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ATARI® COMPUTER ADVANCES MICRO-MINIATURIZATION TECHNOLOGY

WITH 1-POUND COMPUTER USING ADAPTED MS-DOS® SOFTWARE

LAS VEGAS, NV (November, 1989) -- Atari Computer has created a new
category of personal computers with the introduction of the Portfolio™, the
world's first "palmtop" personal computer. This compact system establishes
new standards for size, weight, power consumption and price for portable
computers.

A great deal of sophisticated micro-miniaturization technology was
integrated into the one-pound unit, which is slightly smaller than a video
cassette tape. Priced at $399.95, the Portfolio requires only three standard
"AA" alkaline batteries, yet it has the power to execute spreadsheet, text
editing and other computational tasks required by today's sophisticated and
mobile users.

The Portfolio breaks new ground in terms of the amount of power, capa-
bility and versatility that is available in such a compact, economical per-
sonal computer. In fact, the 4.92-MHz system, which includes a built-in Lotus
1-2-3® file-compatible spreadsheet program, text editing software, a calcu-

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lator, appointment book package and phone/address directory as well as an operating system using MS-DOS 2.11-compatible commands, is comparable to having the power of an IBM PC® in the palm of your hand.

Saving Power, Space

Atari Computer's engineers and designers had one goal in mind when they began to conceptualize the Portfolio--to create the smallest, full-featured personal computer ever designed.

The design team had to find a lightweight, low power consumption CPU, display and other components. The 80C88 static CMOS microprocessor, CMOS RAM and other CMOS components, as well as an LCD display were chosen for the Portfolio. The low power consumption of the these components, combined with special system software, enable users to run the system for six to eight weeks under normal usage, using three standard "AA" alkaline batteries.

The system software itself provides several power-conserving features. For example, while a program is waiting for the user to type, the Portfolio automatically switches into a stand-by mode. The stand-by mode is transparent to the user, because the screen does not go blank and there is no delay when the user resumes work. The stand-by mode actually stops the microprocessor clock while software is waiting for user input.

The energy-saving system also conserves its battery life by turning off automatically if no entry has been made for two to four minutes. However, data is not lost and the user simply presses any key to continue the work in progress.

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Users are also warned if their batteries are running low. A built-in circuit senses when battery voltage is low and indicates the status by putting a message on the screen before it automatically shuts the system off. Users who turn on the machine will get a "low batteries" message and the machine will again turn itself off. If the user changes the batteries within a few weeks, the data in the internal memory and file storage will not be lost.

Developing a True Palmtop System

Special component packaging and fabrication technology was a major factor in determining the compact size of the Portfolio. Atari Computer took advantage of the worldwide effort to miniaturize components and drew from the very latest in integrated circuit technology for their palmtop system.

For example, rather than using the standard integrated circuits that are used in full-size, dual in-line packages; the Portfolio uses miniature, surface-mount components, which are mounted on both sides of the circuit board.

Until now, it would have been virtually impossible to create such a small system with full computing power because the technology just wasn't available. For example, the Portfolio has a powerful ASIC chip which combines most of the system integration features that, as recently as two years ago, would have used multiple chips.

Another design factor that helped reduce the size of the system was substituting solid-state memory cards for a floppy drive and disks. This significantly reduced the system's size, weight, cost and power consumption.

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Choosing a 40-column by 8-line display was the final design decision that enabled Atari Computer's engineering team to minimize the size and power consumption of the Portfolio. Rather than doubling the size of the system with a full screen display, they included a window function that allows users to travel throughout a virtual 80-column x 25-line display. This virtual screen is used when running certain Portfolio-compatible MS-DOS programs that have been downloaded onto the system.

Atari Computer's engineers designed the Portfolio similar to a clam shell. The keyboard is on the bottom half of the system and the display is on the top half. They are joined by a hinge, which enables users to adjust the angle of the screen for optimal viewing.

Ergonomic Considerations

Atari Computer was committed to developing a palmtop computer, but the small size created some definite ergonomic "obstacles." For instance, many potential users were concerned that the keyboard would not "feel" like a computer keyboard because of its small size.

Every effort was made to provide Portfolio users with the look and feel that they are accustomed to with their IBM-compatible systems. The keyboard has a 63-key IBM PC-software-compatible configuration with positive-action keys. This means that when users strike a character, they can easily feel when the keystroke is complete. There is also an audible key click (which can be disabled)--a second reassurance to users that they have entered data.

Rather than add "feet" to the system to tilt the keyboard upward from front to back, which can be clumsy, the Portfolio designers chose to tilt each keytop upward, from front to back, to optimize the viewing and typing angle.

The keyboard fills the entire lower surface (7.8-inch by 4.1-inch) and a special key combination activates an embedded numeric keypad.

The solid-state memory cards, which are about the size of credit cards, are used in the same way as floppy disks. The cards can store data files or application programs, have no moving parts, are fully encased with plastic and are more rugged and easier to store than floppies.

Solid-state memory cards have a suggested retail price of $79.95 for 32K, $129.95 for 64K and $199.95 for 128K. Programmable (PROM) cards (64K and 128K) and 128K masked ROM cards are also available and are priced according to quantities.

Internal Software

To meet the varied needs of today's consumers and business users, the Portfolio is bundled with five internal software packages, including:

Spreadsheet--The Lotus 1-2-3 file-compatible spreadsheet offers users 127 columns by 255 lines. The Portfolio spreadsheet permits most Lotus 2.X commands and functions except database management and graphics.

Text Editor--This easy to use editor includes automatic carriage return and word wrap, as well as search and replace and cut and paste functions.

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Calculator--The calculator has five memories, percentage calculations and four number formats: general, fixed, scientific and engineering. In addition, there are three functions: factorial, power and root. The calculator also includes an editable "tape" of previous calculations with spreadsheet-like recalculation.

Diary--The personal diary includes a calendar and appointment book with programmable reminder alarms. Repeating alarms can be set to go off every day, week, month or year.

Address Book--Names, phone numbers and addresses are managed with an alphabetical index. Users may find entries alphabetically, by scrolling or by searching for a word or phrase. Users can retrieve telephone numbers visually or let the Portfolio do the dialing.

Operating System-- The Portfolio's operating system uses MS-DOS 2.11-compatible commands. This enables MS-DOS software developers to easily adapt "well-behaved" PC programs to the unique features of the Portfolio, such as the 40-column by 8-line LCD. The equivalent of MS-DOS .EXE and .COM files may be stored in Program Cards instead of floppy disks, or executed directly when specially compiled.

The Portfolio also includes an internal file transfer function which, when combined with the optional Parallel Interface, enables users to upload or download data files from their IBM-compatible personal computers. For moving data within or among applications, the Portfolio includes a cut-and-paste function. For example, spreadsheet data can be easily incorporated in a business memo.

The Portfolio is truly a multi-lingual system. In fact, the Portfolio is provided with one of seven different keyboard configurations during assembly. Each system includes one predominant language for menus and messages and two additional languages. Users can switch between languages with a few key-strokes. The three language formats are: English/French/German, English/Spanish/Italian and English/Swedish/Danish.

In addition to the basic software that is included with the Portfolio, Atari Computer executives are expecting that a wide range of horizontal and vertical market software will be introduced in each of the languages by third-party developers within the year. The company also plans to market their own line of program cards.

Options Provide Expanded Capabilities

The Portfolio has a 60-pin bus connector for use with proprietary peripheral devices. When used with the Serial Interface, the Portfolio can be connected to any peripheral that uses the industry-standard RS-232C serial interface. The Parallel Interface supports standard Centronics parallel devices, such as printers.

Optional Portfolio peripherals will include:

Parallel Interface--The $49.95 Parallel Interface can be used with the Portfolio's internal File Transfer program and PC File Transfer software to exchange files between the palmtop system and an IBM PC or compatible desktop computer. For example, users can download Lotus 1-2-3 spreadsheet templates

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created on their desktop PC and use them on their Portfolio. It can also be used to connect the system directly to a parallel printer.

Serial Interface--The $79.95 Serial Interface can be used to connect the Portfolio to peripherals such as modems, printers or bar code readers. With suitable software, the Serial Interface can be connected to the serial interface of another computer so the Portfolio will act as an intelligent terminal.

AC Adaptor--The Portfolio's $9.95 AC Adaptor is useful to users who want to conserve their batteries during long periods of operation. When the adaptor is connected, batteries are not required to power the system or peripherals.

PC Card Drive--Users who frequently transfer files between the Portfolio and their desktop PC will want to consider adding the $99.95 PC Card Drive to their desktop system. The card drive allows users to read and write memory cards with their IBM-compatible PC at high speeds. It also eases the process of downloading MS-DOS files onto Memory Cards for the Portfolio.

Atari Computer will also be shipping a Memory Expander Plus which can increase the size of internal RAM to 640K.

The one-pound Portfolio palmtop personal computer is the most complete portable personal computer system available today. But even if it were a 10-pound unit, it would be the most competitive system available for portable computer users in terms of price/performance.

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Atari Computer has taken a quantum leap forward with the Portfolio's technology. The handheld system will be quickly recognized as the industry standard in truly portable personal computers.

For more information on the Portfolio portable personal computer, contact Mike Morand, president, Atari Computer, 1196 Borregas Ave., Sunnyvale, CA 94088; (408) 745-2000.

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trademark of Atari Corporation.

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Portfolio Specifications

Processor:	80C88
System Clock Speed:	4.92 MHz
Internal RAM:	128K (externally expandable to 640K)
Internal ROM:	256KB
Display:	Supertwist LCD display Text mode - 40 character x 8 line Graphics mode - 240 x 64 pixels
Keyboard:	63-key QWERTY
Sound:	Speaker with telephone dialing, 25 melody tones from 622 to 2489 Hz and Key Clicks
Expansion Bus:	60 pin
Card Drive:	Solid-state card drive for optional 32K, 64K or 128K memory (RAM) cards; 64K or 128K programmable (PROM) cards; 128K masked ROM cards
Weight:	15.87 ounces with batteries
Size:	7.8 x 4.1 x 1.2 inches
Power:	3 AA alkaline batteries or optional AC adaptor

Options

Parallel Interface--	For printers, PC file transfer and other "Centronics" parallel devices
Serial Interface--	For modem, printer and other RS232-C serial devices

Memory Expander Plus--   Expands main memory by 256K RAM. Includes
              additional card drive

PC Card Drive--   Read/write Portfolio cards. Includes
              interface card for standard PC bus

AC Adaptor--   Optional power supply for extended use

Portfolio Software

* Lotus 1-2-3 File-compatible spreadsheet

* Text editor with basic word processing functions

* Calculator with five memories, four number formats and editable "tape" of calculations

* Address book with virtually unlimited name and address storage and automatic phone dialing

* Personal calendar/appointment book with programmable alarms

* File transfer to upload and download files from compatible PC using optional Parallel Interface

* Clipboard to move or copy data within a file or between files or programs

* Operating system similar to MS-DOS 2.11