# The Atari

Atari Mega ST

Processors: Motorola 68000, running at 8 MHz. Custom chips provided for memory control, video and graphics, and DMA.

Ports: Parallel (printer), serial (modem), floppy disk, MIDI (music synthesizers, sequencers), monitor, cartridge, mouse, joystick, and DMA (hard disk, laser printer).

Price: 2Mb CPU with monitor, under $2000; 4Mb CPU with monitor, under $3000.

Summary: Friendly, powerful computer with a substantial base of existing software. Easy setup, with all ports built in. Comparatively inexpensive competitor for Macintosh and IBM and compatibles.
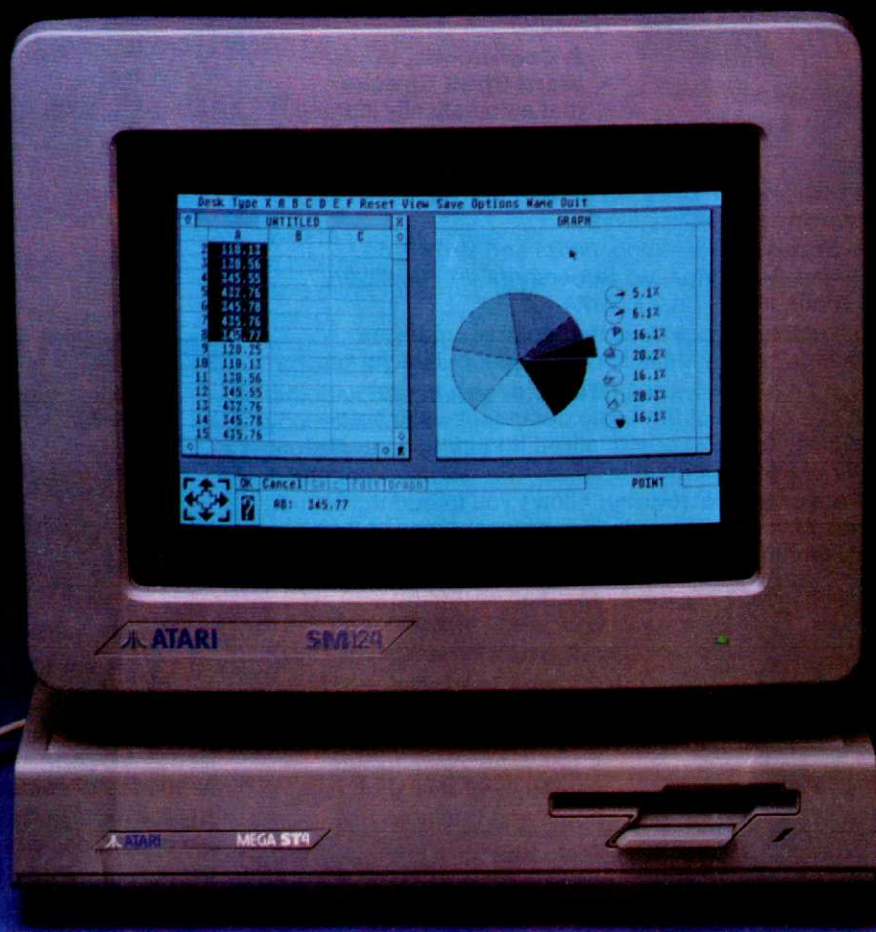
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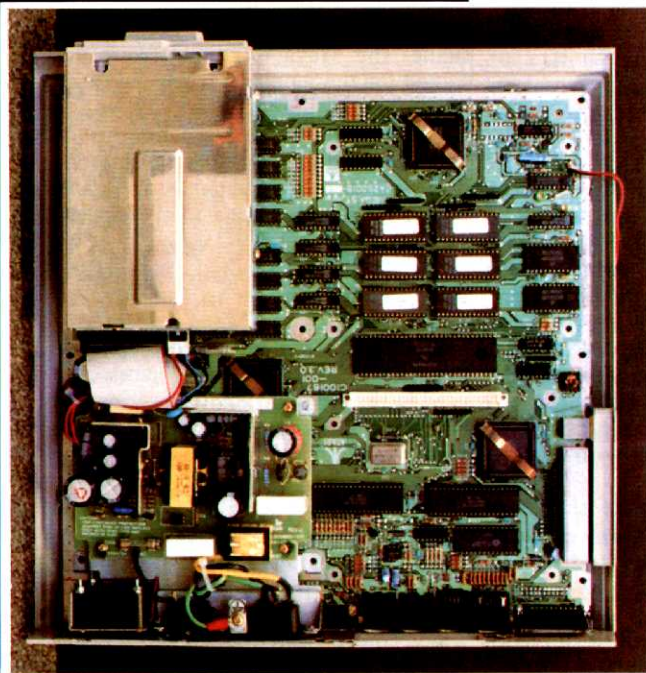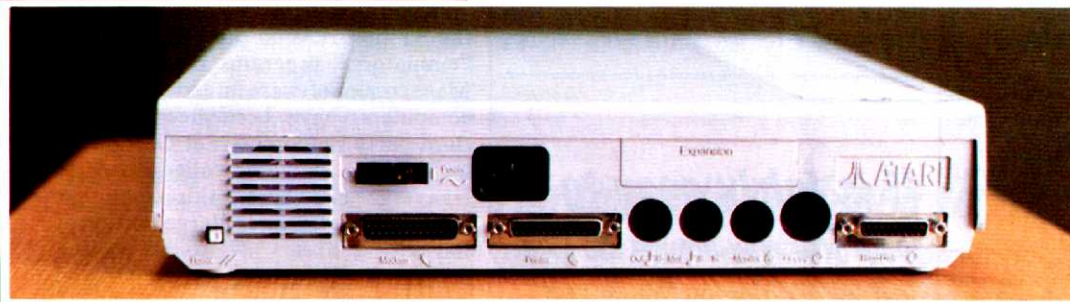
A friendly computer with an abundance of memory designed to provide a "total solution" to your computing problems

By MARK JANSEN

Early microcomputers were the domain of hobbyists, people who bought them more for their novelty than for their usefulness. People who lined up to buy kits, solder them together, and cheer when they flickered to life, blinking tiny LEDs or uttering clicks through an external speaker.

Today's computer buyers are much more difficult to impress. They view the computer as a tool, and they want that tool to be powerful, affordable, and easy to use. Novelty doesn't impress them the way it did those early hobbyists; today's computer buyers are interested mainly in increasing their productivity. They have seen machines that are powerful but require a month of training to use and machines that are friendly but limited; until now, few machines have been friendly, powerful, *and* affordable. The Atari Mega ST is just such a machine.

Basically, the Mega is an enhanced version of the ST with two or four megabytes of memory and separate housings for the keyboard and CPU. Let's have a look at it from the user's perspective.

The first hurdle facing a computer

user is setting the machine up. After unpacking the Mega, which consists of a detached keyboard and CPU, I spent less than five minutes getting it set up.

The Mega CPU is much smaller than the typical IBM-ish computer, being about a foot square and 3″ high. The styling is sleek and clean.

The monitor (color or monochrome) is separate and sits on top of the CPU, with one cable running to the monitor output jack on the computer and another to the wall. The mouse plugs into the keyboard, the keyboard plugs into the CPU, and one power cord connects the Mega to the wall outlet. The only other setup step involves the installation of two AA batteries, for the real-time clock, in a compartment on top of the CPU.

Peripherals, including an external 3½″ floppy disk drive (the same SF314 or SF354 used with the ST) or an external hard disk drive are just as easy to attach. None of the connectors can be plugged in upside down or into the wrong jack, so there is little chance of getting confused and none of damaging the hardware. The Mega ST manual provides clear instructions and helpful diagrams.

Once you have the system assembled, all you have to do to bring the machine to life is insert a disk in the built-in double-sided, double-density, 720K disk drive and turn the monitor and computer on. TOS, the operating system, is already onboard in the form of six ROM chips, so you don't have to load it each time you turn the machine on. Soon after the power starts flowing, the Mega "desktop" appears.

From then on, the Mega provides a visual metaphor for computer operations. Disk drives are represented as file drawers, which can contain folders, which can, in turn, contain other folders or individual files and/or programs.

You use the mouse to move an on-screen pointer, which facilitates point-and-click configuration of the system and execution of programs. Very little setup is needed to use the system, but you can, if you want, customize the desktop to suit your specific needs. The colors can be changed, the icons can be rearranged, and the desktop can be set to display the contents of a specific disk or folder each time you boot the system.

It is fairly easy to learn your way around the Mega without studying the manual, just by clicking on things and watching the results. Double-click on a floppy disk icon, for example, and the icon opens, displaying the contents of the disk. Click on a program icon, and

the program runs. Click on a text file, and the Mega asks if you wish to show it on the screen, print it on your printer, or change your mind altogether.

(An aside about printers: If you have an Epson graphics compatible printer, two keystrokes will dump whatever is onscreen to paper. Again, the manual explains even the very basics of the operation, including where to point and when to click.)

Software

For all its friendly technology, the Mega can do little without software. Fortunately for users, the Mega comes

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out of the gate with a large selection of programs developed by companies like Atari, Microsoft, and Word Perfect.

The Atari ST series predates the Mega by about two years, and that time has not been wasted by software companies, who have been busy developing everything from word processors to paint programs to spreadsheets for it. This same body of software runs flawlessly on the Mega—often with *better* results.

There are two reasons for this enhanced performance: an improved version of the operating system and a new custom chip, the Blitter. The new TOS has had some time-critical portions optimized for better performance and has been made even more capable than its predecessor. Support has also been added for the Blitter, which moves data around in memory very quickly.

These improvements combine to increase the speed of the graphics around which the user interface of the Mega is built. The machine draws and redraws objects onscreen more rapidly; icons and windows, the portholes through which a program communicates with the user, open, close, and display their contents much more quickly than they do on the ST.

This increase in speed is good for a lot more than just showing off. Scrolling through a window in a word processor, for example, is much smoother and faster than in the past. And data on disks formatted by the Mega can be accessed faster thanks to a new "skewed" format, which places sectors on subsequent tracks in a position that gives the head time to align itself before the first sector comes around. My informal benchmark showed that the Mega disk loaded a large program about 30% faster than a disk formatted on a standard ST.

In addition to the software written for the ST that runs on the Mega, several "emulators," programs that coax the Mega to run software intended for other computers, have been developed by third party vendors. Avant Garde sells an MS-DOS emulator, called *PC-Ditto* (see review elsewhere in this issue), that allows you to run a very large portion of the existing library of software written for the IBM Personal Computer and compatibles.

Data Pacific sells a cartridge called the Magic Sac (see review on page 42 of the Jan/Feb 1987 issue) which persuades the Mega to run software designed for the Apple Macintosh family of computers.

Between these commercial programs and a public domain CP/M emulator, it is fair to say the Mega can run literally thousands of programs—many for very specialized purposes.

Under the Hood

The heart of the Mega system is a Motorola M68000 microprocessor running at 8 MHz. This is the same chip used in the Apple Macintosh series and is generally considered more powerful than the 8088 used by PCs and their clones.

Unlike the Macintosh, however, the Mega makes use of several Atari-exclusive custom chips to assist the 68000. These include the Shifter, which is responsible for graphics; MMU and Glue, which control system memory and generally "hold the machine together"; DMA, which provides high-speed input/output for floppy and hard disks and special gadgets like the Atari Laser Printer; and the Blitter, which handles high-speed data manipulation in memory, resulting in faster graphics and other data-movement-intensive activities.

The Mega also offers a new expansion bus, an extension of the system bus through which hardware designers can communicate with all manner of expansion cards that will allow users to take advantage of the speed of the Mega in

anything from networking to number-crunching.

Atari has shown a math coprocessor card for the bus connector, which could be used by math-intensive software to relieve the 68000 of the burden of performing complicated mathematical operations. As is the case with math coprocessors designed for other computers, software must be written specifically to take advantage of the math coprocessor.

While Atari may not offer a coprocessor card itself, several other companies have shown strong interest in the expansion potential it and other cards offer, so look for new applications that will enhance the power of the Mega and keep it current for years to come.

Memory Capacity

Because the expansion connector permits access to the main system bus, where the processors communicate with memory, it is possible to add extra RAM to the expansion bus. The Motorola 68000 has a maximum address range of 16Mb, so it could conceivably communicate with that much extended memory.

An interesting application of such an enormous memory capacity might be a large, battery-backed RAMcard that the Mega would recognize as a blazingly fast disk drive. The extra RAM can also be used in applications like sound digitizing where a large amount of very fast temporary storage is invaluable.

At the moment, it is difficult to imagine an application that would *require* more than 4Mb RAM, but given that only a few short years ago 32K was considered excessive, I'm sure that software engineers will find a use for every bit of the Mega memory—and more.

The Mega comes in two- and four-megabyte models, which are essentially identical except for memory size. Most of the enormous memory is available to the user, with only about 150K set aside for the operating system. Most (192K) of the operating system, including TOS, GEM (Graphics Enviroment Manager), and ABIOS (Advanced Basic Input/Output System), is in ROM.

The size of the memory is a tremendous advantage. Existing programs, like word processors and databases, take immediate advantage of it by allowing larger documents and indexes. Large RAMdisks, which use memory to simulate very fast disk drives, can easily be used to speed up disk-intensive programs. And, the door is open for larger, more sophisticated applications yet to come.

The *Flash* telecommunications program, for example, benefits from the extra memory by providing a much larger capture area. I recently spent more than two hours on Genie with the Mega, capturing in memory everything in sight, and at the end of that time, *Flash* reported that my memory was just 11% full.

Expansion Ports

The rear of the Mega is packed with expansion ports. These include a parallel port for connecting standard printers, an RS-232 serial port for modems and other serial devices, a DMA port for extremely high-speed I/O, a MIDI port to control music synthesizers, a floppy disk port for connecting an external 3½″ drive, a monitor port, and a cartridge port. A removable panel labelled Expansion, provides access to the system bus connector inside.

Joystick and mouse ports are provided at the back of the detached keyboard. The keyboard layout is identical to that of the ST, but the keystroke mechanism has been improved. The keyboard "feels" better, offering a more definite click when a key hits bottom. As a touch typist, I found the change very noticeable and quite comfortable.

Service

We have covered the obvious ways in which the Mega is superior to its predecessor; one that is not so obvious is support. Although the Mega is a computer that approaches the status of "information appliance," Atari feels it is, nevertheless, an appliance that needs more support than most department stores are capable of providing.

Consequently, the Mega will be sold only through Atari-authorized, full-service dealers, who must be provide personnel to answer buyers' questions about the machine and to service it in the event of a problem. Mail order houses will not be authorized to sell the Mega.

Atari Corp. is available to its customers through several channels; phone, mail, and online through several telecommunications services. Everything from information on the nearest authorized dealer to software suggestions to programming help is available to users who call, write, or connect.

Telecommunications is becoming an important part of customer service for Atari. The company, through its employees, is a major online presence, and user response to this line of communication has been excellent. With the advent of electronic mail and low-cost telecommunications services like Genie, far more questions can be handled in less time online. Another advantage is that

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these services are available 24 hours a day, seven days a week, so users can send and receive questions and information whenever convenient.

Moreover, users can address a far larger group of people online than through individual contacts by mail or over the phone. In addition to Atari personnel, other users and representatives of third party companies, who may have additional knowledge about specific subjects, are available to answer users' questions.

As all current Atari users know, Atari is well-known for its philosophy of Power Without the Price. In keeping with that philosophy, the Mega is designed for the consumer who is looking for a total solution to his computing problems, and backed by a network of full-service dealers and Atari Corporation, the new machine should have no trouble delivering just that.

The Mega ST is easy to use, boasts access to a large and growing library of software, and costs considerably less than similarly configured machines from competitive manufacturers.

Although exact pricing was not available at press time, the price for a 2Mb system with color or monochrome monitor will be under $2000, and the price for a 4Mb system, under $3000.

With the advent of the Mega ST, it appears that Power Without the Price is moving upscale with an admirable alternative to the IBM and Macintosh. ■