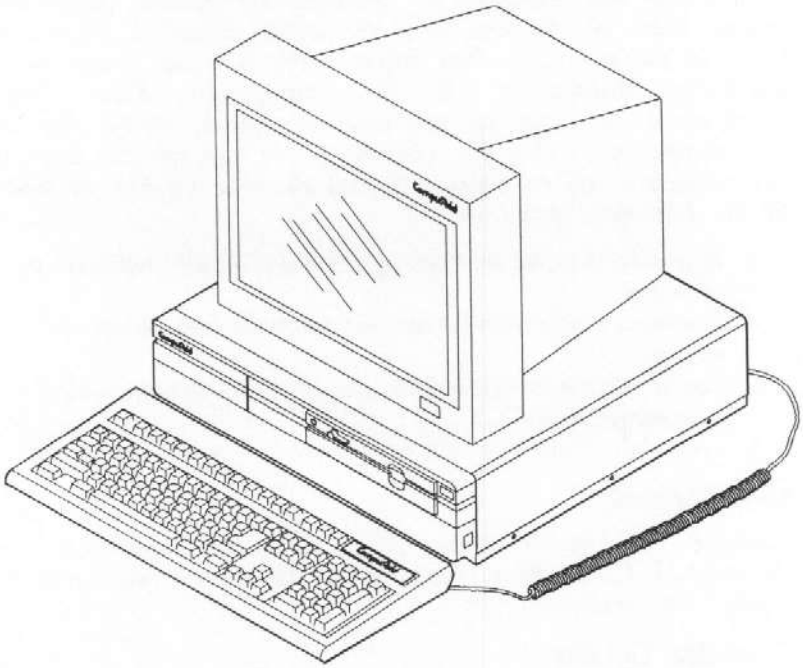
CompuAdd 810

INSTALLATION AND OPERATIONS MANUAL



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FCC RADIO FREQUENCY INTERFERENCE STATEMENT

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15, Subpart B, of the FCC Rules. This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, may cause interference to radio communications.

The limits are designed to provide reasonable protection against such interference in a residential situation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- *Reorient or relocate the receiving antenna of the affected radio or television*
- *Increase the separation between the equipment and the affected receiver*
- *Connect the equipment and the affected receiver to power outlets on separate circuits.*
- *Consult the dealer or an experienced radio/TV technician for help.*

Modifications

Changes or modifications not expressly approved by CompuAdd Corporation could void the user's authority to operate the equipment.

Shielded Cables

Shielded cables must be used with this equipment to maintain compliance with FCC regulations.

IMPORTANT SAFETY INSTRUCTIONS

Read all of these instructions before setting up and using your system!

Follow all warnings and instructions marked on the computer and noted in the operating instructions.

Save these instructions for later use.

General Precautions

- Do not setup or use this computer system near water.
- Do not place this computer system on an unstable cart, stand, or table. Doing so may cause the computer and attached devices to fall, resulting in serious and permanent damage to the equipment.

Electrical Considerations

- To avoid damage to the computer or monitor, always operate it from the correct type of AC power source, specified on the label (115V/60Hz in the U.S. and Canada; 230V/50Hz in the United Kingdom and Europe). For operation at 230V, a UL listed cordset should be obtained which employs a grounding type attachment plug suitable for connection to the 220-240V supply source.

- To prevent electrical shock, the computer's power cable is equipped with a three (3) prong plug. Plug the power cable into a properly grounded electrical outlet. Do not use adaptor plugs or remove the grounding prong. If the outlet does not accept the three-prong plug, contact an electrician to replace the obsolete outlet.

- If you must use an extension cable with this computer, use a 3 wire extension cable and make sure that the extension cable's ampere rating is sufficient to handle the load of all of the equipment plugged into the extension cable.
  The total load of all devices attached to one cable or one outlet should never exceed 15 amperes. A rough estimating method (120Vac applications) for determining the load is to divide by 100 the total wattage for all devices attached to a cable or outlet. The wattage rating for most devices is listed on a label on the product.
  Example: A 1300W space heater and this computer system (145W) would be a load of about 14.5 amperes. (This example configuration is **not** recommended.)

- Do not set any object on the power cable. Locate the power cable out of traffic areas so it can not be stepped on or tripped over.

- Be sure the power switches on the computer, monitor, and all attached external devices are turned to OFF and unplugged from electrical outlets before removing the computer cover.

- Static electricity can permanently damage computer components. Handle components and option cards with care.

- Except as explained in this manual set, do not attempt to service this computer yourself. Opening covers marked "Do Not Remove" may expose you to dangerous voltages or other risks. Refer all servicing of those components to qualified service personnel.

- Avoid touching components and contacts on the option cards. If possible, hold the card by its edges or by its metal mounting bracket. Contact qualified service personnel for assistance if:
  - A power cable or plug is frayed or damaged
  - The computer has been exposed to rain or water, or liquid has been spilled into it
  - The computer is dropped or the cabinet is damaged
  - The computer does not operate normally when the operating instructions are followed. **Adjust only those controls covered in the operating instructions!**

Use and Maintenance

- Unplug the computer from the electrical outlet before cleaning it. Use a damp cloth for cleaning. Never apply liquid or aerosol cleaners directly to the computer. If the computer gets wet, unplug all system power cables and contact CompuAdd technical support for assistance.

- Slots and openings in the system cabinet (front, back, or bottom) are for ventilation. Do not block these vents or the computer may overheat and operate unreliably. Avoid setting the system unit on the a bed, sofa, carpet, pillow, or other soft surface that would cover these vents. Never set the computer on a radiator, heat register, or other heat source.

- Do not place this computer in a built-in installation unless proper ventilation is provided.

- Never insert any foreign objects into the computer cabinet slots. Fire, electrical shock, and damage may occur if such objects short out high voltage parts.

ATTENTION

This digital apparatus does not exceed the class B limits for radio noise emissions from a digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareil numérique de la classe B énoncées par les Règlements sur les brouillages radioélectriques émis par le Ministère des Communications du Canada.

CompuAdd Inc.

ACHTUNG

We hereby certify that the Personal Computer Model "CompuAdd 810" is in accordance with Vfg 1046/1984 and are RFI-suppressed.

Hiermit wird bescheinigt, dass der Personal Computer Modell "CompuAdd 810" in Übereinstimmung mit den Bestimmungen der Vfg 1046/1984 funk-entstört sind.

The marketing and sale of the equipment was reported to the German Postal Service. The right to re-test this equipment to verify compliance with the regulation was given to the German Postal Service.

Der Deutschen Bundepost wurde das Inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

CompuAdd Inc.

Ergonomic Testing

This device has been tested in combination with the devices listed below and meets the VDE safety and ergonomic requirements for display workstations in office environments.

Dieses Gerät erfüllt mit den hierfur geprüften weiteren Geräten die Anforderungen an Bildschirmarbeitsplätze in Bürobereich.

Monitors:	Goldstar, MGH 4335
	NEC Multisync II, Model JC-1402HMED
Video Cards:	Video-7, VGA Vega
	Video-7, VEGA Deluxe
	Paradise, VGA Plus (8-bit)
	Paradise, VGA (16-bit)
	Paradise, EGA 480
	Paradise, EGA 350
	Diamond Flower, EG-3000
Keyboard:	Keytronics Model EO3435

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Chapter 1
INITIAL INSTALLATION

This chapter consists of instructions for connecting and starting your CompuAdd 810 computer. If the instructions contain terms you are not familiar with, check the glossary in Appendix A of this manual for definitions.

Before You Start

To complete the installation, you will need:

- MS-DOS software and manuals
- The manuals for all options not installed at the factory as part of the system (printers, plotters, external modems)
- Any software that came with these options
- A small flat-blade screwdriver for securing data cables

The installation instructions are in this order:

- Unpack and check system components
- Prepare to install the system
- Install the system unit
- Install the video display unit
- Install the keyboard
- Install peripherals and options
- Start the computer

The *Where To Go Next* section at the end of this chapter consists of suggestions on what to do once you have installed your CompuAdd 810.

Unpack and Check System Components

Completely unpack the system before starting the installation.

Step 1.

Carefully remove all of the components from their shipping containers.

Step 2.

Make sure that you have all of the components you ordered.

The basic CompuAdd 810 system unit consists of:

- The system board
- A diskette drive and onboard drive controller
- One onboard parallel port
- Two onboard serial ports
- An onboard monochrome/CGA video controller and port
- A riser board with bus expansion slots for optional cards

Your system arrived in two boxes. The larger box contains the system unit and the other items in Figure 1.

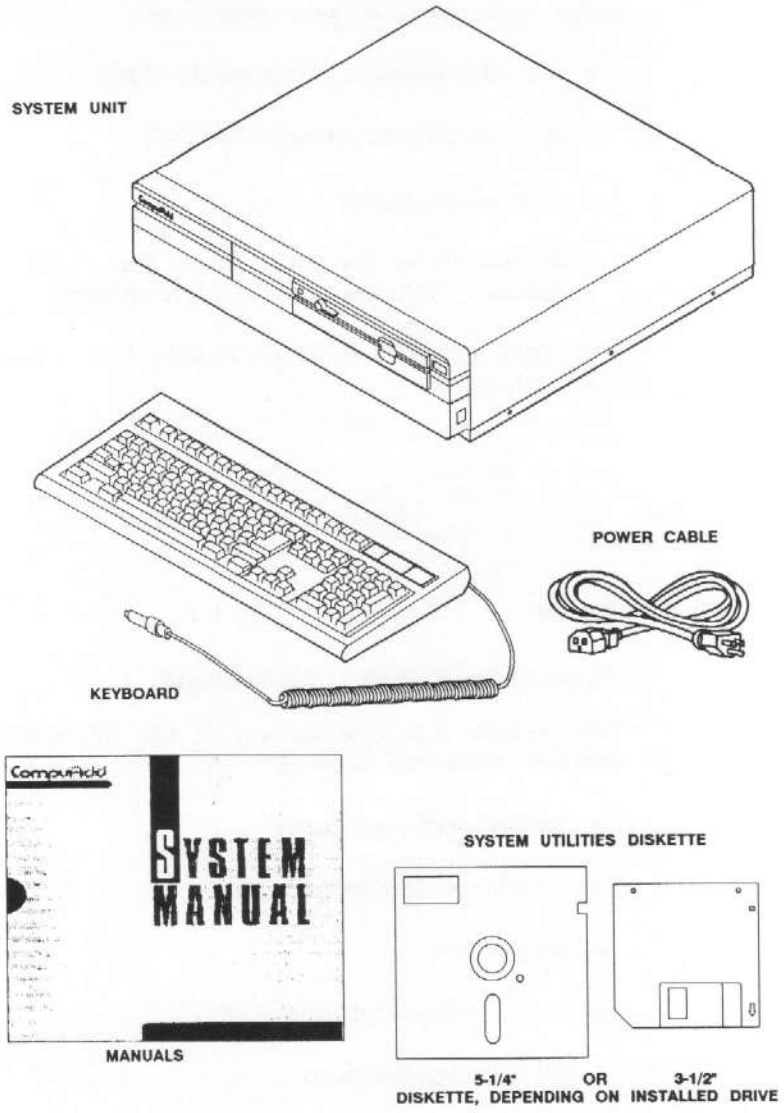


Figure 1-1. System Unit Box Contents

Other basic parts of your system are:

- A 101-key keyboard (102-key in the U.K.)
- A system diskette (either 5¼" or 3½")
- A system manual set
- A video display unit (monochrome displays are standard, CGA, EGA, and VGA are optional)

The video display unit is in another box. This box contains:

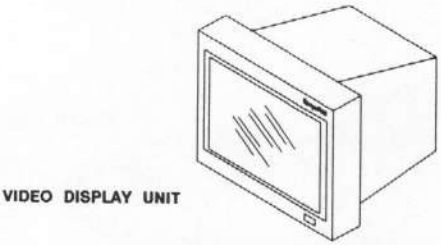


Figure 1-2. Video Display Unit Box Contents

Your system also contains any of the following optional items you ordered:

- An 8087 math coprocessor
- A real-time clock/calendar chip
- A game port
- A second diskette drive
- An IDE fixed-disk drive
- An EGA/VGA video adapter card
- A dual diskette/fixed-disk drive controller card and non-IDE fixed-disk drive

NOTE: Keep all shipping containers and packing material in case you need to move the system at some later time.

Step 3.

If you also purchased a printer, a plotter, or an external modem, remove any of these other peripherals from their shipping cartons. Printers, plotters, and modems must have data cables either included with the device or ordered separately. Any internal options that were bought with the system, such as non-standard video cards, internal modems, or additional disk drives, were installed at the factory.

NOTE: As you unpack the equipment, check for obvious shipping damage by looking for crushed packing materials, listening for loose items, and visually inspecting the exterior of each component.
Be sure you inform the shipper about shipping damages immediately. Inform your dealer of missing parts from your order within the time limit specified by the warranty.

Prepare to Install the System

To prepare for installation, you will need an area on a desk or table large enough to hold the computer and close to a wall outlet.

Step 1.

Make sure that a grounded outlet is located near where you plan to install the computer.

CAUTION

To avoid electrical shock, always use grounded power outlets and three-wire extension cables to connect your computer system to power. Make sure that any extension power cable's ampere rating is sufficient to handle the load of all of the equipment powered via that extension cable. Your system unit and video display unit together will not draw more than about 7.5 amperes on 120V ac power.

Step 2.

Set the power switches on the system unit, video display unit, printer, and other peripherals to OFF.

WARNING!

Plugging the system components into a power outlet with the power switches ON could cause permanent damage to the system.

Install the System Unit

The system unit consists of a base that holds the system board, a metal cover, and a front bezel.

The system board is the computer. The system unit base also contains the power supply, any option cards, the diskette drive controller circuits (on the system board), and the disk drives. The option cards plug into bus

expansion slots on the riser board and the riser board is inserted in a slot on the system board. Other devices that you connect to the system unit, the video display unit, keyboard, and printer, are I/O devices. I/O devices are your means of communicating with the computer. Figure 1-3 shows the rear panel of the system unit.

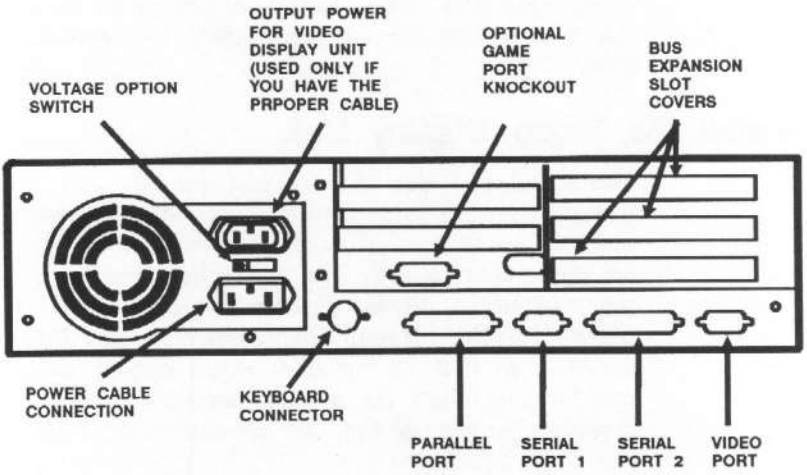


Figure 1-3. System Back Panel

To install the system unit:

Step 1.

Set the system unit so that the back of the unit faces you.

Step 2.

Check the voltage option switch, and ensure that it is set for the proper local voltage, 115V in the U.S. and Canada, 230V in the U.K. and Europe. Figure 1-3 shows the location of this switch.

Step 3.

Plug the power cable into the rear of the system unit. DO NOT PLUG THE OTHER END INTO THE WALL OUTLET YET. Figure 1-3 shows the location of the power cable receptacle; it is the male connector.

Next, each I/O device must be connected to the system unit via an appropriate connection port.

Install the Video Display Unit

The standard video display unit for the CompuAdd 810 is a monographics display that receives video data from the video controller on the system board. The controller translates the computer's display instructions into video signals for the screen. This controller may be disabled so that an optional video display unit can be controlled via a video adapter card installed in one of the bus expansion slots on the riser board.

Optional video display units, Enhanced Graphics Adapter (EGA) or Video Graphics Array (VGA), each have their own video adapter cards that perform the computer-video display interface function. If you ordered your system to include one of these optional displays, the onboard controller is disabled and the appropriate video card is factory installed. When using one of these cards the video port will be in one of the bus expansion slot openings.

NOTE: Systems ordered with EGA or VGA monitors may not have the standard mono/CGA video controller installed on the system board. If you ordered your system with one of these two optional displays, make sure your system has a controller chip at location U82 before attempting to revert to a monochrome or a CGA display.

The 810 has a video port, a parallel port, two serial ports, and is prepared to accept the optional game port. Except for the game port, these ports are located along the lower edge of the rear panel. Your system may also have other I/O cards (such as an EGA video adapter card mentioned above). The connections for these cards will be on the right side of the rear panel, above the standard ports. Figure 1-3 shows the location of the standard I/O ports and the location of the game port, when that option is installed.

To connect the video display unit to the video port:

Step 1.

Familiarize yourself with the connection ports in the rear panel of the system unit using figure 1-3.

Step 2.

Set the video display unit on top of the system unit with the back of the video display unit facing you.

Step 3.

Plug the video display unit's data cable into the video port and secure the connector with the attached screws. The screw-connection is

part of the shielding to prevent radio frequency and electromagnetic interference and also prevents unintentional disconnection.

NOTE: If you ordered an EGA or VGA video display unit instead of the standard monographics display, you must use the video port on the video adapter card.

This card is in one of the horizontal slots on the right side of the rear panel:

EGA cards usually have a 9-pin video connector, two RCA jacks, and a set of switches.

VGA cards usually have a 15-pin video connector and a set of switches.

Step 4.

Most video displays have the power cable permanently attached to the unit. If not, plug the power cable into the rear of the video display unit. DO NOT PLUG THE OTHER END INTO THE WALL OUTLET YET.

Install the Keyboard

The keyboard is the means of giving commands to the computer and one way to enter data for the computer to work with. To connect the keyboard:

Step 1.

Turn your keyboard over and check for a switch on the underside. Some keyboards have a switch that sets the keyboard in either AT or PC/XT mode. If your keyboard has such a switch, set it to the XT mode position as Figure 1-4 shows.

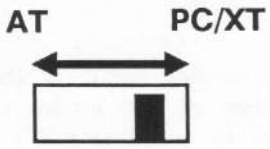


Figure 1-4. - AT-PC/XT Keyboard Switch

Step 2.

Plug the keyboard cable into the round DIN connector located in the lower, center part of the system unit rear panel. Figure 1-3 shows the DIN connector.

Step 3.

If you wish to tilt the keyboard, swing out the fold-up feet on each end of the underside of the keyboard.

Install Options

Printers, plotters, and external modems are shipped separately. Because printers are a very common peripheral device, this chapter contains instructions for connecting a printer to the system unit. For additional information on installing a printer, refer to the manuals that came with the printer.

Optional diskette or fixed-disk drives you ordered as a part of your system were factory-installed in the system unit. If you need to add or replace disk drives, a modem, or other optional devices, Chapter 3 contains general instructions for completing such system improvements.

Printers

The computer communicates with a printer using one of two modes of transmission, parallel or serial (RS-232). Some printers communicate in parallel mode; other printers, most plotters, and most external modems communicate via serial transmission.

The two modes of transmission use different cables (parallel or RS-232). Normally, this cable comes with the peripheral device or is ordered separately at the same time as the device is ordered. This chapter covers installation instructions for both types of cable.

Read your printer manual to determine whether your printer uses parallel or serial transmission.

Connecting Parallel Printers

If your printer uses parallel transmission:

Step 1.

Connect the printer's data cable to the parallel port in the rear panel of the system unit or to the parallel port on an optional I/O card. Secure the connector with the attached screws. The screw-connection is part of the shielding that prevents radio frequency and electromagnetic interference and also prevents unintentional disconnection.

Step 2.

Refer to the manual that came with the printer for additional printer setup information.

Connecting a Serial Printer

If your printer uses serial transmission:

Step 1.

Connect the printer's serial data cable to one of the two serial ports along the lower edge of the rear panel or to the serial port on an optional I/O card. One of the serial ports is a 9-pin port and the other is a 25-pin port; so serial cables with either type connector may be used. Secure the connector using the attached screws. The screw-connection is part of the shielding that prevents radio frequency and electromagnetic interference and also prevents unintentional disconnection.

Step 2.

Refer to the manual that came with the printer for additional printer set-up information.

Connecting the System Power Cables

Step 1.

When you have finished the physical installation of the system, arrange the system so that you can use the keyboard, diskette drives and video display unit screen.

Step 2.

Check to make sure all power switches on all system components are OFF.

NOTE: To protect your system from damaging power surges on the AC power line, it is strongly recommended that you connect an approved surge and spike protector between the wall outlet and the power cables to your system. A surge or spike protector is a device that plugs into a wall outlet and has one or more outlets to plug electronic devices into it. The circuitry inside the protector resists brief high-voltage fluctuations on the power line.

The system unit and video display unit each require a power outlet, so additional outlets or appropriate extension cables will be necessary if your system includes a printer, plotter, modem, or other peripheral device that has its own power cable.

Step 3.

Plug the power cables for the system unit, video display unit, and any peripherals into the wall outlet.

Start the Computer

This manual assumes that you will be using DOS as your operating system. If you are using another operating system, or a version of DOS earlier than 3.3, refer to the operating system's manual for starting procedures. Starting up the computer is often referred to as booting.

The boot instructions are slightly different if you will be using DOS version 3.3 or earlier, than if you will be using DOS 4.01. Instructions for both are given here.

Step 1.

Remove the cardboard head vibration protector from the diskette drive.

Step 2.

For DOS 4.01, insert the INSTALL diskette in Drive A. For DOS 3.3 or earlier version, insert the PROGRAM diskette (DOS disk 1 of 2)in Drive A.

If your system has one diskette drive, it is Drive A. If your system has two diskette drives, the drive on the right is usually Drive A. Push the diskette into the drive until it clicks in. Figure 1-5 shows how to insert diskettes.

Some 5¼" diskette drives have a drive latch, a small handle that turns 90 degrees to lock the diskette in place. If your drive has a drive latch, you must turn the latch from the horizontal to the vertical position before the drive can access the diskette.

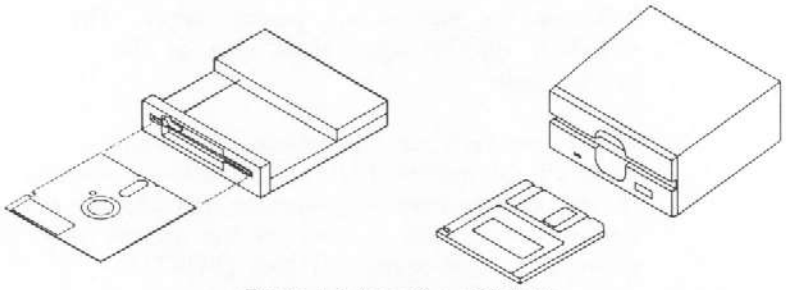


Figure 1-5. Inserting a Diskette

NOTE: When inserting a 5¼" diskette, the write-protect notch is on your left. There is an arrow stamped on the cover of 3½" diskettes that points into the drive when the diskette is inserted properly.

Step 3.

If the video display unit has a power switch, turn the switch ON.

Step 4.

Turn the screen brightness and contrast up. The contrast and brightness controls for a monochrome video display unit are on the back of the unit. If your system has one of the optional video display units, refer to the manual that came with that video display unit for instructions on setting the brightness and contrast.

Step 5.

Turn on the power switches of any peripherals.

Step 6.

Turn on the system unit power switch. This switch is on the right, front side of the system unit.

When you turn on the system, the basic input/output system (BIOS) instructions, located in the system read-only-memory (ROM) on the system board, take control of the system and complete a power-on self test (POST).

The system beeps and the BIOS type and version number appear at the top of the screen.

```
8088/86 Modular BIOS
Copyright (c)1984-89 Award Software, Inc.
CompuAdd 810R

RAM PARITY ENABLED
TESTING INTERRUPT CONTROLLER #1 . . .GOOD
SIZING SYSTEM MEMORY . . .640K FOUND
TESTING SYSTEM MEMORY . . .640K GOOD
CHECKING FOR UNEXPECTED INTERRUPTS
AND STUCK NMI . . . . . GOOD
```

Figure 1-6. Self-Test Video Display Screen

Messages indicating the completion of the POST also appear on the screen as Figure 1-6 shows.

When the POST completes normally, the system then reads operating instructions from the diskette in Drive A. If there is a DOS system diskette in Drive A, DOS takes over.

If there is not a system diskette in Drive A, the computer displays a message:

```
Non-system or disk error
Abort,Retry, Fail?
```

As the computer gets instructions from the diskette the light on the diskette drive should light and you will hear the mechanical actions of the drive. This is normal.

If you are using DOS 4.01, the INSTALL diskette will prompt you to insert the SELECT diskette so that you can install DOS. Simply follow the instructions as they appear on the screen and refer to your DOS manual.

If you are using DOS 3.3, the system displays the following date and prompts for the correct date:

```
Current date is Tue 1-01-80
Enter new date (mm-dd-yy):
```

Enter the correct date in the specified format (mm = month; dd = day; yy = year) and press the **Enter** key.

The system next prompts you for the correct time:

```
Current time is 0:02:09.40
Enter new time:
```

Enter the correct time in the same format as the display (using a 24 hour clock), and press the **Enter** key.

If your system includes the optional clock/calendar chip, refer to Chapter 2 of this manual for instructions on setting the date and time and bypassing the DOS prompts when booting.

After the date and time prompts, the DOS prompt appears:

```
MS-DOS (R) Version 4.01
(C) Copyright MicroSoft Corporation

A>
```

This prompt indicates that DOS is ready to accept commands.

Where To Go From Here

Your system hardware is now installed and running.

Next, make backup copies of the DOS and the system utility diskettes. Chapter 2 contains instructions on making backup copies. Chapter 2 also contains helpful information for new computer users on using the keyboard and diskettes.

Beyond the basic instructions in Chapter 2, you should learn the fundamentals of DOS. Your DOS manual provides additional information about how to install and use DOS.

After completing the system setup, installing DOS, and making backup copies of your diskettes, you can install and start using your application programs. The application (software) manuals contain the necessary software installation information.

If an error occurs during the booting process, the system beeps and displays an error message on the screen. If this occurs, refer to the Error Message section of the Troubleshooting Supplement for possible causes and solutions.

Chapter 2

GENERAL OPERATING INSTRUCTIONS

This chapter consists of operating instructions for the general use and special features of your CompuAdd 810 computer. In addition to the material here, you should read the manuals for any application software you will use on the system. The topics in this chapter are:

- Using the Keyboard
- DOS and Other Software
- Diskette Handling
- Formatting Diskettes
- Backup Copies and Copying
- Switching Speeds
- Setting the Real-time Clock
- Using the System Utilities
- Stopping the Computer and Rebooting

Using the Keyboard

Your system comes with an AT-style, enhanced 101-key keyboard (102-key in the U.K.). The following section describes the keyboard by dividing the keys into groups. Each group is then explained individually noting the location and function of the keys.

The key-groups are:

- Typewriter keys
- Numeric keypad keys
- Cursor control keys
- Function keys
- Special purpose keys

Figure 2-1 shows the locations of these key groups.

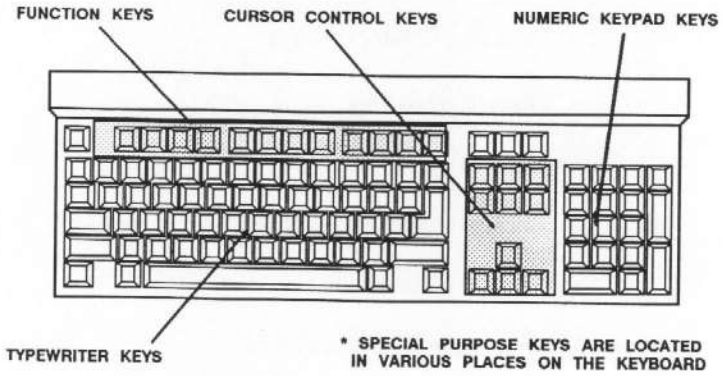


Figure 2-1. Function Key Locations for the 101 Key Keyboard

Throughout these keyboard descriptions you will see the word "cursor". The cursor is a marker on the video display screen, usually a flashing vertical or horizontal line. The position of the cursor is the point where characters are inserted.

Typewriter Keys

The typewriter keys, the main section of the keyboard, have the same letter, number, and special character key placement as a standard typewriter. However, a few special keys need an introduction. They are:

Enter

The **Enter** key functions the same as the carriage return key on a typewriter. To issue commands or input data to the computer, type the desired information; then press the **Enter** key.

Backspace

The **backspace** (←) key functions the same as the backspace key on a typewriter. To erase characters on the video display screen, place the cursor one character to the right of what you want to erase, then press the **backspace** key.

NOTE: When you hold down the **backspace** *key, the cursor continues to erase information until you release the key.*

Ctrl

The **Control** key performs special functions, normally in combination with other keys (refer to the special purpose keys section). In applications software the function of the **Control** key varies from program to program. Refer to your software manuals.

Alt

The **Alternate** key is like the **Control** key in that it performs special functions unique to the software. Again, refer to your software manual.

Numeric Keypad and Cursor Keys

The numeric keypad serves two purposes: entering numbers or moving the cursor. The **Num Lock** key switches between the numeric and cursor control modes. When the keypad is in numeric mode, the Num Lock indicator light is on. When the cursor mode is selected, the indicator light is off. There are also symbol keys for the four arithmetic operators (+, -, *, /) and a second **Enter** key on the numeric keypad so that it may be used like a calculator for entering numeric data.

NOTE: The arithmetic operator keys only create the symbols on the screen, they DO NOT perform the operations as a calculator does unless you are using software that allows them to function that way.

Cursor Mode

The secondary cursor control mode functions are printed in a lighter color below the numbers on the keys. All of the cursor control mode functions are also available using the cursor control key group.

NOTE: The cursor control key functions described below are not available under DOS control, you must be in a software program to use them.

Cursor Up

Pressing the (↑) key moves the cursor up one line.

Cursor Down

Pressing the (↓) key moves the cursor down one line.

Cursor Left

Pressing the (←) key moves the cursor to the left one character.

Cursor Right

Pressing the (→) key moves the cursor to the right one character.

Home

Pressing the **Home** key moves the cursor to the top left corner of the screen.

End

Pressing the **End** key moves the cursor to the bottom right corner of the screen.

Pg Up (Page Up)

Pressing this key moves the cursor up one page.

NOTE: A page here is one full screen display (normally 25 text lines), not a full page in the sense of a normal sheet of paper.

Pg Dn (Page Down)

Pressing this key moves the cursor down one page

Ins (Insert)

The keyboard is either in insert mode or overstrike mode. The **Insert** key switches between the two modes each time it is pressed. If the keyboard is in overstrike mode, pressing the **Insert** key allows you to add characters in the middle of a line without writing over existing text. Position the cursor one character to the right of the position where you want to insert text, press the **Insert** key, then type the characters. If you press the **Insert** key again, the keyboard returns to

overstrike mode. In overstrike mode, whatever you type replaces the existing text.

Del (Delete)

Pressing this key deletes the character at the cursor.

NOTE: Holding the **Delete** *key down deletes the text to the right of the cursor until you release the key.*

Function Keys

The function keys are defined by the software program used. Refer to your software manual for more information concerning the use of these keys.

Special Purpose Keys

Esc

The purpose of the **Escape** key varies depending on the software program. Consult your software manual concerning the function of this key. Usually the **Escape** key cancels commands.

Print Screen

Pressing the **Print Screen** and **Shift** keys simultaneously sends the information currently displayed on the screen to the printer. This function is not available in all software programs.

Scroll Lock

The purpose of the **Scroll Lock** key is different from program to program. Consult your software manual concerning the use of this key.

Pause

Pressing this key causes the system to temporarily halt the scrolling of text (movement of text off of the screen). Press any other key to have scrolling continue. The same function is also available by pressing the **Control** (**Ctrl**) and the **S** keys simultaneously.

Sys Rq (Ctrl + Sys Rq)

This key is always used in conjunction with the **Ctrl** key. The **Sys Rq** key is also a software specific function. Consult the software manual concerning it's function.

Break (Ctrl + Break)

Pressing the **Ctrl** and **Break** keys simultaneously causes a break, or a complete halt, of the execution of a program. To begin the program again, you must restart it. The break function is also available pressing the **Ctrl** and **C** keys simultaneously.

Ctrl + Alt + Del

Pressing these keys simultaneously causes the computer system to restart. This is called a "warm start" or "reboot". This is necessary when a program ceases to function or when the computer does not respond to any input.

DOS and Other Software

To use your computer, you must have an operating system. This chapter assumes you are using DOS as your operating system; however, the DOS software is not a standard part of the system unless your system was ordered as part of a starter kit.

DOS is a set of programs that manage the system. The programs control how memory

(both ROM and RAM) is used, how data is accessed, and other basic functions. DOS also provides utilities that allow you to prepare diskettes and fixed disks for use, make backup copies of your data or programs, and display or print copies of programs or files.

If you do not have DOS, you may purchase it separately. For maximum flexibility and capacity, use DOS version 3.1 or later.

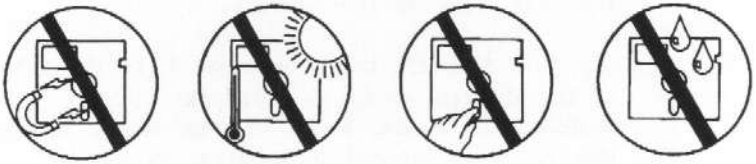
You will also need application software. Applications are programs that perform specialized tasks on the computer. Application software includes spreadsheets, word processors, database programs, drawing programs, desktop publishing programs, inventory control programs, games, and more.

NOTE: When purchasing applications software be sure that your system meets the software's requirements for type of video display and amount of memory. Most software requires that your system have a certain minimum amount of random access memory (RAM). Some software, games that are heavily graphics-oriented for example, require a particular type video display, such as CGA.

Diskette Handling

Diskettes are a magnetic storage media that must be handled carefully to ensure that the data stored on them is retrievable.

> **CAUTION**
> **Keep diskettes away from all magnets and magnetic or electrical fields. Do not expose diskettes to moisture, dust, or high temperatures. Do not write on diskette labels with ballpoint pens.**
> **Never touch the exposed area of the diskette surface! Oils and other contaminants on your skin will destroy the recording ability of the diskette surface.**



There are four capacity types of diskette drive: 360KB, 720KB, 1.2MB, or 1.44MB. The 360KB and 1.2MB drives accept 5¼" diskettes. The 720KB and 1.44MB capacity drives require 3½" diskettes. Figure 2-2 shows the two sizes of diskettes.

Additionally, 5¼" diskettes are available in two densities, double density and high density. To avoid problems, make sure the blank diskettes you use are labeled with either DD or 2D for double density and HD for high density.

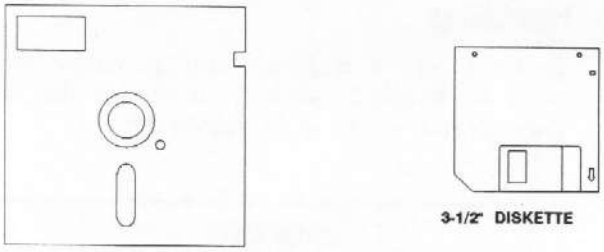


Figure 2-2. Two Types of Diskettes

Double density diskettes should only be formatted at 360KB capacity for fully reliable use.

The actual recording surface of the diskette is covered with a protective shield. The oblong hole, covered by a sliding shield on the 3½" diskettes, exposes a portion of the diskette's surface to the magnetic heads that write and read the data on the diskette.

On 5¼" diskettes the square notch in the side of the diskette cover is called the write-protect notch. Refer to Figure 2-3. When this notch is covered information cannot be recorded on the diskette. Blank diskettes come with small rectangular stickers that fit over the notch to prevent overwriting diskettes that contain data you do not want to lose.

On 3½" diskettes there is a small tab in the corner that can be moved to cover the hole and write-protect the diskette.

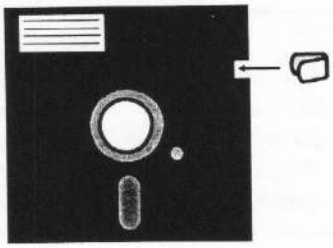


Figure 2-3. 5 1/4" Diskette Showing Write-Protect Tab

Formatting Diskettes

Before a diskette can be used to store data and programs, it must be formatted. Formatting divides the diskette's surface into sectors and tracks that DOS uses to organize the information on the diskette.

The DOS FORMAT utility formats any size diskette. Certain parameters must be used with the format command if you are formatting a diskette for a capacity different from the capacity of the drive. Refer to the DOS manual for the details.

NOTE: To format a diskette to hold 1.2MB of data, use high density (HD) diskettes. Double density diskettes do not reliably maintain data when formatted for 1.2MB.

CAUTION
Do not format a diskette unless you are absolutely sure there is no information on it that you want to keep. The FORMAT command destroys all data on the diskette.

Formatting a Diskette On a System That Has Only One Diskette Drive

Step 1.

Put the DOS system diskette into Drive A. (This step is not necessary if your system is operating with DOS installed on a fixed-disk drive.)

Step 2.

Make sure that the target diskette (the diskette you want formatted) is not write protected (the write-protect notch, or hole, is uncovered).

Step 3.

Make sure that the current directory is the root directory of Drive A. Do this by typing:

```
A: (Press the Enter key)
CD \ (Press the Enter key)
```

You must enter the backslash character in the second command line to move to the root directory. The CD \ is the DOS change directory (CHDIR) command.

Step 4.

Enter the FORMAT command and the A drive letter:

```
FORMAT A: (Press the Enter key)
```

The display shows this message:

```
Insert new diskette for Drive A:
and strike ENTER when ready
```

FORMAT sets up a diskette with the same capacity as the diskette drive it is formatted in. CompuAdd 810 computers come with a 1.2MB, 5¼" diskette drive standard. Diskettes formatted in this drive using the FORMAT command will hold 1.2MB of data.

NOTE: A 1.2MB drive can read and write data to diskettes formatted at 360KB, but 1.2MB formatted diskettes cannot be read by 360KB diskette drives.

If you need to format a diskette that will be used on another system that only has a 360KB diskette drive, it is possible to format a diskette in the 360KB format using your system's 1.2MB drive. To do this, insert the diskette and enter:

```
FORMAT A: /4 (Press the Enter key)
```

NOTE: Diskettes formatted at 360KB in a 1.2MB drive in this way may not perform reliably in all drives. It is best to format all 360KB diskettes in 360KB drives. After formatting, the diskette can be reliably read from and written to by a 1.2MB drive.

Step 5.

Insert the target diskette. When you press the **Enter** key, the display shows:

```
Head: 0   Cylinder: 00
```

While the diskette is being formatted, the **Head:** value alternates between 0 and 1. The **Cylinder:** value counts to 40 for 360KB format and to 80 for 1.2MB format. Formatting takes about a minute.

Step 6.

When the diskette is formatted, you are given the option of formatting another diskette.

```
Format another (Y/N)?
```

Step 7.

To format a second diskette, type Y and press the **Enter** key. Insert another new diskette, and press the **Enter** key again.

If you do not want to format another, replace the newly formatted diskette with the DOS system diskette and enter N. (This step is not necessary if your system is operating with DOS installed on a fixed-disk drive.) The system returns to DOS.

If you do not have DOS on a fixed-disk drive, and you do not replace the system diskette in Drive A when you enter N, the system displays the non-system disk error message on the screen:

```
Non-system disk or disk error
Replace and strike any key when
ready
```

If this happens, insert a DOS system diskette, such as the PROGRAM diskette for DOS 3.3 or earlier versions or the INSTALL diskette for DOS 4.01, into Drive A and press any key as instructed.

As a part of formatting, you can transfer DOS to the diskette you are formatting, and you can give the diskette an eleven character name, or volume label.

After a diskette is formatted, you can make it a bootable system diskette by transferring the DOS system files to it using the SYS command. This must be done before putting any other data on the diskette. Your DOS manual contains detailed instructions on this option.

Formatting a Diskette On a System With More Than One Diskette Drive

If your system has more than one drive, you can use the FORMAT command to format the diskette in another drive, or to format a fixed-disk drive.

Step 1.

Place the DOS disk in Drive A and the diskette to be formatted in drive B. (If your system is operating with DOS installed on a fixed-disk drive, you only need to place the diskette to be formatted in a diskette drive.)

Step 2.

Enter:

```
A: (Press the Enter key)
CD \ (Press the Enter key)
FORMAT B: (Press the Enter key)
```

CAUTION
Be sure you have a write protect tab on the DOS system diskette. This will prevent destroying your copy of DOS if you should accidentally enter FORMAT A:.

Backup Copies and Copying

A backup is a second copy of data or programs. You should always keep a current backup copy of your work in case the original copy is somehow lost or damaged. This is true whether your system includes a fixed-disk drive or you work from diskettes. Before you use any application software, including DOS, make a backup copy of the original diskettes. Use the copy to do your work, and keep the original in a safe place.

This section describes how to use the DOS DISKCOPY and XCOPY commands to make backup copies of your DOS diskettes. You can also use the BACKUP command or COPY command to make backup copies. Each method has its benefits; refer to the DOS manual for more information.

In copying diskettes, the terms source and target are frequently used. The source diskette is the diskette you are copying from. The target diskette is the diskette you are copying to.

NOTE: To prevent accidentally overwriting or erasing data on the source diskette, cover the write protect notch before beginning.

Copying Diskettes With Only One Diskette Drive

These instructions are for making a backup copy of your DOS diskettes. Because your system has only one diskette drive you will have to swap the source and target diskettes in and out of Drive A.

Step 1.

Insert the DOS 4.0 INSTALL diskette in the drive. For earlier versions of DOS, insert the PROGRAM diskette.

Step 2.

Enter the following command:

```
DISKCOPY A: B: (Press the Enter key)
```

This prompt message appears:

```
Insert SOURCE diskette in Drive A:
Press any key when ready . . .
```

NOTE: The DISKCOPY command cannot copy information between diskettes with different capacities (such as copying a 1.2MB source diskette to a 360KB target diskette). DISKCOPY can copy a 360KB diskette in a 1.2MB drive to a 360KB diskette in a 360KB drive. To copy between diskettes with different formats, use the XCOPY command instructions that follow these DISKCOPY instructions.

Step 3.

The DOS system disk should already be in Drive A, so press any key. The next prompt to appear reads:

```
Copying 40 tracks
9 Sectors/Track, 2 Side(s)

Insert TARGET diskette in Drive A:
Press any key when ready . . .
```

Step 4.

Remove the DOS diskette, insert a blank, formatted diskette in the drive, and press any key.

You will have to repeat steps 3 and 4 for each diskette in the DOS diskette set, swapping the source and target diskettes in Drive A. A prompt appears on the screen telling you when to swap diskettes.

When the copy is finished, the screen displays this message:

```
Copy another diskette (Y/N)?
```

Step 5.

Type "Y" and press the **Enter** key. The prompts of step one display again. Remove the diskette in Drive A, insert the second DOS diskette, and repeat this procedure until you have made copies of all your original DOS diskettes.

To copy using the XCOPY command with only one diskette drive:

Step 1.

With the DOS system diskette in Drive A, enter:

```
XCOPY A: B: /S/W (Press the Enter
key)
```

The screen displays:

```
Press any key to begin copying
file(s)
```

Step 2.

Press a key. The prompt message is:

```
Insert diskette for Drive A: and
strike
any key when ready
```

Step 3.

The DOS system diskette should already be in Drive A; press any key.

The next prompt is:

```
Insert diskette for drive B: and
strike
any key when ready
```

Step 4.

Remove the DOS diskette and insert the blank, formatted diskette. So far all the system has done is determine which format each of the diskettes is using. The screen prompts you to again insert a diskette in Drive A.

Step 5.

Remove the blank diskette and insert the DOS diskette in Drive A again. Remember, the source (A) diskette is the diskette you are copying from. The target (B) diskette is the diskette you are copying to. Press any key once the diskette is in. The system displays this message:

```
Reading source file(s)...
```

Then, when that is complete:

```
Insert diskette for drive B: and
strike
any key when ready
```

Step 6.

Remove the DOS diskette and insert the blank, formatted diskette in Drive A, then press any key. The filenames of the files being copied are displayed on the screen. When all of the files have been copied, a message stating how many files were copied appears at the bottom of the list of filenames.

Step 7.

Repeat this procedure for the rest of the original diskettes. After all are copied, put them in a safe place, observing the care precautions in the diskette handling section earlier in this chapter.

Copying Diskettes With Two Diskette Drives

With the exception of removing and inserting the diskettes, the procedures for copying with two diskette drives are the same as those for copying with one diskette drive.

Step 1.

Insert the DOS (or other source) diskettes in Drive A.

Step 2.

Insert the blank, formatted diskettes in drive B.

Step 3.

Enter the appropriate command, either DISKCOPY or XCOPY and press any key to begin copying.

Switching Speeds

Your CompuAdd 810 can operate at three different speeds: LOW - 4.77 Megahertz (MHz), MEDIUM - 7.15 MHz, and HIGH - 9.54 MHz. The speed refers to the clock speed of the microprocessor.

The system normally starts in LOW speed. The system diskette that came with your computer has on it a program, named SW,

that does the speed switching. This program can be copied onto the disk you boot your system with and then called from an AUTOEXEC.BAT file to set the desired speed each time you boot.

To select the speed type the program's name followed by the appropriate parameter. The parameters are:

- Either 1, L, l, or * for LOW speed
- Either 2, M, m, or - for MEDIUM speed
- Either 3, H, h, or + for HIGH speed

For example, to switch to MEDIUM speed, enter:

```
SW 2  or  SW M  or  SW m  or  SW -
```

If you forget to enter the parameter, the speed switching program displays this prompt:

```
Speed Switcher v2.0 -- (c) 1989 by
CompuAdd Corporation
INPUT ERROR-Use "SW [+,h,H,3]" for
HIGH speed
                "SW [-,m,M,2]" for
MEDIUM speed
                "SW [*,l,L,1]" for
LOW speed
```

If this happens, simply retype the command and press the **Enter** key.

You also may change the speed from the keyboard. Pressing the **Ctrl**, **Alt**, and [* (LOW), or - (MEDIUM), or + (HIGH)] keys sets the speeds. When you set the speed from

the keyboard, the computer beeps to indicate the speed chosen: once for LOW, twice for MEDIUM, and three times for HIGH.

Setting the Real-Time Clock

If your CompuAdd 810 computer has the optional real-time clock chip installed the real-time clock can provide DOS with the current date and time and eliminate the need to enter these each time you boot. In order for this to happen:

- The CLOCK.SYS driver, on the system diskette, must be copied into the root directory of the disk you use to boot your system
- The CLOCK.SYS driver must be listed as a device in the CONFIG.SYS file
- There must be an AUTOEXEC.BAT file on the disk you use to boot your system that does NOT include the DOS date and time commands

For instructions on installing the real-time clock chip, refer to Chapter 3 and Chapter 4 of this manual.

Refer to your DOS manual for details about the CONFIG.SYS and AUTOEXEC.BAT files.

Set the date and time on the real-time clock using the DOS date and time commands. At the DOS prompt (A>), enter:

```
DATE
```

DOS displays the following date prompt:

```
Current date is Tue 1-01-80
Enter new date (mm-dd-yy):
```

Enter the correct date in the specified format (mm = month; dd = day; yy = year) and press the **Enter** key.

Next enter:

```
TIME
```

The system next prompts you for the correct time:

```
Current time is 0:02:09.40
Enter new time:
```

Enter the correct time in the same format as the display (using a 24 hour clock), and press the **Enter** key.

When you set the time and date with the real-time clock chip installed, they will be correct until you change them using the date and time commands again. The clock chip has a ten-year battery in it.

It is important that the date and time are correct, because DOS records the date and time when each file is created or updated. This information is displayed when you run the DOS directory (DIR) command. Having the correct date and time on data files is often helpful in keeping files organized.

Using the DIAGMENU Utility

In addition to the CLOCK.SYS driver and SW programs mentioned above, the system diskette contains DIAGMENU, a diagnostic utility.

The DIAGMENU utility is a collection of diagnostic programs that test IBM-compatible microcomputers and their peripherals. If your system is experiencing difficulties, running DIAGMENU helps locate the part of the system that could be causing the problem.

To use DIAGMENU:

Step 1.

Boot the computer. At the DOS A prompt enter:

```
DIAGMENU
```

The utility searches the system I/O addresses for installed equipment and then displays on the screen a list of the equipment it finds. An example of this equipment list, which may not match your system, is shown here.

```
        PC Consultant's Diagnostics
         Version 2.00 May 15, 1989
(c) Copyright, 1987, 1988, PC Consultants. All
Rights Reserved.
XT ROMs              =  Award       7/25/87
Processor            =  8086        7.15 MHz
Co-processor         =  Not Installed
Memory               =  Sys 640 kb, Ext 0 kb,
Video                =  Monographics
Keyboard             =  Installed
Parallel Port(s)     1  3BCH
Serial Port(s)       2  3F8H        2F8H
Floppy Disk(s)       2  1.2 Mb      1.44Mb
Fixed disk controller found.
How many fixed disk DRIVES are installed?
```

Figure 2-4. DIAGMENU Equipment List Screen Display

This list determines which diagnostic tests will be run; for example, since no math coprocessor is installed in this example system, that test will be skipped.

Step 2.

If a fixed-disk drive controller is a part of your system, the diagnostics will find it and ask you to enter the number of fixed-disk drives in the system. When you enter the number, a second screen display asks you to enter the drive manufacturer and model number from a list of options.

Type a number in response to the prompt for the number of fixed-disk drives installed. Work through the selection lists that appear on the screen and select the appropriate fixed-disk drives. When you complete the fixed-disk information the equipment list reappears with the additional data.

Step 3.

After the equipment list is complete with the fixed-disk information, verify that the other system components installed in your computer or attached as peripherals are correctly identified on the equipment list. If the list is correct, type Y in response to the prompt, and press the **Enter** key to start the diagnostics.

The name of the diagnostic appears on the screen along with messages indicating what test is running.

Step 4.

During some of the tests, particularly video display unit tests, the diagnostics program halts and asks you if a certain display showed correctly. At these halts, type the appropriate response and the test continues automatically.

When all of the tests have run, the screen displays the results as shown below (for the example system).

```
Diagnostic Completion Status Screen
Sysbrd              = Passed
Ramtst              = Passed
Mdamga              = Passed
Parall              = Passed
Floppy              = Passed
Fixdsk              = Passed
```

Figure 2-5. Diagnostic Completion Report

Stopping the Computer

When you are finished with an application program:

Step 1.

Make sure all of your work is saved.

Step 2.

Stop the application according to the instructions in the manual that came with it. This returns you to DOS, where you can turn off the system. Turn off any peripherals connected to the system, then turn off the system unit.

If a program is running out of control or is locked-up and not running, and you want to stop it, use one of these key sequences:

- Press **Esc**
- Press the **Ctrl** and **C** keys simultaneously
- Press the **Ctrl** and **Break** keys simultaneously (The **Break** key is the same as the **Scroll Lock** key on some keyboards.)

If none of these stops the program, reboot the computer.

Rebooting

There are three ways to reboot the system.

- Press the **CTRL**, **ALT**, and **DEL** keys simultaneously
- Turn the computer off using the power switch, wait a few seconds, then turn it on again.

For the computer to restart, a system boot diskette with the DOS system files on it must be in Drive A, or you must have a fixed-disk drive with the DOS system files installed on it. If not, the screen displays the following error message.

```
Non-system disk or disk error
Replace and strike any key when
ready
```

If this happens, insert a DOS system diskette into Drive A and press any key as instructed.

If your system is operating with DOS installed on a fixed-disk drive and you get this message, you may have a non-system diskette in Drive A.

For 5¼"diskette drives, flip the drive latch back up to its horizontal, open, position and press any key.

For 3½" diskette drives, press the diskette release button to eject the diskette.

Chapter 3
UPGRADING THE SYSTEM

This chapter contains general instructions for adding and changing the hardware components in your system.

You should use the instructions and explanations in this chapter to guide you through the parts of the installation process that apply to the system unit. Refer to the installation instructions that came with the hardware you are installing for other details. The procedures covered in this chapter are:

- Opening the System Unit
- Installing the Optional Real-Time Clock Chip
- Installing the Optional Game Port
- Installing a Math Coprocessor
- Installing Adapter Cards
- Installing a New Video Display
- Installing Diskette and Fixed-disk Drives
- Replacing the System Unit Cover

NOTE: You will need a Phillips screwdriver to open the system unit and remove or install cards.

Opening the System Unit

Step 1.

Before opening the system unit:

- Turn the power off.
- Unplug all the power cords from the wall outlets
- Remove all the data cables from the rear of the system unit

Step 2.

Remove the six screws, three along each side, at the base of the system unit. Figure 3-1 shows the location of the screws.

Step 3.

Lift the cover slightly and pull it off the back of the system unit base as Figure 3-1 shows. Set the cover aside.

Installing the Optional Real-Time Clock

Your system accepts an optional real-time clock chip that maintains the date and time when the computer is off. With this chip installed and the clock's driver software installed, you may create an AUTOEXEC.BAT file on the system boot disk that eliminates the need to enter the current date and time when you boot the system. A 10-year Lithium battery is an integral part of the chip.

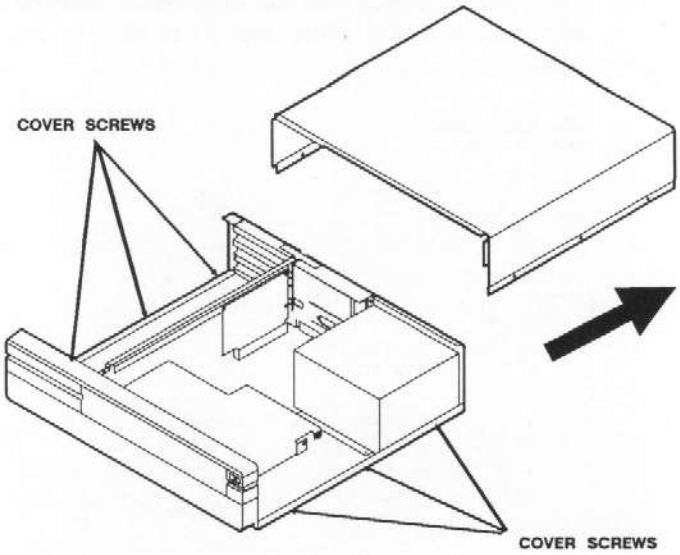


Figure 3-1. Removing the System Unit Cover

WARNING!

The Lithium battery on the clock chip is NOT user servicable. Do not attempt to replace it.

Step 1.

Remove the system unit cover as described above.

Step 2.

Insert the DS1287 real-time clock/calendar chip in the socket (U28) shown in Figure 3-2. Pin 1, designated by a notch or dot in one corner

of the chip, must be placed at the end of the socket nearest the back of the system board. This places pin 1 on the left when you view the system board from the front of the system unit.

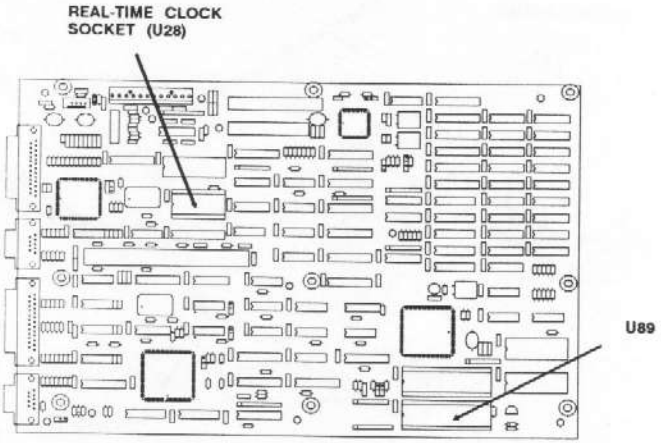


Figure 3-2. Optional Chip Socket Locations

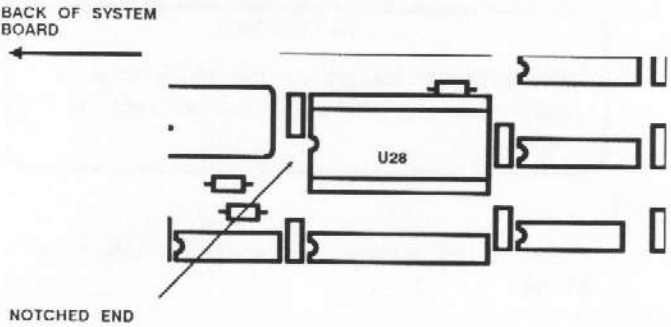


Figure 3-3. Close-up of Real-Time Clock Chip Socket

Step 3.

Set switch 9 on switch bank SW2 to ON to enable the clock chip.

Step 4.

Replace the system unit cover.

Step 5.

Copy the file CLOCK.SYS, on the system utilities diskette, to the root directory of your fixed-disk drive or to the diskette you normally use to boot the system.

Step 6.

If you already have a CONFIG.SYS file, use an ASCII file editor to add the line:

```
DEVICE=CLOCK.SYS
```

If you do not have a CONFIG.SYS file, create one in the root directory of your fixed-disk drive or on the diskette you normally use to boot the system using an ASCII file editor or the following steps. At the DOS A> prompt, type:

```
COPY CON CONFIG.SYS
```
(and press the Enter key)

```
DEVICE=CLOCK.SYS
```
(and press the Enter key)

Then press the **Ctrl** and **Z** keys simultaneously or press the **F6** key.

Step 7.

When you reboot the system, use the DOS DATE and TIME commands to enter the correct time and date. The clock chip will maintain the date and time information until it must be updated because of a time change.

Installing the Optional Game Port

There is a game port connector on the system board that allows you to add an optional game port to your system for connecting a joystick. The game port kit consists of a short length of ribbon cable with a port at one end and the connector for the system board at the other end.

To install the game port:

Step 1.

Remove the system unit cover as described above.

Step 2.

Detach the riser board assembly by removing the three screws in the rear and the one fastening the support bar to the front of the chassis. Make sure any cards in the riser board are disconnected and lift the riser board assembly out of the system unit.

Step 3.

With a screwdriver, carefully press the game port knockout at the bottom. Once the plug is bent out far enough to hold onto, slowly bend it back and forth until it comes off.

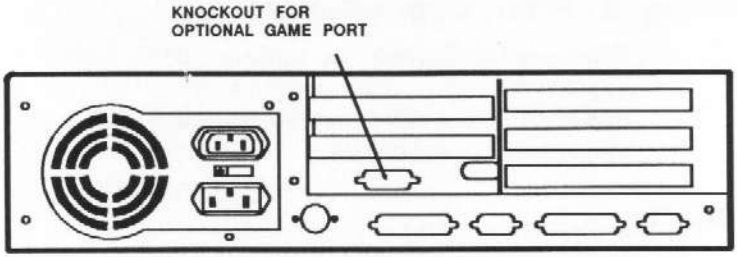


Figure 3-4. Location of Game Port Knockout Plug

NOTE: The prepunched plug must be left in place when no game port is attached to maintain compliance with the Class B limits for radio noise emissions.

Step 4.

Using the stand-off screws that came with the game port, fasten the port into the open hole in the rear panel. Attach the other end of the cable to the game port connector pins on the system board.

Step 5.

Set switch 8 on switch bank SW2 to ON to enable the game port.

Step 6.

Replace the riser board assembly and any cards you may have removed from it. Replace the screws.

Step 7.

Replace the system unit cover.

Installing a Math Coprocessor

Your system accepts an optional 8087 math coprocessor chip that increases speed of numerically intensive operations, such as spreadsheet calculations.

Step 1.

Remove the system unit cover as described above.

Step 2.

Insert the 8087 math coprocessor chip in the socket (U89) shown in Figure 3-2. Pin 1, designated by a notch or dot in one corner of the chip, must be placed at the end of the socket nearest the back of the system board. This places pin 1 on the left when you view the system board from the front of the system unit.

Step 3.

Replace the system unit cover.

Installing Adapter Cards

There are a number of adapter cards that you can insert in the expansion slots on the riser board to upgrade or enhance your system. Some examples are:

- Video adapter cards
- I/O cards (for additional serial and parallel communications)
- Memory expansion cards

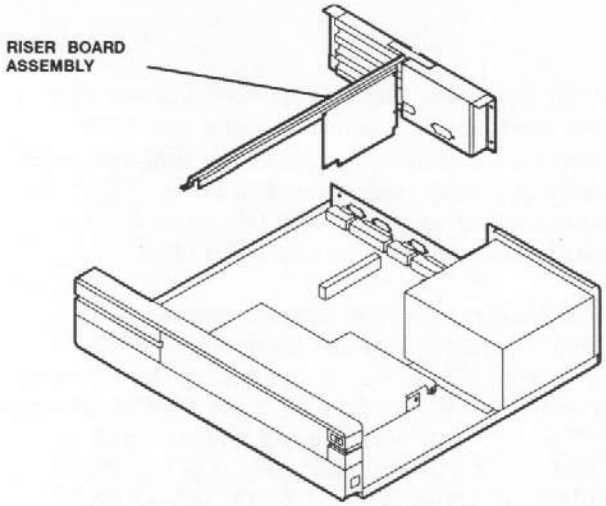


Figure 3-5. Riser Board

This section mainly covers I/O cards. Video adapter cards are covered in the *Installing a New Video Display* section of this chapter. Any cards not ordered as a part of your system should have come with installation instructions. Refer to those instructions for specifics on installing the card.

CAUTION

Static electricity can damage the components on adapter cards and the system board. Before handling a card, discharge any static charge by touching some metal object, such as the system unit base. Hold the adapter card by the edges when you install it and never touch the soldered side of the card.

Step 1.

Make sure any jumpers or switches on the new card are set properly. You must set switches or position jumpers so that the card works properly with your computer. Refer to your adapter card installation manual for instructions on how to configure the card.

Some commonly-used adapter cards, EGA video adapter cards for example, include additional I/O ports. Your system can support as many as three parallel ports (LPT1 through LPT3) and two serial ports (COM1 and COM2). The BIOS does not support two additional serial ports, COM3 and COM4. However, some software packages support two extra serial ports.

The ports on most adapter cards are set up as port 1 (either LPT1 or COM1). If you add a card with a port, make sure that port is set as port LPT2 (parallel ports), COM3 (serial ports), or disabled. If you want to use the port on the adapter card as port 1 instead of the built-in port, you must disable the built-in port because you can not change its designation.

Chapter 4 of this manual explains the switch settings for disabling the built-in ports.

NOTE: If you run more than one parallel printer from your system, the port controlling the primary printer must be designated LPT1. An enabled or improperly set up port will interfere with proper operation of the other ports in the computer. Confirm the configuration of all ports on the new card and on the system board before installing the new card.

Each serial port also must be assigned an interrupt request (IRQ) address. In your system, IRQ4 is assigned to COM1 and IRQ3 is assigned to COM2.

Step 2.

Remove the cover from the system unit as described earlier in this chapter.

Step 3.

The adapter cards fit in the expansion slots on the riser board. Refer to Figure 3-5.

One side of the riser board holds 3 full-length add-in cards and the other side of the riser board accommodates 2 half-length add-in cards.

Step 4.

Remove a blank slot cover from the rear of the system unit. Keep the screw.

Step 5.

Firmly press the card into the selected slot. Make sure that the front edge of full-length cards slides into the guide at the front of the chassis. Also be sure the card edge connector is fully inserted in the expansion slot.

Step 6.

Use the screw that held the blank slot cover to secure the adapter card to the back panel.

Step 7.

Replace the system unit cover.

Installing A New Video Display

If you change the type of video display you use with your system, you must also change the jumper and switch settings on the system board. The video controller on the system board operates either the standard monochrome display or a CGA display.

To use a CGA display, you must change the video mode switch settings on the system board.

To use an EGA or VGA display, you must install a video adapter card and disable the built-in video port.

NOTE: Systems ordered with EGA or VGA monitors may not have the standard mono/CGA video controller installed on the system board. If you ordered your system with one of these two optional displays, make sure your system has a controller chip at location U82 before attempting to revert to a monochrome or a CGA display.

Change the video display using these instructions:

Step 1.

Disconnect the data cables connected to the built-in video port or the video adapter card being replaced.

Step 2.

Open the system unit following the instructions earlier in this chapter.

Step 3.

Remove the old video adapter card or disable the built-in video port.

Remove a video adapter card by taking out the screw that holds the card into the riser board assembly and carefully pulling the card out of the expansion slot.

Disable the built-in video port by moving the jumper block at J13 from pins 2 and 3 to pins 1 and 2. Also set both switches 1 and 2 in switch bank SW2 to ON if the display is EGA or VGA. Use Figure 3-6 as a reference in finding J13 and SW2.

If the display is monochrome, jumper J12 must have a jumper block across pins 1 and 2. If the display is CGA, place the jumper block on pins 2 and 3. Also set switches 1 and 2 on switch bank SW2 correctly for the

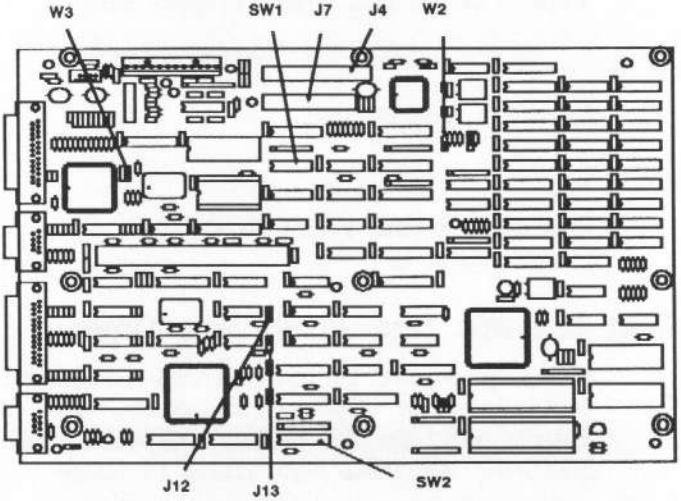


Figure 3-6. System Board, Video and Drive Jumpers

type of display. The video display section of Chapter 4 describes the settings.

Table 3-1. Diskette Drive Type Switch Settings (SW1)

Switch	Drive	Setting	Function
1	A	ON	360 or 720 KB
		OFF	1.2 or 1.44 MB
2	A	ON	5 1/4" drive
		OFF	3 1/2" drive
3	B	ON	360 or 720 KB
		OFF	1.2 or 1.44 MB
4	B	ON	5 1/4" drive
		OFF	3 1/2" drive

Step 5.

Install the new video adapter card in the system unit. (The adapter card installation steps 5 and 6 and cautions apply here.)

Step 6.

Close the system unit.

Step 7.

Connect the data cables to the new video adapter card.

Installing Diskette and Fixed-Disk Drives

If you purchased an optional disk drive with your system, or if you install another drive at a later date, use the manual that came with the drive and these instructions to install it.

Diskette Drives

Step 1.

Remove the system unit cover according to the instructions earlier in this chapter.

Step 2.

Remove the three screws from the drive support plate. Refer to Figure 3-7.

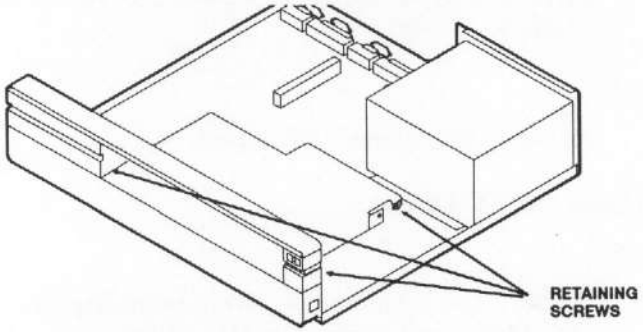


Figure 3-7. Drive Support Plate Screw Locations

Step 3.

Fasten the drive onto the support plate using the screws that came with the drive. The screws go up through the bottom of the plate.

Step 4.

Replace the drive support plate and replace the three retaining screws.

Step 5.

Connect the diskette drive cable from J7 to the diskette drive. Connect one of the

four-wire power cables from the power supply to the diskette drive.

Step 6.

Set the following switches.

Set switch 6 on SW2 ON.

Using Table 3-1 as a guide, set the switches on switch bank SW1 according to the type of drive and drive capacity. Figure 3-6 shows the location of SW1.

Step 7.

Replace the system unit cover.

Fixed-Disk (IDE) Drives

Step 1.

Remove the system unit cover according to the instructions earlier in this chapter.

Step 2.

Remove the three screws from the drive support plate. Refer to Figure 3-7.

Step 3.

Fasten the drive into the brackets under the support plate using the screws that came with the drive. Replace the drive support plate.

Step 4.

Connect the drive cable from J4 to the drive. Connect one of the four-wire power cables from the power supply to the drive.

Step 5.

There are three possible fixed-disk drive combinations for the CompuAdd 810: one IDE drive, two IDE drives, or one or more drives controlled by a card in a bus expansion slot and no IDE drives. Refer to Table 3-2 to set the jumpers and switches for each of the cases.

Table 3-2. Fixed-Disk Options and Switch Settings

Installed Drives	Addresses		Settings			
	Primary Drive	Secondary Drive	J14	W2	SW2 7	SW2 10
One IDE	C800H	N.A.	2-3	1-2	OFF	ON
Two IDE	C800H	CA00H	1-2	1-2	OFF	ON
One bus controller no IDE	N.A.	N.A.	2-3	1-2	OFF	OFF

Step 6.

Refer to the manual that came with your fixed-disk drive to determine whether the drive requires a reset signal that is active high or active low. Place the jumper block at W3 on pins 1 and 2 to select an active-high reset signal. Place the jumper block on pins 2 and 3 to select an active-low reset signal.

There are no pin designations on the system board for W2 and W3, refer to figure 3-8 to set these jumpers.

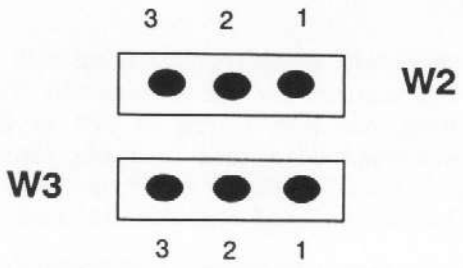


Figure 3-8. W2 and W3 Jumper Setting Diagram

Fixed-Disk Drive Preparation

Diskette drives need no preparation, but a new fixed-disk drive must be prepared for use by:

- Performing a low-level format
- Creating DOS partitions (multiple partitions on drives with capacities larger than 32MB)
- Performing a high-level format

CompuAdd ships all fixed-disk drives with the low-level format already done. If you ordered your drive from another source, refer to the documentation shipped with the drive to determine if any of these steps have already been done.

Partitioning is necessary because boundaries must be established on the disk for the operating system. In addition, DOS versions prior to 4.0 can only manage 32MB of disk space. If your drive's storage capacity is larger than 32MB, the drive must be divided into two or more partitions, each 32MB or less.

The specific method of drive preparation varies, depending on the drive. Some drives use special software on diskettes or in ROM (read-only memory) on the drive controller card. If you ordered your drive from another source, please consult your drive manual for more detailed information on preparing your particular drive.

Replacing the System Unit Cover

Step 1.

Position the system unit base so that it faces away from you.

Step 2.

Align the cover horizontally with the system unit base and carefully slide it into position. You may have to lift the center portion of the cover slightly so that it clears the rear panel of the system unit base.

NOTE: Make sure no cables get caught and pulled loose as you slide the cover on.

Step 5.

Replace the screws on the back panel.

Step 6.

Replace all of the data and power cables.

Chapter 4
TECHNICAL SUMMARY

This chapter is a summary of the system specifications and hardware setup options. Use this information to check the compatibility of your system with other hardware or software, or to describe your system specifically to a customer support technician.

The information contained in this chapter covers:

- System board layout and description
- Memory (RAM Types)
- ROM types
- Optional math coprocessor
- Optional real-time clock
- Optional game port
- Video display types
- Drive controller and IDE interface

System Board Layout and Description

Table 4-1 is a reference list of the locations called out in Figure 4-1. Table 4-2, on the following page is a comprehensive list of jumper and switch settings.

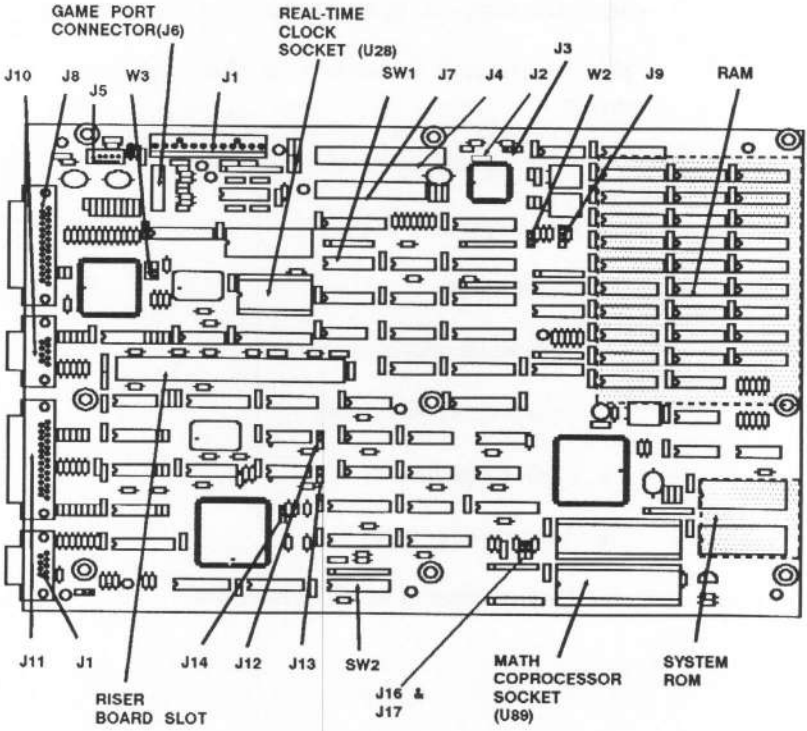


Figure 4-1. System Board Layout

Table 4-1. System Board Layout Descriptions

Jumper or Switch	Function
J1	System board power supply connector
J2	Reserved
J3	Reserved
J4	IDE drive connector
J5	Keyboard connector
J6	Game port (optional) connector
J7	Diskette drive connector
J8	Parallel port connector
J9	Fixed-disk drive LED connector
J10	Serial port 1 connector
J11	Serial port 2 connector
J12	Video mode select jumper
J13	Video controller enable jumper
J14	IDE ROM address
J15	Video port connector
J16	User ROM chip capacity select
J17	System ROM chip capacity select
J18	Reserved
W2	IDE drive select
W3	IDE drive reset signal select
SW1	Diskette drive capacity and size select
SW2	Select switches for video mode controller, serial and parallel ports, drive controllers, real-time clock, and game port.

Table 4-2. Complete Jumper and Switch Setting List

System Component	Switch or Jumper	Setting	Function
Parallel port	SW2 switch 5	ON	Enabled*
		OFF	Disabled
Serial port 1	SW2 switch 3	ON	Enabled*
		OFF	Disabled
Serial port 2	SW2 switch 4	ON	Enabled*
		OFF	Disabled
Game port (optional)	SW2 switch 8	ON	Enabled
		OFF	Disabled*
RT clock (optional)	SW2 switch 9	ON	Enabled
		OFF	Disabled*
System ROM size	J17	1-2	128KB ROMs*
		2-3	256KB ROMs
User ROM size	J16	1-2	128KB ROMs*
		2-3	256KB ROMs
Diskette controller	SW2 switch 6	ON	Enabled*
		OFF	Disabled
Drive A	SW1 switch 1	ON	360KB/720KB
		OFF	1.2MB/1.44MB
	SW1 switch 2	ON	5 1/4" diskettes
		OFF	3 1/2" diskettes
Drive B	SW1 switch 3	ON	360KB/720KB
		OFF	1.2MB/1.44MB
	SW1 switch 4	ON	5 1/4" diskettes
		OFF	3 1/2" diskettes
	SW1 switches 5-8	OFF	Reserved

Table 4-2. Jumper and Switch Setting List (continued)

System Component	Switch or Jumper	Setting		Function
IDE ROM	SW2 switch 10	ON		Enabled
		OFF		Disabled*
IDE secondary	SW2 switch 7	ON		IDE secondary
		OFF		IDE primary*
IDE ROM address	J14	1-2		C800H & CA00H
		2-3		C800H*
		None		CA00H
IDE drive select	W2	1-2		Drive 0*
		2-3		Drive 1
IDE drive reset signal	W3	1-2		Active High
		2-3		Active Low*
Video	J13	1-2		Disabled
		2-3		Enabled*
	J12	1-2		Monographics*
		2-3		CGA
	SW2	1	2	
		OFF	OFF	Monographics*
		OFF	ON	CGA 80x25
		ON	OFF	CGA 40x25
		ON	ON	Alternate display (EGA, VGA)
* - Default settings				

Memory (RAM types)

Your CompuAdd 810 has one of two random-access memory (RAM) chip sets. There are either six 256KB by 4 bit memory chips, or there are 19 256KB by 1 bit memory chips. In either case your system has 640KB of RAM available. Each of the two sets of

chips occupies only a portion of the RAM space on the system board, so there will be some empty RAM spaces. Figure 4-1 shows the location of the RAM on the system board.

ROM Types

Your system has one of two types of read-only-memory (ROM) chips installed on the front, left side of the system board. The ROM chips contain the BIOS program. The ROM chips may be either 128KB or 256KB capacity chips. Figure 4-1 shows the location of the ROM at U85.

Jumpers J16 and J17 must be properly set to indicate the capacity of the installed ROM. Table 4-3 shows the ROM capacity jumpers settings for both types of ROM chips.

Table 4-3. ROM Chip Capacity Jumper Settings

Jumper	Jumper Block Position	Function
J16	1 and 2	128KB ROM installed
	2 and 3	256KB ROM installed
J17	1 and 2	128KB ROM installed
	2 and 3	256KB ROM installed

Optional Math Coprocessor

The system board is compatible with the 8087 math coprocessor. The coprocessor socket is along side the microprocessor on the left edge of the board (U89), as Figure 4-1 shows. Chapter 3 contains instructions for adding a coprocessor chip.

Optional Real-time Clock

There is a socket available on the system board to install a real-time clock chip. Figure 4-1 shows the location of the socket. Such a chip maintains the date and time while the computer is turned off and supplies this information to DOS at start-up when there is an AUTOEXEC.BAT file on the disk you use to start your system.

If your system has a real-time clock chip installed, switch 9 on switch bank SW2 must be set to ON. This enables the chip. Refer to Chapter 3 for full installation instructions.

Optional Game Port

Your system can support a game port that can be installed in the empty hole in the back panel of the system unit. The game port has a short cable that must be attached at J6 on the system board. Refer to Figure 4-1. The cable end is keyed so that it only can be inserted one way. After installing the port and attaching the cable to the connector on the system board, set switch 8 on switch bank SW2 to ON to enable the game port.

Video Display Type

There are two jumpers and two switches that must be set to indicate whether the onboard video controller or a video adapter card is running your display and what type the display is being used.

The standard, or default, setting for the jumper block on J13 is on pins 2 and 3;

indicating that the onboard video controller is enabled. Place the jumper block on pins 1 and 2 to disable the onboard video controller.

When the onboard video controller is enabled, jumper J12 selects the between monographics and CGA video types. Place the jumper block on pins 1 and 2 for monographics, and on pins 2 and 3 for CGA.

You must further define the video mode for the onboard controller by setting switches 1 and 2 on switch bank SW2 according to Table 4-4.

Table 4-4. Video Mode Switch Settings

Switch Settings		Function
Switch 1	Switch 2	
OFF	OFF	Monographics video
OFF	ON	CGA 80x25
ON	OFF	CGA 40x25
ON	ON	Alternate (EGA/VGA display)

Drive Controller and IDE Interface

The controller for the diskette drives and the IDE interface for IDE fixed-disk drives are on the system board. The connectors for the drives are J7 for diskette drives and J4 for IDE fixed-disk drive interface.

If you install a drive controller card to run the drives in your system, you must disable the onboard controllers. Do this by setting switches 6 and 10 on switch bank SW2 to

OFF. Switch 6 disables the diskette controller, switch 10 disables the IDE ROM.

Diskette Drive Settings

Switches on switch bank SW1 indicate the type and capacity of the installed diskette drives. Table 4-5 shows the settings.

Table 4-5. Diskette Drive Type Switch Settings (SW1)

Switch	Drive	Setting	Function
1	A	ON	360 or 720 KB
		OFF	1.2 or 1.44 MB
2	A	ON	5 1/4" drive
		OFF	3 1/2" drive
3	B	ON	360 or 720 KB
		OFF	1.2 or 1.44 MB
4	B	ON	5 1/4" drive
		OFF	3 1/2" drive

IDE Fixed-Disk Drive Settings

The onboard controller for IDE fixed-disk drives also requires that jumpers J14, W2, and W3 be set.

Jumper J14 indicates the address of the IDE drive's ROM. The default drive address is C800H. Place the jumper block across pins 2 and 3 to select address C800H only. Set the jumper block across pins 1 and 2 to select addresses C800H and CA00H when two IDE drives are installed. Remove the jumper block completely to select address CA00H only when you have a primary fixed-disk drive operating

on the bus and the IDE drive is a secondary drive.

W2 selects between drive 0 (set jumper block on pins 1 and 2) and drive 1 (set jumper block on pins 2 and 3).

Set W3 to select either an active high or an active low reset signal for the IDE drive installed. Place the jumper block across pins 1 and 2 for a active high (positive) reset signal and across pins 2 and 3 for an active low (negative) reset signal.

If you install a drive controller in your system, set switch 7 on switch bank SW2 to indicate whether the IDE drive is the primary or secondary drive. Set the switch OFF to select the IDE drive as the primary drive and ON to select the IDE drive as the secondary. You must set the controller card as the alternate drive, secondary if the IDE is primary and vice versa, to avoid conflicting with the IDE drive setting.

I/O Ports

If you add I/O ports to your system, you may need to disable the built-in ports. Switches 3, 4, and 5 on switch bank SW2 enable or disable the built-in ports.

Set switch 3 ON to enable serial port 1. Set switch 4 ON to enable serial port 2. Enable the parallel port by setting switch 5 ON.

Appendix A
GLOSSARY

application

An application is a computer program that applies your system to some special task. For example there are wordprocessing applications, database manager applications, and so on.

AUTOEXEC.BAT

A batch file that contains a set of DOS commands that are executed when the system is booted. The DOS manual explains the many possibilities for customizing your system's startup using this file.

backup

A spare copy of programs or data. It is a good idea to keep a backup copy of all your programs and data in case the original diskette is damaged. If possible, keep backup copies in a different location than your system; otherwise the backups may be damaged by the same calamity that destroys the programs and data in your system. Used as a verb, to backup is to make a copy of data.

base memory

The random access memory (RAM) located on the system board. (See conventional, extended, and expanded memory).

batch file

A file that contains a set of DOS commands. Batch files are excellent for grouping often-used DOS commands to be executed with a single call. The DOS manual explains how to create batch files.

BIOS

The basic input and output system. This is a program that is stored in read only memory and is accessed automatically each time the system is turned on. It checks the configuration data and performs self-tests to make sure the system is functional. When the checking is complete, this program loads and turns over control to the operating system.

bit

The smallest unit of information handled by a computer. A bit can be one of only two states, on (usually designated as 1) or off (usually designated as 0). Bits are grouped into bytes (8 bits). Memory capacity is stated in the number of bytes that can be stored.

board

(See card)

boot

To start the system. The system starts when: 1) You turn the power on, 2) You press the **CTRL, ALT,** and **DEL** keys simultaneously and then release them, or 3) You press the RESET button on the front of the system unit. When you boot, the system transfers start-up instructions from read-only memory

(ROM) to random-access memory (RAM) and loads DOS. You must have DOS or another startup program on the diskette in Drive A or on the fixed-disk when you boot the system. If you don't, an error message is displayed. Synonyms: IPL (initial program load), reboot, restart.

bus

An electronic path for sending data within the computer or from the computer to an external device. A data bus is identified primarily by its width, in bits; as in 8-bit, 16-bit, and 32-bit buses.

byte

A group of 8 bits. Two bytes are called a word. A byte is sometimes subdivided into two nibbles.

cable connector

The apparatus on the end of a cable that makes the connection to a port.

card

A flat piece of hardware consisting of electronic components on a fiberglass or plastic foundation. Add-in cards fit into the extension slots on the system board and control the communications between the computer and peripheral devices. Synonym: board.

CGA (Color Graphics Array)

A type of video display unit (See video display unit).

character

Any number, letter, punctuation mark, or space.

COM

Designation for a serial COMmunications port. Provided your system has the physical ports installed, DOS can manage as many as 4 serial communications lines (See port).

COMMAND.COM

A file that must be available when running any DOS command.

CONFIG.SYS

A file that contains information that customizes your system configuration when the system boots. It usually contains special settings such as custom files and buffers values. It also calls and starts special driver programs required by devices such as a mouse, a RAM disk, etc. Refer to your DOS manual for additional information.

configuration

The physical characteristics of your system and the specific amounts of memory and optional devices. The configuration information is stored in battery-maintained memory and is checked each time the system boots.

controller

Refers to the disk drive controller card. This card contains the components that run the diskette and fixed-disk drives in your system and also passes data to and from the drives and the system board.

conventional memory

Conventional memory is the memory between 0KB and 1MB.

current directory

The directory where DOS is operating. The current directory is also called the default directory. You can change the current directory with the DOS CHDIR (CD) command.

current drive

The disk drive where DOS is operating. The current drive is also called the default drive. All DOS commands are executed only in the default directory unless a path to other directories is entered in the autoexec.bat file using the PATH command.

cursor

The blinking marker on the screen that shows where the characters you enter from the keyboard will appear on the screen.

cylinder

All of the tracks on all of the platters of a fixed-disk drive that are a certain distance from the center of the disk. For example, the outside cylinder is the set of all track zeroes on the disk drive (See track).

daisy-chain cable

A cable with more than one connector. For example, a daisy-chain cable is used to connect more than one drive to a drive controller card. One end of the cable attaches

to the controller card, and the other end the middle connector attaches to the drives.

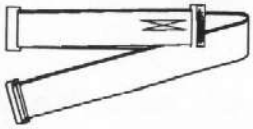


Figure A-1. Daisy-Chain Drive Cable

data

All of the information that you process with your computer. It includes calculations, numbers, lists, reports, programs, documents, letters, etc.

default

A predetermined or recommended choice in a program. The default value is applied unless you supply an alternative.

destination

The drive or file you transfer information to (See target)

DIP

Dual in-line package. Refers to the physical construction of some integrated circuit packages that have a row of connecting pins down each long side.

DIP switches

A row of little switches on a card or board that allow you to set configuration options.

directory

A special file; its content is a list of file names. Directories can contain files and sub-directories. All files are listed under a directory.

diskette

The magnetic media most often used to store data and programs.

diskette drive

The machine that reads and writes the data on a diskette.

disk operating system (DOS)

A program that controls the way programs are loaded into memory, how information is stored on the disk, and how the computer communicates with the printer and other peripheral devices.

display

(See video display unit)

DOS

(See disk operating system)

DRAM

Dynamic Random Access Memory (See random access memory).

D-shell connector

A connector for serial, parallel, and video cables that is shaped such that it can only be connected one way.

edge connector

The part of an add-in card that slips into the expansion slot and makes the data connections to the system board. Sometimes the power connections for the card are also made via the edge connector.

EGA (Enhanced Graphic Array)

A type of video display unit (See video display unit).

electronic disk

An extension of memory that is used like a diskette drive. Electronic disks provide faster access times than real disk drives, but because the electronic disk is part of random-access memory, all the data stored on it is lost when you remove power from the system. Synonyms: RAM-disk, virtual disk.

expanded memory

Memory that requires a special EMS driver to allow the system access. The driver manages the memory by swapping 16KB to 64KB blocks of it in and out of a selected section of addresses in reserved memory.

expansion slot

A connector on the system board where add-in cards such as video adapter cards, I/O cards and specialty cards plug in.

extended memory

The memory at addresses above the 1MB of conventional memory. Extended memory is not available to XT-class systems like the 810.

FDISK

The DOS command that partitions a fixed-disk drive.

file

A collection of data. You can think of a computer file as you do a file that you store in a filing cabinet. In a computer, all data is kept in a file, and every file has a name.

firmware

A program that is permanently recorded on a programmable read-only memory (PROM) chip. It is installed on the computer's system board, and thus is essentially a piece of hardware that performs software functions.

fixed-disk drive

A set of rigid magnetic media platters. Fixed-disk drives store more data and retrieve it faster than diskettes.

FORMAT

The DOS command that performs the high-level format on a diskette or a fixed-disk. Formatting lays out specific boundaries for information to be stored on the disk or diskette.

hard disk drive

(See fixed-disk drive)

hardware

The physical components of the computer system (See software).

heads

The part of a diskette or fixed-disk drive that reads and writes data magnetically on the disk. Diskette drives have one or two heads and fixed-disk drives have one head for each side of each platter.

Hertz(Hz)

The name given to the standard unit of cycles per second.

I/O

Abbreviation for input and output.

IPL

Initial program load (See boot)

jumper block

A small connector that slides onto jumper pins to make an electrical connection.

jumper pins

Sets of square pins on a card that allow the user to select different circuit options. Options are chosen by placing a jumper block on the pins.

KB

(See kilobyte)

kilobyte

1,024 bytes. A way of measuring memory or disk capacity.

LED

(Light-emitting diode) An indicator light.

load

To transfer a program from a disk to random-access memory.

LPT

Designation for a parallel communications port. Provided your system has the physical ports installed, DOS can manage as many as 4 parallel communications lines (See port).

MB

(See megabyte)

math coprocessor

A secondary processor that can be installed on the system board to speed up applications that are calculation intensive such as spreadsheets and database managers.

megabyte (M)

1,024 kilobytes, just a bit more than 1,000,000 bytes.

megahertz (MHz)

One million cycles per second (See Hertz). When speaking about microprocessor cycles, it is a measure of a system's speed.

microprocessor

The integrated circuit that performs all of the computing in your system. The microprocessor in your system is an V20.

military time

In military time, the hours are counted from 0 to 23. Minutes and seconds are counted from one to 59 as in standard time. Times between Noon and Midnight are determined by adding 12 to the normal PM hour value. Thus 3:00PM, 3 + 12 = 15, becomes 15:00.

Standard	Military
Midnight	00:00
1:00AM	01:00
NOON	12:00
1:00PM	13:00
1:30PM	13:30
6:00PM	18:00
6:30PM	18:30

MODE command

The DOS command that allows you to set the type of communications port, serial (COM) or parallel (LPT) by which your system will send data to a peripheral device.

modem

A *mo*dulator-*dem*odulator. This is a peripheral device that allows your system to communicate with another system over telephone lines.

overwrite

Replace new information with old information. Existing data on a diskette or fixed-disk is lost when it is overwritten. ALWAYS use a write-protect tab on diskettes containing information you cannot afford to lose. Data may also be lost by overwriting if you give the same filename to more than one file.

park

To move the heads of a fixed-disk drive over an area where there is no data.

peripheral

A device used with the computer. Peripherals connect to the rear of the system unit and provide additional functions. Some examples of peripherals are the video display unit, printers, and external modems.

platter

One of the several rigid magnetic disks that make up a fixed-disk drive (Refer to Figure A-1).

port

A connector on the outside rear of the system unit. You connect peripheral devices to the computer via the ports. Ports are of two types, indicating the method that data is transmitted in, parallel and serial.

processor speed

The speed at which the microprocessor handles the instructions and data.

prompt

A question or request posed by a program. You enter a response to the question to continue operation of the program. The A> or B> symbols provided by MS-DOS are a form of prompt.

RAM

(See random-access memory)

RAM-disk

(See electronic disk)

random-access memory

Temporary memory that stores data and programs while the computer is in use.

read-only memory

Permanent memory where the computer start-up instructions are stored. You can add special ROMs to your system; these ROMs can store DOS or instructions for interpreting computer programs.

restart

(See boot)

ROM

(See read-only memory)

sector

A subdivision of a track on a disk. Sectors are numbered sequentially along a track (Refer to Figure A-1).

slot

(See expansion slot)

software

Computer programs. Software (programs) are instructions that direct the computer to do tasks.

source

The drive or file that you transfer information from.

subdirectory

A directory that is subordinate to another directory. All directories are subordinate to the ROOT directory that is identified in DOS by a \ with no name.

system

The computer and all the attached devices (video display unit, printers, etc.)

system board

The main board in the system. This board holds the microprocessor, math coprocessor if one is installed, ROM, and the main RAM. Synonyms: system unit board, motherboard.

system unit

The base and cover that house the system board, power supply, disk drives, and any add-in cards.

synonym

In DOS, a command having the same meaning as another command. For example, CD is a synonym for CHDIR. Both execute exactly the same command.

syntax

Rules for forming statements in DOS (or a computing language). In DOS, the syntax includes the order of filenames, pathnames, and/or punctuation for each command. For example, in the COPY command, the source file must be named first, and the target file must be named second.

target

The drive or file that you transfer information to.

tracks

The narrow, concentric bands on a formatted diskette or platter where data is stored. Tracks are divided into sectors.

troubleshoot

To isolate a problem to a specific piece of hardware or software so that corrective action can be taken.

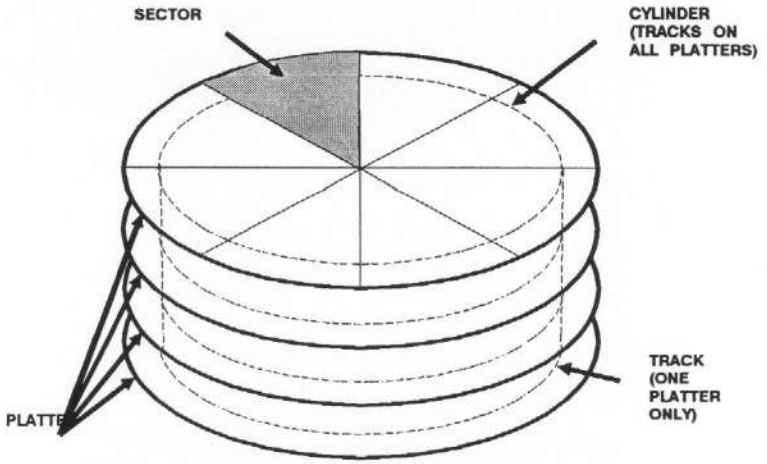


Figure A-2. Fixed-Disk Format Terminology

VGA (Video Graphics Array)

A type of video display unit (See video display unit).

video display unit

The television-like device that the computer displays information on. Synonym: display, monitor, CRT

Appendix B
WARRANTY INFORMATION

For CompuAdd-Brand Products

Limited Warranty

CompuAdd Corporation warrants its hardware products, to the original purchaser, against defects in materials and workmanship for a period of one (1) year from the date of original shipment. Warranty service, whether repair, adjustment or replacement (at our option) may be obtained by delivering the product and proof-of-purchase to the **CompuAdd Corporation** location nearest you.

Obtain a **return material authorization (RMA)** number from **CompuAdd Corporation** prior to returning products to the factory for repairs. Merchandise received without an RMA number or shipped C.O.D. will be refused. Purchaser (sender) shall prepay shipping charges for products returned to **CompuAdd Corporation** and shall insure and accept liability for loss or damage to the product. **CompuAdd Corporation** will pay for the return of the product to the purchaser. The customer's sole and exclusive remedy for repairs made under this warranty is through the repair or exchange of defective hardware, at **CompuAdd's** option, by a **CompuAdd** authorized service representative.

This warranty does not cover damages resulting from improper assembly, power connection or accidents, alterations, abuse, negligence, misuse or perils such as fire, theft, water damage, vandalism or repairs resulting from service rendered by anyone other than a **CompuAdd** authorized service representative.

Service Agreements

CompuAdd Service Agreements for on-site or carry-in service should be completed and returned immediately. We cannot dispatch a technician to your location or issue an authorization for carry-in service until this completed and signed agreement has been returned and accepted by **CompuAdd** at their country headquarters.

Claims And Damages

All goods and packages are inspected before shipment. Claims for goods damaged or incomplete shipments **must be filed within five days** of receipt of merchandise.

Specifications

We reserve the right to substitute or change materials, product specifications, and functional attributes without notice, at any time.

IF THIS PRODUCT DOES NOT PERFORM AS WARRANTED HEREIN, PURCHASER'S SOLE REMEDY SHALL BE REPAIR OR REPLACEMENT, AT THE OPTION OF **CompuAdd Corporation**, AS FURTHER PROVIDED ABOVE. IN NO EVENT WILL **CompuAdd Corporation** BE LIABLE FOR DAMAGES, LOST REVENUE, LOST WAGES, LOST SAVINGS, OR ANY OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING FROM THE PURCHASE, USE, OR INABILITY TO USE THIS PRODUCT, EVEN IF **CompuAdd Corporation** HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

CompuAdd Corporation will not be responsible for the cost of reconstructing data stored in hard drive files, tapes, memories, etc. lost due to system failure or during the performance of any service performed by **CompuAdd Corporation** or its authorized service representative.

For Name-Brand Products

Limited Warranty

Unless otherwise stated, name-brand products have an initial one-year limited warranty through **CompuAdd Corporation.*** After the initial warranty period, the manufacturer's warranty goes into effect for what ever time remains.

CompuAdd Corporation's warranty procedures for these products are the same as that outlined for **CompuAdd-brand** products.

***CompuAdd Corporation's** warranty is subject to change without prior notification.

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