarily in the amount of memory, disk storage capacity, and number of users supported simultaneously. Storage capacities vary from an 800K-byte diskette drive to 400M bytes on a single Winchester drive. The number of simultaneous users can range from one to 7 in the smaller desktop systems—the AM-1000 and AM-1000E—to 40 users in the larger systems—the AM-1042, 1082, and 1092. Data backup can be in the form of video cassette recorders, floppy disk drives, or streamer tapes. In addition to offering standard configurations for each model, Alpha Micro also custom-designs systems to fit an individual's needs.

The latest entries in the Alpha Micro product line are the AM-1000E, an entry-level desktop unit that is an expanded version of the AM-1000, and the AM-60, a custom-designed terminal which can be attached to the systems. According to the latest financial figures released from the company, the AM-1000 products accounted for 30% of Alpha Micro's total sales.

Multiuser systems, such as these Alpha Micro units, are considered to be the powerhouses of the microcomputer industry as opposed to the basic single-user, single-tasking personal and professional workstation. They can be grouped into what is known as the supermicro arena, competing with low-end minicomputers.

The low-end Alpha Micro units—the AM-1000 and AM-1000E are competing with systems such as the Altos 586, the CompuPro 68K, Onyx Sundance, Wicat System 150, and the low-end Charles River Systems. At the other end of the spectrum, Alpha Micro's main competitors are the high-end Wicat and Charles River systems plus minicomputers such as the low-end DEC VAX units.

The middle of the Alpha Micro product lineup is perhaps

the most crowded with competition, for this is where most of the supermicros compete. Here are found systems such as the Altos 68000, CompuPro 68K, Pixel, Plexus, Wicat, and Charles River plus minis such as the Data General 16-bit Eclipse and the DEC PDP-11, all vying for a share of the marketplace.

It would seem, from Alpha Micro's financial profiles, that the company is more than holding its own in the supermicro arena. In its second quarter of fiscal 1984, which ended in August 1983, the company posted its highest sales and earnings in its history, with sales up to 75% from the previous year. Obviously, the company's goal of producing powerful systems with minicomputer performance but at lower prices is paying off.

**□ Strengths**

As pointed out in the Analysis section, the expandability of the Alpha Micro computers is a definite asset for the growing small business. Complete hardware and software compatibility within this family of computers provides for time- and cost-saving conversions.

The choice of the relatively fast MC68000 microprocessor in the basic structure assures rapid processing of tasks for many users. Also, AMOS/L, the company's proprietary operating system, with its multiuser, multitasking, timesharing capabilities can support over 40 users. When combined with the optional CP/M, the benefits to the user increase, as the numerous CP/M application programs become available along with the advantages of AMOS/L.

Regarding the all-important area of maintenance for micros, Alpha Micro has set up a network of AlphaSERV centers and provides dealers with direct service, training, and product support through the International Service and Support Group, a company division.

**□ Limitations**

The major drawback of the Alpha Micro systems is its lack of Unix or a Unix-like operating system. Not that there is anything wrong with AMOS/L, but having some form of



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Unix on the systems would make much more software available to users.

#### ■ SOFTWARE

##### Terms & Support

**Terms** • all Alpha Micro software available under the Master Software License or the End-User Software License agreement • Master Software License (typically sold to dealer or OEM) authorizes holder to use software and resell it • End-User Software License requires end user's signature, authorizes end user to operate software; does not authorize reselling • Master Software License is required before purchasing an End-User License • End-User License must be secured by dealers and OEMs each time they buy software products for resale • pre-requisite for all software products sold or licensed by Alpha Micro is possession of license to use AMOS or AMOS/L operating systems • most Master License packages include 1 year of service and support under Annual Software Support program which consists of patch updates, Comprehensive Software Support, Software Performance Reporting, and Software Bulletins; each is a 1-year subscription service purchased annually.

**Support** • Alpha Micro's Technical Services (AMTS) provides telephone diagnosis, assists in applying temporary correction, or assists in preparing a Software Performance Report • company representative may be sent to location during normal working hours.

##### Software Overview

All Alpha Micro systems use the AMOS/L proprietary operating system. Additionally, CP/M 2.2 is available for use in conjunction with either the AM-1003 serial expansion board or the AM-330 communications controller board. Other products available through Alpha Micro include AlphaBASIC, AlphaPascal, FORTRAN 77, a macro assembler, AlphaRJE for 2780/3780 communication, plus the AlphaWrite word processor and AlphaCalc spreadsheet. Various applications programs are available through Alpha Micro dealers. The vendor will supply users with a catalog of packages.

##### **Packaged Software**

**AMOS/L Package** • AMOS/L operating system, AlphaBASIC, AlphaMenu, and assembler.

\$1,000 lcms

##### Operating Systems

**AMOS/L** • proprietary, multiuser (1 to 40 users), multitasking, timesharing system • design of separate program components called by AMOS/L; allows expansion of system capabilities • includes 3-pass assembler, linkage editor, symbol file generator, symbolic debug routine, support file management, peripheral software drivers • directly addresses 16M bytes of memory • includes set of over 150 utility programs and routines performing general file and system maintenance; sorting, spooling, file handling • English language commands include COPY, SYSTAT, HELP • TASK manager set of programs for background job control, automatic job scheduling functions runs without operator intervention • password security.

**CP/M 2.2** • 8-bit, disk-oriented, single-user operating system • with Alpha Micro implementation, I/O functions handled by AMOS/L • standard CP/M utilities include DDT 8080 interactive debugger, ASM 8080 assembler, PIP file transfer utility, DUMP utility, SUBMIT/XSUB batch control utilities, ED command-oriented text editor, and STAT system status utility • occupies 7K bytes of main memory, 2K bytes of which can be overlaid by application programs • most AMOS/L file backup routines, all AMOS/L-supported disks may be used:

\$370 lcms

##### Data Management

None available from vendor.

##### Communications/Networks

**AlphaRJE** • enables Alpha Micro systems to communicate with most other manufacturer's systems utilizing IBM's bisynchronous

2780/3780 protocols and with other Alpha Micro systems:

\$600 lcms

##### Program Development/Languages

**AlphaBASIC** • Alpha Micro compiled version of BASIC • interactive and compiler modes • memory mapping system • automatic variable-type conversion • substring modifiers • assembly language subroutine calls • interactive debugging features • chaining to system commands, other programs or command files • error trapping • print formatting and terminal-independent screen handling features • random, sequential, and indexed sequential file access.

**AlphaPASCAL** • Alpha Micro version of Pascal • produces structured software for small computers • variety of data structures • assembly language subroutine calls • library of standard routines • user-defined functions and libraries • virtual memory for executing larger programs • random and sequential file access:

NA lcms

**FORTRAN 77** • ANSI standard with extensions for Alpha Micro systems • multiuser, multitasking • single- and double-precision floating-point numbers • screen-oriented symbolic debugger • compiles directly to machine code • runs standard FORTRAN programs with minimal modification • requires 32K bytes for compilation:

1,400

##### Applications Packages

**AlphaWRITE** • multiuser, multitasking word processing system • menu driven • features include insertion and deletion of characters and blocks of text, automatic insertion, global replace, automatic word wrap, spelling checker with a dictionary of more than 80,000 words • arithmetic calculation function:

\$835 lcms

**AlphaCALC** • menu-driven, multiuser, multitasking spreadsheet • provides 255 columns by 255 rows; HELP screen and screen prompts; multiple, linked spreadsheets; precision to 11 digits • handles inserting of AlphaCALC spreadsheets into AlphaWRITE documents:

300

##### Other Facilities

**SSD-Simulator** • provides developer with necessary information to associate a specific program with a specific Software Security Device (integrated circuit) • available to dealers and third-party software developers under license agreement.

#### ■ HARDWARE

##### Terms, Support & Documentation

**Terms** • available for purchase from dealers • prices given are suggested retail prices • 90-day warranty.

**Support** • warranties and maintenance available under the AlphaCare exchange program and through AlphaSERV centers, dealers, and systems houses; under AlphaCare, dealer can return an in-warranty product and receive a replacement unit instead of waiting for the original to be returned • AlphaServ is a network of service organizations that supplement dealer support and service functions • Alpha Micro's Technical Service Group (AMTS), which provides additional technical support to both dealers and AlphaSERV members, includes Service Center, System Support, Spare Parts/Logistics, Customer Service, Customer Relations, and Customer Education departments; also an AMTS journal is published monthly to provide up-to-date technical information • additional support is provided to users and dealers by the International Alpha Micro Dealers Association (IAMDA) and the Alpha Micro Users Society (AMUS).

**Documentation** • AMOS/L documentation library Vol 1 included with system; includes 10 manuals such as Introduction to AMOS, User's Guide, Release notes, etc; Vol 2 and Vol 3 are available for a fee; hardware documentation for different options can also be purchased separately.

*LCMS: license fee. Prices effective as of December 1983.*



## Alpha Micro Computer Systems

### AM-1000, AM-1000E, AM-1042E, AM-1072, AM-1082 & AM-1092

**Physical Specifications (H x W x D); Weight**

**AM-1000, AM-1000E**

**CPU** • 6.5 x 20.25 x 15 inches; 23 to 29 pounds (AM-1000), 25 to 31 pounds (AM-1000E).

**Display** • not applicable.

**Keyboard** • not applicable.

**AM-1042E**

**CPU** • 10.5 x 19 x 30 inches; weight information not available.

**Display** • not applicable.

**Keyboard** • not applicable.

**AM-1072**

**CPU** • 29 x 21.62 x 36 inches; weight information not available.

**Display** • not applicable.

**Keyboard** • not applicable.

**AM-1082, AM-1092**

**CPU** • 50.25 x 21.62 x 36 inches; weight information not available.

**Display** • 12.5 x 15 x 12.5 inches; 35 pounds includes keyboard.

**Keyboard** • 2.6 x 20.5 x 7.1 inches.

**Systems Overview & Configurability**

The Alpha Micro computers are based on the MC68000 processor technology. Models range from a 2- to 7-user system to a 26-user system on the lower end to over a 40-user system on the super micros. All models have I/O and memory expansion capabilities using add-on boards. Mass storage can be expanded with additional drives and data backup is available via the VCR interface for standard video cassette recorders or magnetic tape. All models are software compatible.

Maximum configurability is stated below; minimum configurations are discussed under Packaged Systems.

**AM-1000 System Maximums** • 384K bytes of RAM, 100M bytes of hard disk storage on 4 drives, 7 terminals, 1 printer.

**AM-1000E System Maximums** • 512K bytes of RAM, 120M bytes of hard disk storage on 4 drives, 7 terminals, 1 printer.

**AM-1042, 1042E System Maximums** • 3M bytes of RAM, 1.44G bytes of hard disk storage; 26 serial ports with addition of I/O boards.

**AM-1072 System Maximums** • 4M bytes of RAM; 560M bytes of hard disk storage on 8 drives; 60 serial ports with addition of I/O boards.

**AM-1082 System Maximums** • 4M bytes of RAM; 560M bytes of hard disk storage on 8 drives; 60 serial ports with addition of I/O boards.

**AM-1092 System Maximums** • 4M bytes of RAM; 3.2G bytes of hard disk storage on 8 drives; 60 serial ports with addition of I/O boards.

**Packaged Systems**

**AM-1000VW** • MC68000 CPU, 128K-byte RAM, real-time clock, 3 RS-232C ports, VCR interface, 10M-byte 5.25-inch Winchester drive.

\$7,583 prch

**AM-1000VWF** • same as AM-1000 VW except includes 800K-byte, 5.25-inch floppy disk drive:

8,750

**AM-1000WF** • same as AM-1000VWF except no VCR interface:

8,258

**AM-1000FF** • same as AM-1000VW except includes 2

800K-byte floppy disk drives in place of Winchester, no VCR interface:

5,850

**AM-1000EVW** • MC68000 CPU, 256K-byte RAM, real-time clock, 3 RS-232C ports, VCR interface, 30M-byte Winchester 5.25-inch drive:

13,333

**AM-1000E VWF** • same as AM-1000E VW except also includes 800K-byte floppy 5.25-inch drive:

14,506

**AM-1042EV** • AM-100/L CPU, 512K bytes of RAM, real-time clock, 2 RS-232C interfaces, VCR interface, 60M-byte, 8-inch Winchester disk drive:

21,666

**AM-1042ES** • same as AM-1042EV except streaming tape backup in place of VCR interface:

25,333

**AM-1072V** • AM-100/L CPU, 512K bytes of RAM, real-time clock, 2 RS-232C ports, VCR interface, 70M-byte, 8-inch Winchester disk drive:

30,500

**AM-1072S** • same as AM-1072V except streaming tape backup in place of VCR interface:

34,167

**AM-1082V** • AM-100/L CPU, 512K bytes of RAM, real-time clock, 2 RS-232C ports, VCR interface, 140M-byte, 8-inch Winchester disk drive:

48,000

**AM-1082M** • same as AM-1082V except magnetic tape backup in place of VCR interface:

60,600

**AM-1082M (Without Backup)** • same as AM-1082V except without VCR interface or magnetic tape backup:

46,600

**AM-1092V** • AM-100/L CPU, 512K bytes of RAM, real-time clock, 2 RS-232C ports, VCR interface, 400M-byte, 10.5-inch Winchester disk drive:

56,000

**AM-1092M** • same as AM-1092V except magnetic tape backup in place of VCR interface:

68,600

**AM-1092M (Without Backup)** • same as AM-1092V except without VCR interface or magnetic tape backup:

54,600

**CPU's**

The AM-1000 and AM-1000E are based on the MC68000 microprocessor; all of the older models have a proprietary CPU, the AM-100/L, which uses the MC68000 chip.

**Motorola MC68000 Processor** • 16-bit data transfer, 24-bit memory addressing and 32-bit wide registers (8 data, 7 address, 2 stack).

**AM-100/L** • based on MC68000 chip • 32-bit internal architecture composed of 17 32-bit bidirectional registers and 32-bit data path • 16-bit data transfer bus • addresses over 16M bytes of memory • operates at 8 MHz • contains over 70 standard instructions which combined with 14 addressing modes form over 1,000 instruction variations • 8 vectored level interrupts • 8-channel DMA capability.

**Memory**

**Standard Memory** • 128K-byte RAM expandable to 384K on AM-1000; 256K-byte RAM expandable to 512K on AM-1000E • 512K-byte RAM expandable to 3M in 128K-byte or 512K-byte

*PRCH: purchase price. Prices effective as of December 1983.*



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increments on AM-1042E; 512K-byte RAM expandable to 4M in 128K-byte or 512K-byte increments on AM-1072 and AM-1092 • byte parity is standard.

**128K-Byte RAM Option** • expands memory capability on AM-1000 and AM-1000E:

\$750 prch

**256K-Byte RAM Option** • expands memory capability on AM-1000 and AM-1000E:

1,575

**128K-Byte RAM Option** • expands memory capability on AM-1042E, AM-1072, and AM-1092:

1,833

**512K-Byte RAM Option** • expands memory on AM-1042E, AM-1072, and AM-1092:

3,666

**I/O & Communications**

**Standard Input/Output** • 3 serial RS-232C ports expandable to 4 additional RS-232C and 1 parallel Centronics printer port with AM-1003 board on AM-1000 and AM-1000E • 2 RS-232C ports expandable to 26 on AM-1042E • 2 RS-232C ports, expandable to 60 on AM-1072 and AM-1092.

**AM-1003 Serial Expansion Board** • optional communications controller and I/O expansion board for the AM-1000 • 4-MHz Z80A microprocessor, 64K bytes of RAM, 4K bytes of EPROM, Centronics parallel interface, 4 serial ports • supports AlphaRJE, Alpha Micro's 2780/3780 bisynchronous communications software • supports CP/M operating system • supports high-speed modem:

\$1,500 prch

**AM-300 Expansion Board** • provides 6 serial ports, cabling • for all models except AM-1000, 1000E:

833

**AM-330 Data Communications Controller** • optional communications controller for the Alpha Micro AM-100/L-based, S-100 bus configurations • includes 4-MHz Z80A microprocessor, 64K bytes of RAM, 4K bytes of EPROM, 2 serial I/O ports, telephone line connector and facilities for supporting low-speed modem and computer dialer • supports AlphaRJE, Alpha Micro's 2780/3780 bisynchronous communications software • supports CP/M operating system • supports high-speed modem through serial port:

1,500

**Mass Storage**

**Diskette Storage**

Floppy disk drives are available for the AM-1000 and AM-1000E only. Packages come with 0, 1, or 2 drives. See Packaged Systems for breakdown.

**Diskette Drive** • 5.25-inch floppy, double-sided, double-density, 800K-byte formatted, 150-millisecond average access time, 250K-bps transfer rate.

**Hard Disk Storage**

Disk size and storage capacity vary according to the model.

**AM-1000/AM-1000E** • 5.25-inch Winchester; 10M bytes/30M bytes formatted; 85-millisecond average access time; 5M-bit-per-second transfer rate • 1 included in certain packages; up to 3 additional subsystems may be connected.

Additional 10M-Byte Drive: \$3,541 prch

Additional 30M-Byte Drive: 6,333

**AM-1042E** • 8-inch Winchester; 60M bytes formatted; 45-millisecond average access time; 8.3-millisecond average latency; 800K-bps transfer rate • 1 included with the system; standard system can support 3 additional drives for a total of 240M bytes; more controller boards and drives can be added for maximum of 1.44G bytes:

10,000

**AM-1072** • 8-inch Winchester; 70M bytes formatted; 20-millisecond average access time; 8.3-millisecond average latency; 1.2M-byte-per-second transfer rate • 1 included with system; standard system can support 3 additional drives for a total of 280M bytes; second controller board and 4 more drives can be added for a maximum of 560M bytes:

13,335

**AM-1082** • dual 8-inch Winchesters; 140M bytes formatted; 20-millisecond average access time; 8.3-millisecond average latency; 1.2M-byte-per-second transfer rate • 2 drives included with system; standard system can support 2 additional drives for a total of 280M bytes; second controller board and 4 more drives can be added for a maximum of 560M bytes:

20,835

**AM-1092** • 10.5-inch Winchester; 400M bytes formatted; 18-millisecond average access time; 7.4-millisecond average latency; 1.86M-byte-per-second transfer rate • 1 included with system; standard system can support 3 additional drives for a total of 1.6G bytes; second controller board and 4 more drives can be added for a maximum of 3.2G bytes:

28,335

**Tape**

Certain models of the AM-1000 & AM-1000E come equipped with a video cassette recorder (VCR) interface permitting file-oriented data backup. The interface uses most commercially available VCRs without modification. One cassette tape can back up 100M bytes of data. AM-1042E and AM-1072 offer either a 20M-byte streamer tape or the VCR interface for data backup. AM-1082 and AM-1092 offer either 0.5-inch magnetic tape or VCR interface.

**Terminals/Workstations**

Alpha Micro offers the AM-60 Video Display Terminal for use with all of their systems. The AM-60 uses a standard EIA RS-232C interface and is ASCII asynchronous, TTY compatible.

**Display** • 12-inch diagonal, tilting, rotating, green phosphor, vertical/horizontal split screen • 80 characters x 24 lines plus 2 status lines • 128-character set including line drawing • 8x10 matrix in 10x11 cell with descenders • blink, underscore, blank, dim, reverse, all combinations.

**Keyboard** • detachable, typewriter-style • low profile • 105 keys, 16 function keys providing 32 possible functions, 8 are programmable • 14-key numeric pad, 5-key cursor control pad; 7 editing keys:

\$1,000 prch

**Printer/Graphics**

Alpha Micro offers a letter-quality printer for use with their systems.

**AM-302 Letter-Quality Printer** • up to 40 cps, 32 cps minimum • ASCII, 128-character set; 1344-character buffer • metalized and plastic printwheels, switch selection • scientific-, financial-, and international-type language fonts • standard ASCII Printer Interface (API); permits either serial or parallel communication:

\$2,750 prch

• END