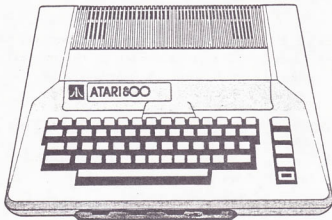


The ATARI[®] 800[™] Personal Computer System
VS
The Apple II Personal Computer System



The Apple II Plus Computer is a redesigned version of Apple's original hobbyist computer. It has undergone a number of changes to achieve its current configuration. In addition, it has fared well, developed a strong following, and now commands much attention.

The ATARI 800 Computer was conceived from the beginning to be a general purpose personal computer for the consumer market. It was introduced later than many of the other systems on the market, and lacks some of their early-design mistakes. The ATARI 800 represents a massive engineering research and development effort which included the design of custom integrated circuit chips.

The ATARI 800 currently has built-in features which make it a superior general purpose personal computer. The ATARI-produced peripherals and software have been designed to take special advantage of these features. The following are some details you might tell a customer who is comparing the ATARI 800 to the Apple II Plus.



The Keyboard

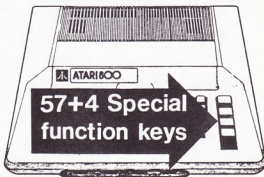
The keyboard is the point of contact between man and machine; its features and layout have a great impact on the overall acceptability of the computer.

ATARI 800™

57 standard keys
+ 4 special function keys

Apple II Plus

52 keys total



Having more keys means fewer keys have to perform multiple functions. More individual functions can be labelled on the keytops, making the keyboard easier to use.

Eg. To move the cursor around on the ATARI 800 Computer, you press the **CTRL** key and then one of the keys labelled **↑**, **↓**, **←**, or **→**, depending upon the direction you wish to move. On the Apple II, the **I**, **J**, **K**, and **M** keys also function as the cursor direction control keys. To move the cursor up, for instance, one must press **ESC** **I**.

The Keyboard

...Continued

ATARI 800™

UPPER CASE and **lower case** are standard.

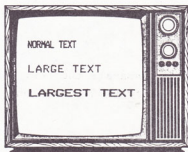
The ATARI 800 also has graphics characters...



for easy highlighting, design, and illustration. There are also 2 **large text modes** for creating titles and headings.

Apple II Plus

UPPER CASE characters only, no standard lower case.



On the ATARI 800, it is easy to have all letters appear in lower case simply by pushing the **CAPS/LOWR** key once. On the Apple II Plus, special adapters are required for this.

The Keyboard

...Continued

ATARI 800™

Apple II Plus

INSERT and DELETE functions

No INSERT function



are standard, both for individual characters and whole lines.

The ability to separate the text and insert characters, or lines, can save the ATARI 800 user huge amounts of editing and correction time.

On the Apple II, in order to make minor changes, you must sometimes retype long complex lines.

RAM Memory Expansion

ATARI 800™

Standard system expandable to
48K using ATARI Memory Modules™

8K RAM Memory Module-
16K RAM Memory Module-



Apple II Plus

Standard system expandable to
48K using individual memory
chips



With the ATARI 800, maximum memory expansion is a matter of opening up a compartment and inserting two 16K RAM modules; it takes a few seconds. To upgrade the Apple II after purchase, either the user or the dealer must take the top off of the computer and carefully insert the individual chips directly into the sockets on the printed circuit board. If this is done with the power ON, the chips can be destroyed. The power shuts OFF automatically on the ATARI 800 when the memory compartment door is opened; there is no danger of damaging the chips within the memory modules.

It is also possible to destroy bare chips with static electricity, put them in the wrong way, and bend or break the pins when inserting them into their sockets. With the ATARI 800, the chips are never exposed, and the modules will go in only one way.

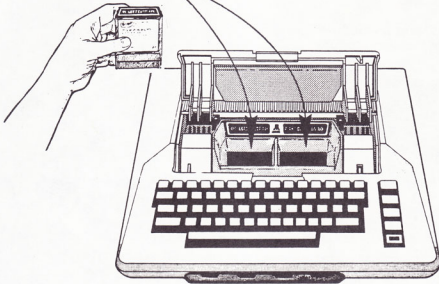
Program Cartridge Slots

ATARI 800™

Two slots

Apple II Plus

None

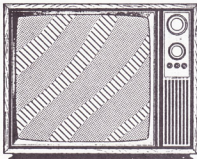


These cartridge slots give people the ability to use sophisticated programs without having to buy even one peripheral; no program cassette recorder or disk drive is needed. ATARI ROM cartridge programs such as BASIC Computing Language, Assembler Editor, Music Composer™, and Computer Chess are sturdy, easy to use, and loaded instantly by popping them into the slot.

This is a dealer training document; not intended for release to the general public.

RF Shielding, Equipment Damage, TV Damage

The ATARI 800 Computer has many clearcut advantages in these areas.



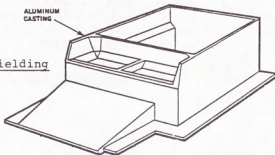
RF Shielding

Many electronic devices generate radio frequencies which create interference and show up as static "noise" on TVs and radios.

Vacuum cleaners do this...so do some computers. This can be a great nuisance to people nearby trying to watch or record TV or radio programs. RF shielding keeps this "noise" generated by the computer from interfering with TV and radio reception.

ALUMINUM
CASTING

ATARI 800 RF Shielding



ATARI 800™

This system was developed from the ground up to meet or exceed F.C.C. standards. The aluminum casting (shown above) which covers the computer electronics, is only part of the ATARI 800's special RF shielding system.

Apple II Plus

Prior to March 1981, the Apple II Computers did not meet F.C.C. requirements for RF shielding. It is possible to have these non-shielded models modified somewhat to cut down on RF interference.

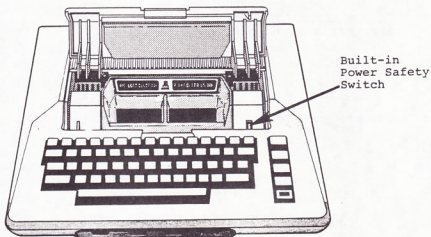
Equipment Damage

ATARI 800™

When the top is opened on an ATARI 800, the power automatically shuts OFF.

Apple II Plus

There is no automatic power shut-off when the cover is removed from an Apple II.



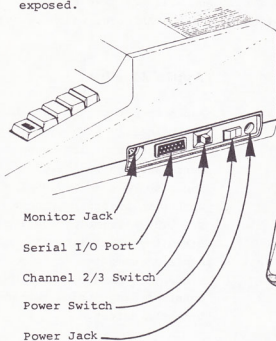
Since printed circuit boards, cartridges, and electronic components can be damaged if they are removed or inserted when the power is ON, having an automatic power shut-off system on the computer is a definite plus.

Equipment Damage

...Continued

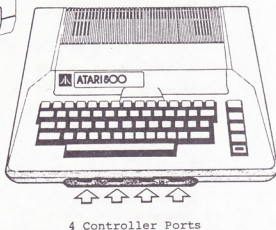
ATARI 800™

ATARI 800 Computers expose no electronics to wandering hands. Only the slots and jacks needed to expand or interface the computer are exposed.



Apple II Plus

The electronic works (bare chips, interface boards, jacks, etc.) of an Apple II are completely exposed to anyone curious enough to remove the top. Not even a screwdriver is necessary to take off the cover.



Printed circuit boards, with their associated chips and components, are very fragile items. The less they are exposed, the less likely it is that they will be damaged.



This issue is of general concern to the public and even though the ATARI 800 protects against it, we have found that it is sometimes best to not bring up the issue unless asked. It is conceivable that the public will remember only one thing... personal computers can damage TVs... and will not make the distinction between those that can and the ATARI 800, which cannot.

ATARI 800™

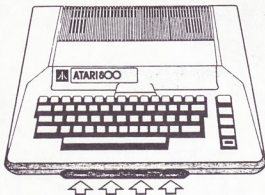
The ATARI 800 was built to work with a home TV or monitor. It has a built-in RF modulator for direct TV connection. When the keyboard of an ATARI 800 Computer is not used for a few minutes, the computer automatically goes into a TV screen-protection-mode. The colors and intensities of characters on the screen constantly change, thus preventing a "ghost image" from being burned onto the screen. ATARI has used this system effectively with millions of video games in use with home TVs around the world.

Apple II Plus

Apple Computers are made to run primarily with a monitor. An RF modulator has to be purchased and installed in order to make an Apple II work with an ordinary home TV. There is no protective circuitry built into an Apple II Computer to help prevent TV damage due to a constant image being burned onto the screen.

Controllers

It is a mistake to view controllers merely as game devices. Although they readily lend themselves to game play, they are really extensions of the keyboard, and can be used for a variety of serious applications.



4 Easy-to-access controller ports

ATARI 800™

ATARI makes a variety of controllers which are available in computer stores, as well as department and variety stores all over the country. All the controllers plug directly into the front of the computer console. There is no need to open the top or expose the electronics. They cannot be plugged in the wrong way, and the connections are designed so even a young child can connect and use the controllers.

Joystick Controller



Paddle Controller



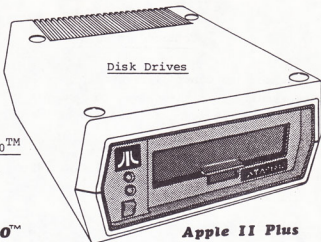
ATARI

Light Pen



Apple II Plus

Apple sells a paddle controller. To plug it in, the top of the computer must be removed and the controller plug carefully inserted into its socket on the printed circuit board. This connector is very delicate; care must be taken to avoid bending the pins, putting the plug in the wrong way, or pulling too hard on the paddle once installed.



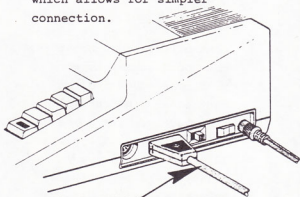
The ATARI 810™
Disk Drive

ATARI 800™

88K bytes of memory per
diskette

Moderate storage and
retrieval time (Faster
with DOS II)

The ATARI 810™
Disk Drive
has its own built-in
electronic controller
which allows for simpler
connection.



A single cable connects the
computer and disk drive, it
takes only seconds to do
and no delicate electronics
are exposed in the process.

Apple II Plus

143K bytes of memory per
diskette (with DOS 3.3)

Relatively fast storage and
retrieval time

The Apple Disk Drive has no
"on board" electronic
controller, and it is
somewhat complex to attach
to the computer. The user
must expose the computer's
internal electronics to
place an additional printed
circuit board in the computer
itself. To do this, the
power must be turned OFF and
care must be taken to avoid
damaging the chips or printed
circuit board electronics.

Disk Drives

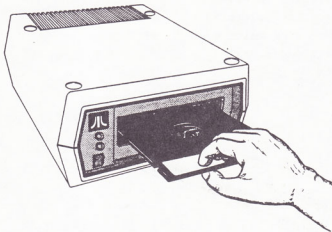
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ATARI 800™

Both the 810 Disk Drive and data cable were designed from the start to meet F.C.C. specifications.

Apple II Plus

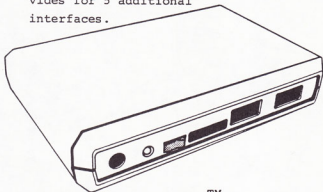
Apple has recently modified their disk drive cable in order to meet F.C.C. specifications for RF shielding.



ATARI chose to produce a disk drive which had F.C.C. approval and was easy to set up and operate, even though it meant there might be a few disadvantages regarding some of the technical specifications related to speed of data transfer. While these specifications may be of interest to the computer wizard, they will be of little or no consequence to the average consumer.

ATARI 800™

Most of the ATARI 800 peripherals and accessories need no special interfacing. The interface capability is built right into the system. Examples of these are the disk drive, 40-column printers, and controllers. For those peripherals that require special interfacing, ATARI makes one multiple interface device which provides for 5 additional interfaces.



The 850 Interface Module™ connects to the ATARI 800 with the standard I/O cable and sells for about the same price as one of the special Apple interface cards.

Apple II Plus

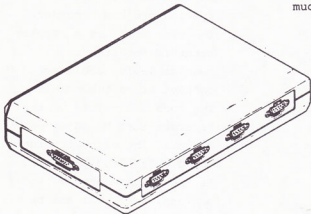
The Apple has 8 slots for adding interface cards. These slots are inside the computer, the cover must always be completely removed in order to expose them. Sometimes the price of a card is included with the price of a particular peripheral.

Interfaces

...Continued

ATARI 800™

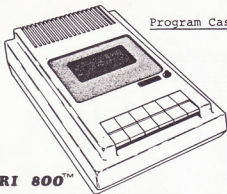
If ever necessary, the ATARI 850 Interface Module can do the work of 5 printed circuit boards.



Apple II Plus

Almost anything that is added to an Apple II requires a special interface card. Some of these cards cost as much as \$495.00.

If you want to pay the price, there are currently more hardware items one can add to the Apple. ATARI designed a system, however, which allows most users to develop their core system with little or no special interfacing requirements. Also, many companies are finding that they can inexpensively adapt additional hardware to the ATARI 800 using its built-in features such as the front controller ports.



Program Cassette Recorders

ATARI 410TM Program Recorder

No tone or volume adjustments necessary

ATARI 800TM

ATARI's program recorder is made specifically for use with the ATARI Computer System. Tone and volume adjustments are automatic. The 410 Program Recorder can stop and start under computer control, and there is only one connector to plug into the computer.

The recorder is also stereo...

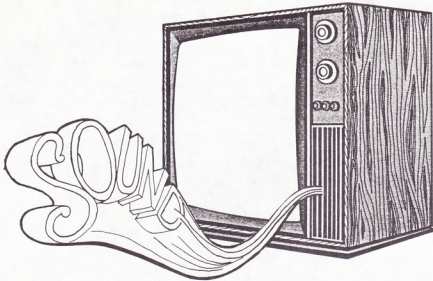


2 Tracks

One track is used to store computer programs, the other to record voices, sound effects or music, and play them back through the TV speaker. This capability makes ATARI programs such as Conversational French and Spanish possible.

Apple II Plus

Apple does not make a special program recorder. The user must use a regular cassette recorder and a special 4-plug cable to connect it to the computer. The tone and volume of the recorder must be adjusted by trial and error in order to save and load programs. If the adjustments are not correct, data will not be transmitted between tape and computer. There are also no provisions for sending voice or music through the TV speaker.



The ATARI 800 Computer's 4 built-in sound registers produce great sounds directly through the TV speaker.

ATARI 800™

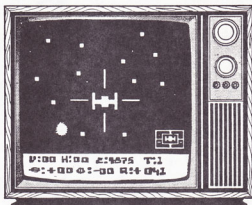
The ATARI 800 has a small speaker within the computer, but in addition, there are 4 separately programmable sound registers which can produce a fantastic variety of sounds directly through the TV speaker. At least 256 different musical notes may be played in each sound register, with 16 volume levels and 8 different tonal qualities available per note. (Even more is possible for the advanced programmer.)

Apple II Plus

The Apple has a small speaker inside the computer also. The Apple Computer can produce a warning buzzer, some sound effects, and 32 musical notes. The standard system, however, cannot produce anything like the sounds produced by the ATARI 800, through the TV speaker. Fairly expensive accessory sound boards can be purchased for the Apple.

Graphics

Personal computer systems offer graphics capabilities which are ideal for computer-aided instruction, advertising or promoting products, advanced telecommunications, and entertaining people with creative and colorful graphics displays as well as computer games.



A particular personal computer's graphics capabilities depend upon a number of things such as general screen display, clarity of text, whether or not both UPPER and lower case letters are available, color options, resolution and the number of letter sizes used. All of these features determine whether or not a computer will execute computer graphics well.

ATARI 800™

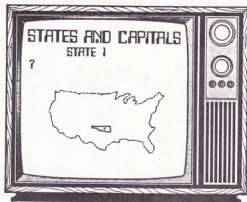
The ATARI 800 Computer is capable of great graphics. It has 128 colors to choose from, and supports 3 text modes for normal size, large and extra large size text. The ATARI 800 also has 6 additional modes for graphics, with the highest resolution, 320x192, being higher than that of the "high res" mode on the Apple II Plus.

Apple II Plus

The Apple II Plus has 16 colors to choose from. It has only 1 text mode, and offers a low resolution (low res) and high resolution graphics mode.

Graphics

...Continued



ATARI 800™

In addition, the advanced programmer can take advantage of the ATARI 800's ability to...

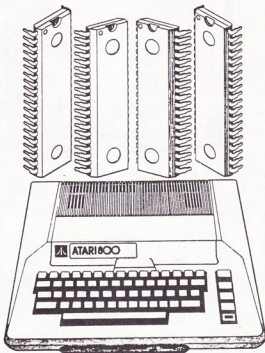
- * mix screen modes using display list interrupts
- * change screen colors instantly
- * use a built-in feature called player-missile graphics, and
- * create graphics using the easily changeable character sets.

Apple II Plus

To change the background color of the screen, the Apple II Plus redraws the entire picture. The ATARI 800 color change process is much faster. Apple II Plus BASIC supports a couple of graphics features (Shape, Rotate, etc.) which ATARI BASIC lacks, but the general graphics capability of the Apple does not compare to that of the ATARI 800.

Additional Considerations

Custom LSI (Large Scale Integration) chips give the ATARI 800 Computer more computing power, as well as superior graphics and sound capabilities.



The ATARI 800 uses the same "main brain" I.C. chip as the Apple II Plus, the 6502 Microprocessor. In addition, however, the ATARI 800 has three custom-designed chips. One of these, the ANTIC, is also a microprocessor. There are many features built into the ATARI 800 with these three special chips which are designed to be tools for the professional programmer, and objects of interest and experimentation for the computer hobbyist. What this means is that the quality of software available for the ATARI 800 is directly related to the computer's superior technical design. Since equivalent features are not included in the standard Apple II Plus, software cannot be written to take advantage of them.

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