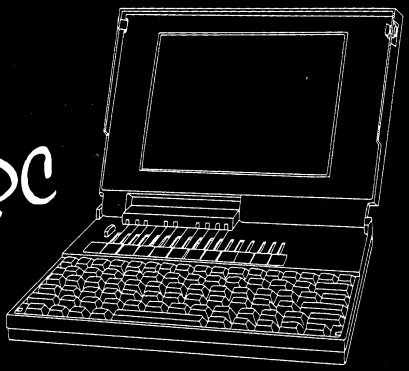
486DX/SX Notebook

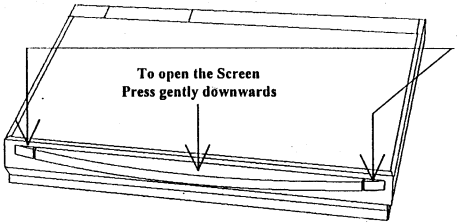
User's Manual

Best Notebook PC



Viglen Dossier 486 Notebook Amendments

Congratulations on purchasing one of Viglen's Dossier 486 Notebook Computers.
To open the screen on your Viglen Dossier, press gently down on the silver lever halfway down the front edge of the Dossier as shown below:



Your Viglen Dossier 486 has been setup at Viglen with all the software purchased with your system. This means that all you have to do is turn on your Viglen Dossier and you are ready to start work immediately. Once your system has booted up you will see a Prompt on the left hand margin on the screen. The prompt should look as follows:

C:\>

This prompt is called the C prompt or DOS prompt. To start MS-Windows type "win" at the at the C prompt and then press enter.

C:\>win {Enter}

A a few secounds MS-Windows will appear on the Screen. You are now ready to start work. Please read the relevant manuals supplied with your system for more information on how to operate you Viglen Dossier.

Internal Fax Modem

The internal modem cable is now attached to the motherboard and not to the temporary board. The cable must be unplugged from connector CH15 on the motherboard and then plugged into the modem as shown in the manual on Page B-34 "Installing a European Model Fax modem".

Connection of External Monitors

The Viglen Dossier 486 is fitted with a standard 15 pin VGA connector to allow the connection of an external monitor. The system will produce either a VGA resolution (640x480 with 16 colours) or a super VGA resolution (800x600 with 16 colours). When the system is operating in the VGA mode it is possible to have the internal LCD screen and the external monitor operating simultaneously. The system can be used with any VGA colour or monochrome monitor when VGA mode is being used. The super VGA resolution requires a suitable super VGA monitor which must be able to operate with an horizontal refresh frequency of approx 31.77 kHz and a vertical refresh frequency of approx 50 Hz. The standard Viglen monitors have been optimised to use a higher vertical refresh rate and will not be suitable. Monitors that have not been optimised for high vertical refresh rate frequencies or those that operate at a wide range of vertical refresh rate frequencies will be suitable i.e. the Viglen CA1726LE monitor.

486DX/SX Notebook
User's Manual

Federal Communications Commission (FCC) Statement

Note: This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. Of this equipment does cause harmful 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.
- Increase the separation between the equipment and receiver.
- Connect the equipment into and outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio TV technician for help.

Notice:

(1) The changes or modifications not expressly approved by the party responsible for Compliance could void the user's authority to operate the equipment.

(2) Shielded interface cables and AC power cord, if any, must be used in order to comply with the emission limits.

Produced by Delta Electronic Publishing Services.

Table of Contents

Table of Contents

Safety Guidelines

Power

The computer is shipped with its own AC adapter. Do not use the computer with any other adapter. Do not use the adapter to power other devices. The AC adapter is designed for use with a ground line. Do not use the adapter if the electrical supply does not include a ground. Route all power cord connector cables safely where they will not be stepped on or accidentally pulled out. Do not place heavy objects on the cables.

The socket-outlet should be installed near the equipment and should be easily accessible.

Computer

Keep the computer in a reasonable environment. Avoid extremes of humidity or temperature, such as direct sunlight or rainfall. Sudden shocks, such as dropping or banging the computer, can cause severe damage.

Battery

Do not disassemble the battery. The chemicals inside can damage skin and clothing.

Do not short circuit the battery as this can generate dangerous amounts of heat and damage the computer.

Do not incinerate or dispose of the battery with ordinary refuse. It contains chemically active substances and could explode.

The battery will lose its charge when stored for a long time. Fully charge the battery before you use it again.

Do not pull leads or connectors. This could break soldered or spot-welded connections.

Section 1: Introduction

This User's Manual has the information you'll need to set up and use your notebook computer. It also has information on expansion options and optional equipment you can use with your notebook. In this section we'll review the features and functions of the computer. At the end of the section there is an explanation of how the manual is structured.

1a. System Features

This notebook computer has many powerful and useful features in both hardware and software. We'll go over the hardware first and then look at how the software features integrate with the hardware.

The Hardware

Unlike desktop computers, the notebook is a complete computer integrated into one unit. The CPU, display screen and keyboard are all in the same compact box. As we'll see later, you can also connect full size desktop peripherals such as monitors and keyboards to the notebook.

The CPU

486 Microprocessor

This computer uses one of two low-power versions of Intel Corporation's 486 microprocessor. Depending on which model you have, your computer has either the 486DX or 486SX CPU. These provide full 32-bit operation with all 386 functions, an internal cache and many other sophisticated features which afford a substantial performance increase in comparison with 386 microprocessors. The 486DX also has a built-in numeric (math) coprocessor with performance superior to an 80387 coprocessor.

System Memory

Your computer comes with 4 Megabytes (MB) of system memory. You can add more memory for up to a total of 20MB.

Cache

The computer comes with 8KB of internal cache memory.

Disk Drives

The computer has two disk drives:

- a 1.44MB capacity floppy disk drive
- a hard disk drive

Your computer may have a 60, 80, 120MB or larger drive depending on the model you purchased.

I/O Ports

There are several Input/Output ports built into the rear of the computer. These are:

- A Centronics-compatible enhanced parallel port
- An RS-232 serial port
- An external monitor port for VGA or SVGA-compatible monitors
- An external keyboard or keypad port
- A pointing device port (mouse, trackball)
- Line & Telephone connectors for an optional faxmodem.

The Display System

The built-in monochrome LCD display panel displays up to 64 gray shades. The computer is also available with a color TFT or STN LCD screen. All the screen adjustments are software-based and executed with special key combinations, so you won't see the adjustment knobs common on other computers like this. The computer also has a port to connect a full-size desktop VGA or Super VGA monitor to the external monitor port. This computer will support resolutions of 640 x 480 with 16 colors and 800 x 600 with 16 colors.

The utility disks that you get with the computer have extended display drivers for many popular programs, including Microsoft Windows.

The Power System

The computer can run on either the AC power adapter or the internal battery that come with it. The AC adapter plugs into a wall outlet. It also charges the battery.

The battery is a nickel-hydride (Ni-MH) battery. The battery charges while in the computer. You can also get an optional quick charger/discharger and extra battery packs.

Expandability

To increase the power and function of the computer you can install optional equipment and/or attach desktop peripherals to it.

You can install additional memory and a faxmodem card. The memory and modem are available from your system vendor. There is also an optional system docking module/expansion box combination available that provides room and power for adding two full-size expansion cards. The module can be used alone as a base connector for other equipment you use with the computer. When you travel, you can unplug the module and leave the other equipment connected to it.

The computer also has ports that enable you to connect an external monitor, keyboard, printer and mouse.

Keyboard Features

The keyboard for this computer has 80 keys which emulate the functions of a full-size 101 or 102-key extended keyboard. This is accomplished by "embedding" both the numeric keypad and the cursor and other control keys in the main body of the keyboard. In order to access multiple functions on one key, a new key, not found on conventional keyboards has been added. You'll use this 'Fn' key to access functions on multiple-function keys.

Special Key Commands

The Fn key is also used to activate controls built into the keyboard. There are key combinations for the display controls, CPU speed and system controls.

The key combination display controls replace the hardware brightness and contrast controls commonly found on notebook computers. They also include controls for screen appearance and a switch to toggle between the LCD screen and a desktop monitor connected to the computer.

You can also set the speed the computer runs at to either the maximum or slow speed, reset the computer, call up the Setup Utility and execute several other system control commands.

How The Manual Is Organized

The manual is divided into five sections and two appendices:

- Section 1: This introduction
- Section 2: How to unpack and set up the computer
- Section 3: How to operate the computer
- Section 4: How to install optional equipment and upgrades
- Section 5: Troubleshooting and Care and Maintenance information
- Appendix A: How to use the VGA drivers and utilities
- Appendix B: Some technical information and specifications

We've tried to design this manual so that it is easy to locate things and doesn't require a lot of reading to find specific topics. We suggest that you at least go over sections two and three even if you don't like to read manuals or are familiar with this kind of computer. We've also tried to put the more technical information in the appendices so that those who don't need and may not understand it don't have to wade through it and those who need it can find it quickly without have to read the main body of the manual.

Section 2: Unpacking and Setting Up

This section covers unpacking the notebook hardware and checking that all the components are present and correct. Following is an explanation of how to set up the basic system.

2a. Unpacking

Before you start, prepare a clean stable surface to put the system components on. You will already have opened the documentation package to read this. Altogether you should find the following items in the package:

- The computer (with a rechargeable battery installed)
- An AC adapter/battery charger
- A Power Cord
- This User's Manual
- One floppy disk containing :
  - Utility software
  - VGA drivers
  - Mouse driver

Remove all items from the packaging and put them out where you can get at them. If anything is missing or broken inform your dealer and ask for a replacement.

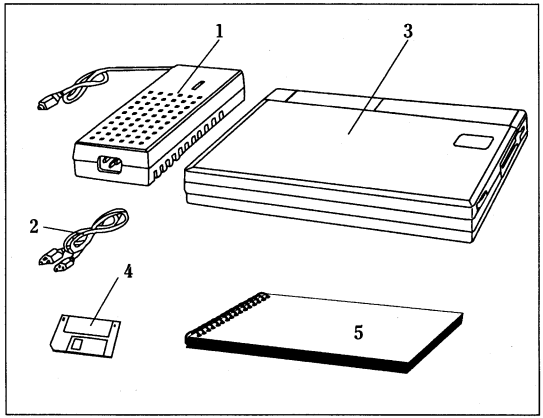
Save the packaging box and materials. If you ever need to ship your computer or send it in for service you will need the shipping container.

Before setting up the computer familiarize yourself with the hardware features covered next.

2b. System Overview

Features and Controls

When you take the notebook out of its packaging you should find the following items:



Package contents

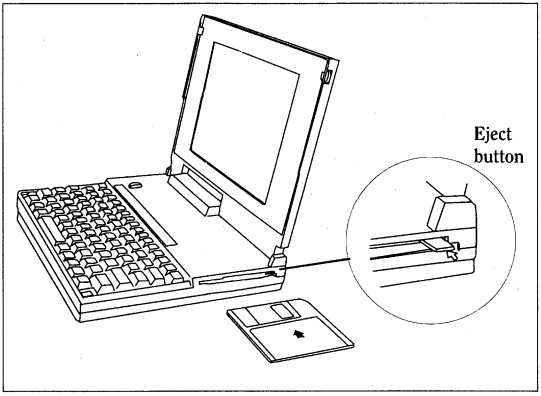
1. Power adapter
2. Power cord
3. The computer
4. Utility disk
5. This manual

The floppy disk drive is located on the right side of the computer.

Floppy disk drive location

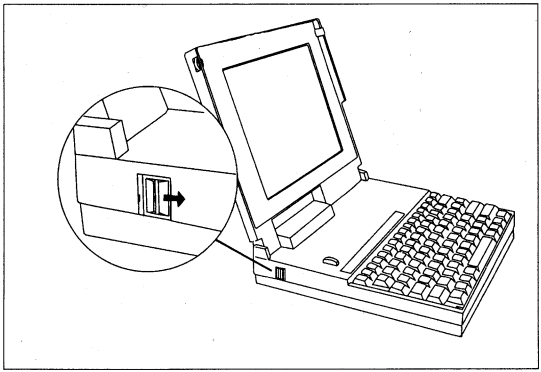
Loading a disk causes the eject button to pop out.

Push the eject button in to eject the disk from the drive.



Don't leave a floppy disk in the drive when you transport the computer. The eject button sticks out with a disk in the drive and could break off.

The power switch is located on the left side.



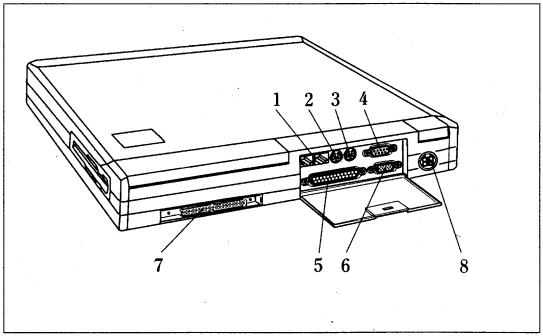
The power switch
Pushing the switch towards the front turns the computer on.

The I/O Ports

There are two access panels at the rear of the computer.

Rear view

1. *Line IN/PHONE*
2. *Keypad/Keyboard port*
3. *Mouse port*
4. *Serial port*
5. *Printer parallel port*
6. *External VGA connector*
7. *Expansion connector*
8. *Power connector*



The panel on the right opens by pressing the latch down and folds down to reveal two rows of ports. The top row has, from left to right:

1 • Two connectors for the optional fax modem

LINE – line in

PHONE – line out

2 • A PS/2-compatible mini-DIN external keypad or keyboard port

3 • A PS/2-compatible mini-DIN mouse port

4 • A 9-pin (DB9) RS-232 serial port.

The lower row has:

5 • A Centronics-compatible parallel port

6 • A 15-pin VGA monitor port.

The left panel removes with downward pressure. Inside the compartment is a connector for the optional expansion module. The module plugs onto the connector. The module has all the same ports as the I/O port panel and also has a connector for the optional system expansion box. The expansion box provides space for installing two expansion cards.

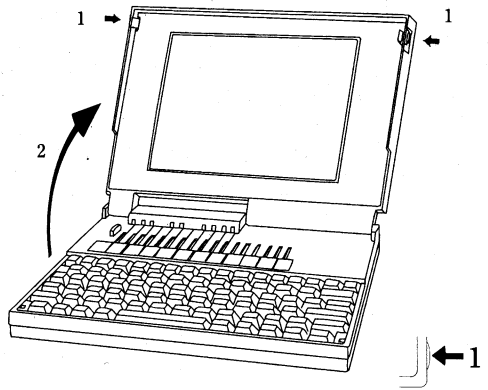
Power Connector

The 4-pin connector to the right of the I/O port panel is the connector for the AC power adapter.

To raise the notebook's display screen, press in the retaining latches to release the screen. You can then raise the screen to a comfortable viewing angle.

Raising the LCD Screen

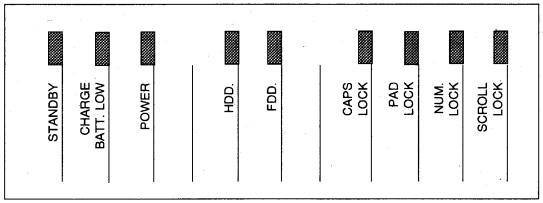
1. Press the latches in.
2. Raise the screen.



Simultaneously press in the latches on both sides

With the computer open you can see the LCD display screen, indicator lights and the keyboard.

Indicator lights



The indicators panel has nine status lights. The lights come on to indicate their function is active. From left to right these are:

- STANDBY - Flashes when standby or suspend feature is active.
- CHARGE/BATT. LOW - Lights when charging, flashes when the battery is running out.
- POWER - Lights when power is supplied to the computer.
- HDD - Flashes when the hard disk is being accessed.
- FDD - Flashes when the floppy drive is being accessed.
- CAPS LOCK - Lights when you press the Caps Lock key on the keyboard.

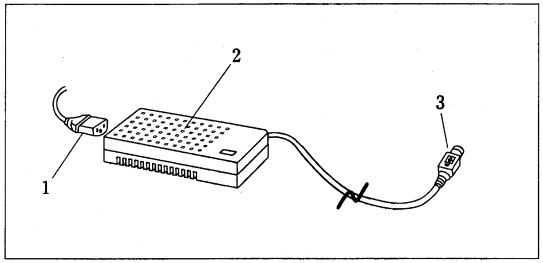
- PAD LOCK - Lights when the embedded numerical keypad is locked on.
- NUM. LOCK - Lights when the Num Lock key is active.
- SCROLL LOCK - Lights when you press the Scroll Lock key.

This computer uses keyboard commands for system controls such as screen brightness, contrast and reset.

Power System

Power Adapter/Battery Charger

The AC Adapter/Battery Charger comes in two pieces: the adapter block with attached connecting cable, and the power cord.



The AC adapter/battery charger

1. Power cord.
2. LED power indicator: lights if adapter is functioning properly.
3. Power jack connects to the computer.

Internal Battery

The notebook comes with a rechargeable battery. It is in a compartment under the keyboard.

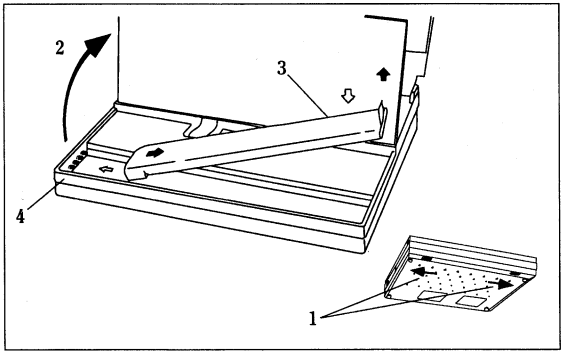
To get to the battery compartment, first raise the LCD screen. Then slide the retaining latches under the front edge of the computer outward. When the keyboard pops up slightly, tilt it the rest of the way towards the LCD.

To insert a new battery, press the left end into the compartment, compressing the springs, then lower the right end in so that it pops into place.

Battery compartment

1. Release the keyboard panel by pressing the latches outward.
2. Raise the keyboard panel to a vertical position.

To remove the battery
3. Pull the right end left and up by the removal strap.
4. Pull the battery out of the seating guides on the left.



Make sure the computer is off before you insert or remove the battery.

2c. Setting Up The Basic System

This section explains how to setup and turn the computer on, check the configuration setup and install an operating system.

Setting Up the Computer

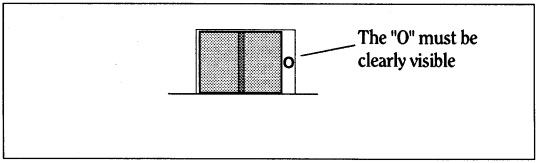
To set up the computer:

1. Make sure the computer is turned off.
2. Connect the Power Adapter.

Connecting the Power Adapter

1. Connect the power cord to the adapter block. Don't plug it into a power source yet.

Before you connect the power adapter, make sure the power switch on the computer is in the "0" OFF position.



Make sure both the computer and the adapter are OFF before connecting the power adapter.

2. The connecting cable attached to the adapter plugs into the power port on the right side at the rear of the computer. Plug the connecting cable into the power port on the computer.

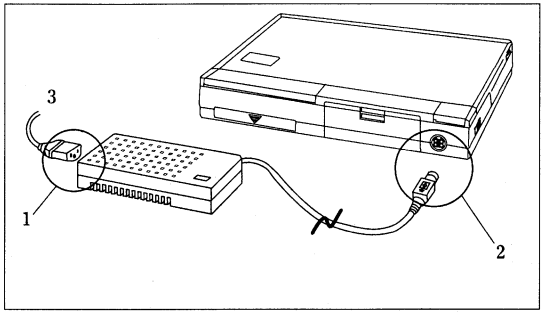
Make sure to hold the connector by its outer shell. Release the connector from the computer by pulling back on the shell. Do not pull on the cable.

3. Plug the power cord from the adapter into a power outlet. The power adapter automatically adjusts to the electrical current in your area and you should have a power cord with a plug appropriate for the electrical hardware where you live.

You can plug the computer/adapter into any standard electrical outlet. However, as with all computers, it is sensitive to fluctuations in the electricity supply. It is better to plug the adapter into an outlet strip that has a "surge protection" feature. This feature prevents the effects of sudden variations in current from reaching the computer. You should take this precaution if possible while using any computer you own.

If you travel to an area with a different electric power standard you should be able to use a plug adapter to plug the AC power adapter in. If for some reason the power cord you received does not match the electrical system in your area, you can use a plug adapter or ask your dealer for a replacement.

If you have any doubt about the notebook's compatibility with the power standard in your area or an area you intend to travel to, you should consult your dealer or technical support.



Connecting the power adapter

1. Connect the power cord to the adapter.
2. Connect the adapter to the computer (computer off).
3. Plug the adapter into an outlet.

First-time Battery Check-up & Charge

The computer comes equipped with a battery already installed. If your dealer has already setup your computer, it should already be charged. To make sure, attach the power adapter as described above and plug it in. Leave it plugged in until the CHARGE /BATT.LOW LED shuts off. You can also operate the computer during this time.

2d. Peripherals

Before you start up your system you may want to install a mouse or other pointing device and a printer. In this section we'll go over how to connect this peripheral equipment to the computer. First we'll look at general requirements and then go through the procedure for connecting some of the most common equipment.

The basic procedure for connecting peripherals is as follows:

1. Unplug and turn everything off.

Even if you just unpacked a new piece of equipment, check the power switch.

2. Setup the peripheral according to the instructions in the manual.
3. Attach the connecting cable to the peripheral if necessary and then to the computer. Most also have screws to either side of the connector. After you connect the cable, you should tighten these screws to firmly attach it to the computer.
4. Connect a power cord to the peripheral if it has one and it is not already permanently attached.
5. Plug the peripheral in if necessary and turn it on.

Before connecting any equipment to the computer, always make sure that everything is turned off and unplugged. You risk damaging your equipment if you don't observe this precaution.

6. Later, after you've got the computer set up and running, you may need to install any software that the peripheral requires to operate onto the hard disk. Follow the instructions in the peripheral or related manual to do this. Once you've done so, you should test the device to see that it is working correctly.

Connecting A Pointing Device

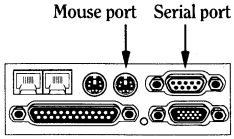
You can connect a mouse or other pointing device such as a mini-trackball to the notebook in one of two ways.

You can use a device with a PS/2 – compatible mini-DIN connector. This attaches to the "mouse" port.

Alternately, you can use a device with a 9-pin serial connector. Attach this to the SERIAL port.

SERIAL is a standard RS-232C 9-pin male "D-shell" or "D-sub" serial connector. Many serial cables for a mouse have a matching connector. Some serial cables have a 25-pin connector instead. If your device has this kind of cable you can use a 25 to 9-pin adapter to connect it. Many pointing device packages include this adapter as a standard accessory .

Ports for Pointing Devices



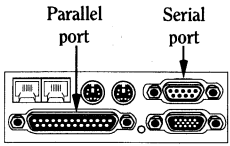
Connecting A Printer

Parallel printers

If you want to use a parallel printer, you should attach it to the printer port.

This computer has an Enhanced Parallel Port (EPP). Your printer will work with it. If your printer supports the EPP feature, you can take advantage of its higher data transfer rate. The port is a standard Centronics-compatible connector with a 25-pin female D-shell connector.

Ports for Printers



Serial Printers

If you choose to use a serial printer connection, attach it to COM1. Serial printers should come with a cable. If not, the variety of ways that printers connect to a standard serial interface could result in your having to have a custom cable made. With new equipment this isn't very likely, but if you want to attach an older serial printer to the computer you could encounter this problem.

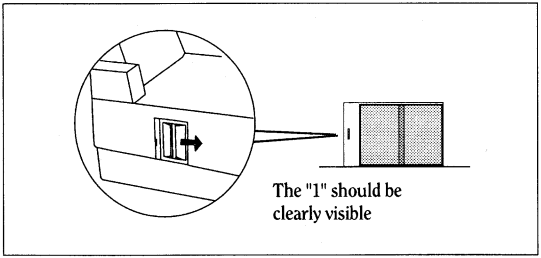
The computer's serial port wiring is standard. The pin assignments are listed in Appendix B. Check your printer manual for more information on how to setup and connect it.

You will need a printer driver that supports your printer. In some cases the manufacturer may supply it. Otherwise you'll need to see if your application software comes with a driver for your printer. Some software, Microsoft Windows for example, comes with a large number of drivers.

Turning On The Computer

At this point everything is ready and you can turn the computer on. Make sure that the connection to the power cord is secure and that the adapter power cord is plugged into a grounded (earthed) electrical power outlet (the mains). It is much better to connect the adapter to a surge-protected outlet strip and plug that into the power source.

The power switch slides between the 0 and 1 positions as mentioned earlier. This is a convention with computers. Zero stands for Off and One stands for On. To turn the computer on, slide the switch toward the front of the computer.



Turning on the Computer

Slide the power switch forward to turn on the computer.

When you first turn on the computer, you may need to adjust the contrast and brightness controls. See Section 3: System Operation for information on how to do this.

The computer will start up and go through its self test procedure. If there is a problem you will get an error message on the screen. There is some information on error messages in Appendix B.

If there is no problem the computer will attempt to "boot", that is, load the basic software it needs to operate, including the operating system. Since this is the first time you've turned the computer on, it won't find an operating system on the hard disk unless your vendor pre-installed one for you. At this point you should do two things. Take a look at the Setup utility that records the system configuration and sets the power management controls and then install an operating system. These topics are discussed next.

2e. Software Setup

Before you can start using the computer you have to install operating system software. You may also want to adjust the basic configuration settings.

This section explains how to use the configuration setup software built into the computer and has some information on installing an operating system. Although your computer may already have been set up by your dealer for you, we suggest that you review the next section.

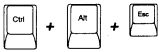
The Setup Utility

When you turn the computer on it will first go through a series of self tests that are done by software (called "firmware") that is permanent installed in the computer. As part of these tests the computer uses a record of the hardware present to check the system. This record is created by using some other firmware called a setup program. If the self-test discovers a difference between the record and the existing hardware it will display a message on the screen asking you to run the setup program. You can then correct the record.

In most cases the record should be correct when you receive the computer. If so, the self-test will finish and the computer will look for an operating system to load into the computer memory. Turn the computer on. The self-test will run. When it's done, you should get a message saying that there is a non-system disk or disk error. This indicates that the hard disk is ready to be prepared for use with the operating system you intend to use. After you prepare the hard disk for use, you should not see this message again unless you try to start the computer with a non-system floppy disk inserted in the floppy drive. If you reach this point you can go directly to the later part of this section for information on installing an Operating System. We suggest, however, that you read through this section first.

If a problem shows up during the self-test you'll see a message on the screen. The message will include some indication of the problem discovered and tell you to use the Setup program.

Enter Setup



Press the <Ctrl> , <Alt> and <Esc > keys simultaneously to enter the Setup Utility program. It will display a screen with a list of the items it has corrected.

In this section the main objective is for you to understand what the standard entries are and what parts you can or might need to modify.

There are two pages: Hardware Configuration and Power Management.

At the bottom of the each page is a menu which tells you which keys to press to activate various functions of the program. These are:

- Up, Down, Left and Right Arrows - to move between the different fields.
- Ins and Del - to change the settings.
- F2 - to advance to the next page of the Setup.
- F10 - to call up the Save/Exit sub-menu.

Default Settings

To call up the default settings, press <F9>.

The Hardware Configuration page is shown opposite.

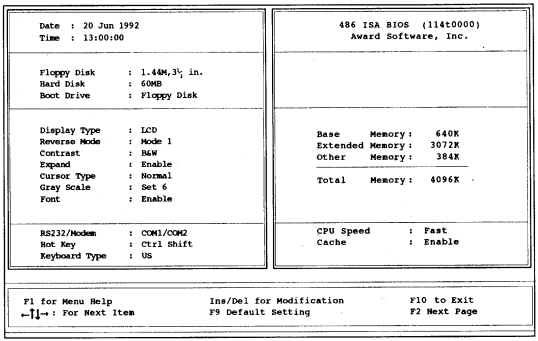
Exiting the Setup Utility reboots the computer.

The Save/Exit Dialog Box

You can exit the Setup utility anytime you want, with or without saving any changes you've made. When you press the <F10> key while you are in the Setup utility, a dialog box with the following choices appears:

- F5 - to save any changes you've made and reboot.
- F1 - to reboot without saving changes.

Both choices cause the computer to restart and go through the self-test.



Page 1: Hardware Configuration

This part of the Setup utility creates the hardware record used by the computer during the self-test. It is divided into six areas. Some of the entries are automatically detected by the computer.

Date and Time

The first two lines of information are for the current date and time. You should make sure they are correct. If you need to change them, highlight the entry and use the Ins and Del keys to change the value. These values will remain changed even if you do not save the new Setup information.

Disks Settings

Floppy Disk

The fixed setting is 1.44MB, 3 1/2 in.

Hard Disk

The size is automatically detected by the system.

Boot Drive

This selects which drive the computer boots from. There are two choices:

Floppy Disk The computer will boot from the floppy disk drive. If there is no disk, then it will boot from the hard disk.

Hard Disk The computer boots directly from the hard disk.

The default is **Floppy Disk**.

Display Settings

Display Mode

This has no options, it is set on VGA mode. In this case, "VGA" includes the SVGA extended mode option of 800 x 600 for an external video monitor.

Display Device

This setting allows you to choose which display or combination you are using:

LCD enables the LCD only.

CRT enables an external monitor only.

Simulscan enables both the LCD screen and an external monitor.

The default is **LCD**.

Reverse Mode

This setting sets the LCD display mode in reverse. The choices are:

Mode 1	Reverse characters for text mode only - dark characters on a light background
Mode 2	Disables the reverse mode
Mode 3	Reverse for both text and graphic modes
Mode 4	Reverse dots for graphic mode only

The default is for a monochrome LCD is **Mode 1**. If you plan to run Microsoft Windows, don't change the default setting. For a color LCD it is fixed at **Mode 2**.

Contrast

This changes gray scale values to enhance contrast in text mode on the LCD screen. There are 5 modes.

Mode 1	Enables background enhancement
Mode 2	Enables foreground enhancement
Mode 3	Enables foreground & background enhancement
Auto Map	Disables contrast enhancement
B&W	Enables text mode attribute emulation (Black & White)

The default setting for a monochrome LCD is **B&W**. For a color LCD it is fixed at **Auto Map**.

Expand

This controls the vertical sizing of text and graphics to fill the LCD screen vertically to the maximum extent. The choices are:

Enable to occupy all of the LCD screen.

Disable to display outward from the center of the LCD.

The default is **Enable**.

This feature operates only when the "Display Device" is set to "LCD".

Cursor Type

This feature controls the height of the cursor on the LCD only. There are two options:

Normal The cursor height depends on the application you are using.

Full Height The cursor is set to full height, independent of any other values.

The default is **Normal**.

Gray Scale

This changes the gray scale mapping of the (R)ed, (G)reen and (B)lue color channels, which in a color display combine to form the displayed colors. This feature works in both text and graphics modes on the LCD screen. There are 6 modes. The default setting is **Set 6**.

You can cycle through the Contrast and Gray Scale modes using the commands described in Section 3.

Font Reload

This computer has two system fonts, one for the LCD screen and one to use if you attach an external VGA or SVGA monitor (CRT). The fonts are optimized for each type of display and only affect text mode applications. The LCD font has an 8 x 16-pixel character box and the CRT is 9 x 16. When you turn on the computer the system loads the LCD font. If you Enable this feature, when you switch from the LCD screen to an external CRT, the system will switch fonts. When you switch back to the LCD screen the system reloads the LCD font. If you Disable this feature the system will not switch fonts. If you use the LCD font with a CRT, the characters will be shorter.

Disable The system will not switch system fonts.

Enable The system switches between system fonts.

The default is **Enable**.

If you have an external monitor attached to the computer when you start up, the system will automatically use the CRT font. If Font Reload is NOT enabled and you switch to the LCD screen, there will be character spacing problems. You can avoid this by enabling the Font Reload feature.

Miscellaneous Settings

RS232/MODEM

The computer has one serial port and a modem port. The RS232/MODEM setting determines which will be COM1. The choices are:

COM1/COM2 the serial port is COM1

COM2/COM1 the modem is COM1

The default is **COM1/COM2**. For information about the base addresses and interrupts see Appendix B.

Hot Key

When using an external keyboard you can select a key combination to function as a <Fn> key. The choices are:

Ctrl Shift

Left Shift-Alt

Right Shift-Alt

Disable

The default is **Ctrl Shift**.

Keyboard Type

US and European extended keyboards have different numbers of keys. This function controls which type of extended keyboard the notebook's 80-key keyboard simulates. There are two options:

U S for a US keyboard.

Non-U S for European language keyboards.

This function must be set for the type of keyboard installed in your notebook.

System Memory Settings

Base Memory

The base memory is fixed at 640 KB.

Extended Memory

Extended memory is all memory over 1024KB. The size of the extended memory is automatically detected.

Other Memory

This is the upper memory block which is reserved for use by the system and is non-relocatable.

Total Memory

The total amount of memory installed is automatically detected by the system.

CPU Settings

CPU Speed

This determines the start-up speed of the CPU. The default is **Fast**.

Cache

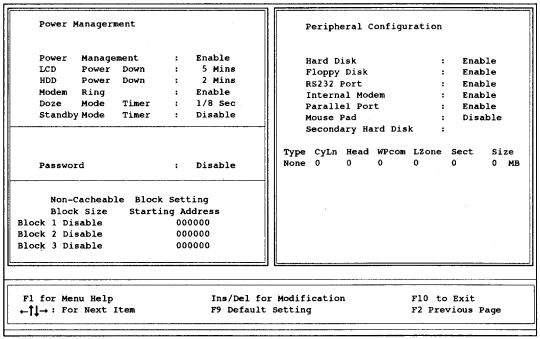
This setting allows you to enable or disable the 486DX/SX CPU's internal cache. The default is **Enable**.

Press F2 to go to the next page.

Page 2: Power Management

The second page of the Setup utility has control settings for the power management features and peripheral configuration features. It also has settings for the Password protection feature. The figure below shows the default settings for Page 2. An explanation of each entry follows. For more detailed information on the entire power management scheme refer to Section 3: System Operation.

Setup Utility
Page 2: Power Management



Power Management

This entry enables the Doze and Standby modes. You have to enable this for those features to work regardless of how they are set individually. The choices are Enable, Battery Only, or Disable. You can leave this enabled even if you are mainly using the computer with the AC adapter. The Battery Only setting enables power management only when you operate the computer on battery power without attaching the AC adapter. The default setting is **Enable**.

LCD Power Down

This setting defines how many minutes of keyboard, modem ring and display inactivity there can be before the LCD screen and its backlight automatically turn off. The choices are 5 Minutes, 10 Minutes or Disable. The screen and backlight will come on automatically if there is any use of the keyboard or mouse. The default is **5 Minutes**.

HDD Power Down

You can define how many minutes the hard disk can be inactive before it enters low power mode. You can choose from 1 to 18 minutes or disable the feature. The hard disk will automatically reactivate the next time it is accessed and the timer is reset. The default is **2 Minutes**.

If an optional docking station is detected all Power Management features are disabled.

Modem Ring

The system will switch to full power mode from the Standby mode if an incoming signal "rings" the modem port. This will only work if the Modem Port is enabled as noted later in this section. You can set this control to Enable or Disable. The default is **Enable**.

Doze Mode Timer

This setting activates the Doze feature. In the Doze mode the CPU speed slows down if there is no activity for a specified period. It comes back up to speed as soon as the display memory is used, an interrupt request is detected or an I/O port is used. There are 16 Doze timer options from 1/8 Seconds to 14 Seconds and Disable. The default is **1/8 Sec**.

This feature must be enabled for the Standby Mode Timer to work.

Standby Mode Timer

This setting defines how many minutes of continued inactivity there can be before the system automatically switches from Doze mode into Standby mode. The Power Management and Doze Timeout must be enabled for this to work. You can choose from 1 to 15 minutes or disable the feature. The default is **Disable**.

To use the Standby Mode Timer, the Doze Mode Timer must be enabled. Otherwise the Standby Mode Timer is automatically disabled.

Security

The next area has the setting for the password feature.

Password

Password allows you to password protect the Setup utility and system access. When this option is enabled you must enter the password to resume operation. The default is **Disable**.

If you want to use this feature you must set the password in advance. The password can be no longer than 8 alphanumeric characters. The shift, space and command keys are ignored. Type your password carefully because the characters won't appear on the screen and you won't be able to see any mistakes.

Non-Cacheable Memory
The non-cacheable memory feature lets you prevent the caching scheme from addressing certain areas of system memory
An example of why you might need to do this is if you have an expansion card that shares memory with the system. If you have an expansion card that does this, you'll probably need to designate the shared memory address as non-cacheable. Another possible situation is if you have software with special timing requirements. If the memory that the software needs to use is addressed by the cache the timing will change and the software may not operate properly. Refer to the software documentation for specific information. Commonly used software does not have this kind of constraint.

Non-Cacheable Block Setting

This feature allows you to protect three areas of memory from being used as cache.

To use this feature, first select the amount of memory you don't want cached. Start with Block 1 and select the size of the area (Block Size) in KB. The options are in fixed units that double in size, starting with 32KB and progressing through all available memory. The default for each block is **Disable**.

After setting the block size you must enter a hexidecimal starting address for that block. The default for each starting address is **000000**.

Peripheral Configuration

The right section of this page has the peripheral configuration settings. While some of these settings determine usage of some of the ports, others help further reduce power consumption.

Hard Disk

You can disable the hard disk to save power. If you do so, the system will ignore the hard disk drive. The default is **Enable**.

Floppy Disk

You can disable the floppy disk to save power. If you want to work with a floppy disk you must enable it for the floppy disk drive to work. The default is **Enable**.

RS232 Port

You can disable the serial port to save power. If you connect a device to this port later you must enable it in order for the device to work. The default is **Enable**.

Internal Modem

If you do not have the optional fax modem you can disable the internal modem port to save power. If you install a fax modem later you must enable this port for it to work. The default is **Enable**.

Parallel Port

You can disable the parallel port to save power. If you connect a printer or other device to this port later you must enable it in order for the device to work. The default is **Enable**.

Mouse Pad

This setting activates the internal Mouse Pad feature. If you are using an external mouse, this feature should not be enabled. The default is **Disable**.

Secondary Hard Disk

If you are using the optional docking station, it may have a secondary hard disk drive. If so, you must select the numbers that correspond to the specifications of the type of hard disk drive present. The size of the drive (MB) is automatically determined. Refer to the docking station's manual for more information.

2f. Operating Systems

An Operating System is the basic software that loads first after you turn the computer on and it goes through the self-test. The operating system forms the basic interface between you and the computer. It creates a basis for creating, organizing and managing files. This section has information on operating system options, installation and the hard disk.

About Operating Systems

All personal computers use a basic set of operating system software. The notebook is compatible with several possible operating systems. You may have purchased an operating system package when you bought the computer. If not, you will need to purchase one. The most common operating system for personal computers is Microsoft Corporation's MS-DOS™ .

MS-DOS

If you have used a computer previously you may already be familiar with MS-DOS. Since it is the most common operating system package for personal computers, most other operating system options are compatible with it.

There are many versions of MS-DOS. They are numbered sequentially and not all versions are suitable for use with this computer. If you decide to use MS-DOS with the notebook you must use Version 3.3 or later.

The Hard Disk Drive

This computer has a hard disk drive. You should install the operating system on the hard disk drive. All the newer versions of the most common operating systems can address the hard disk without dividing it. Check the manuals that come with your operating system package for information and requirements regarding this issue.

Installing An Operating System

As we've already seen, there are a variety of possible operating systems and versions you can install on the notebook's hard disk. It's therefore not really possible to explain exact details of the installation procedure here. Some packages have installation programs that lead you through the process. With other packages you copy most of the files to the hard disk manually.

Basic Requirements

No matter which operating system package you decide to use there are still some basic similarities in the installation process. These will include:

1. Setting the hard disk up for use
2. Installing the basic system files
3. Copying the remaining system files

You'll start with a set of floppy disks that are part of the OS package (you'll need 3.5" disks for this computer). Generally you'll use the first disk in the set to start the process. You insert the disk in the floppy drive and then turn the computer on. The computer will boot and load the system files from the floppy disk.

Follow the instructions in the OS manual and/or on the screen. It's best to review the printed documentation before you start unless you are already familiar with the procedure.

The Installation Procedure

Your operating system manuals will contain a complete explanation of how to install the system software. What we'll cover here is the general theory of the procedure. For the sake of example, we'll use MS-DOS terms here. Other operating systems will use the same or similar terms.

Setting Up The Hard Disk

Before you can install the system files you'll need to prepare the hard disk for use. Operating systems label hard drives alphabetically. The convention is that "A:" and "B:" are floppy disk drives and the hard disks start at drive "C:". The letters may indicate physically separate drives, or sections of a larger drive. These sections, called partitions, are referred to as "logical drives". This is because, although a logical drive works as if it is a physically separate drive, it is actually just another part of the same hard drive.

You will also need to assign the drive to which the system files will be copied. By convention this is usually drive "C:".

Before you can proceed you'll need to initialize the hard disk. In practice this does two things. It prepares the hard disk for use and as part of the procedure, the software you'll use will ask you to define how you want to divide the hard disk space. MS-DOS uses a program called FDISK to define the partitions and name the logical drives. Refer to the documentation that comes with your operating system package for instructions on how to use the program.

You must create at least one partition, even if it uses the entire disk. When you create partitions you have to give them a name according to the convention already mentioned. Start with "C:" and go on from there.

Formatting The Hard Disk

After you create a partition or partitions, you need to format them. In the process of doing this you'll also install the basic system files on in the "active" partition. The active partition is the one from which the computer will load the operating system.

In MS-DOS you use a program called FORMAT to do this. You have to format each partition, but you only install the basic system files in the active partition. The documentation will explain how to do this. In some cases an install program may automate the process for you.

Copying The Remaining Files

After you've completed the formatting procedures you'll still need to copy the rest of the system software files onto the hard disk. With some packages, for instance MS-DOS 5.0, this process may be part of the install program procedure.

If you need to do it manually, as for example with MS-DOS Version 3.3, you'll need to create a storage area called a directory to contain the files and then copy them into the directory.

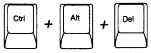
If you don't know how to do this, review your operating system manual on the subjects of making directories and copying files. The installation directions should explain the commands necessary to successfully install the rest of the system files.

Booting From The Hard Disk

After you've installed an operating system on the hard disk the computer is ready to use. Take any floppy disk out of the disk drive and then either turn the computer off and then after a few seconds back on, or press the following keys at the same time:

<Ctrl + Alt + Del>

Press these keys to warm-restart the computer



Pressing these three keys will warm restart the computer without running through the self-test again.

The computer will now start up from the hard disk drive and you should see either the DOS C:> prompt or the operating system shell, if your system has one and you installed it.

Application Programs

Once you have an operating program installed and running you'll need to install any application programs you want to use. The notebook can run the full range of IBM-compatible software including 32-bit software. This includes all types of word processors, spreadsheets, desktop publishing programs, utilities and games. The CPU takes full advantage of software written for 386 microprocessors. This will also allow you to run new 32-bit software that takes advantage of the CPU's special features.

The next section explains how to operate the computer.

Notes:

Section 3: System Operation

In this section we'll go over how to use the computer's controls. These include the following:

- Hardware controls
- Firmware controls
- Using the keyboard
- The power system

System Controls

Hardware Controls

There are two parts of the computer that have mechanical hardware controls on the case. These are the power switch and the floppy disk drive.

The Power Switch

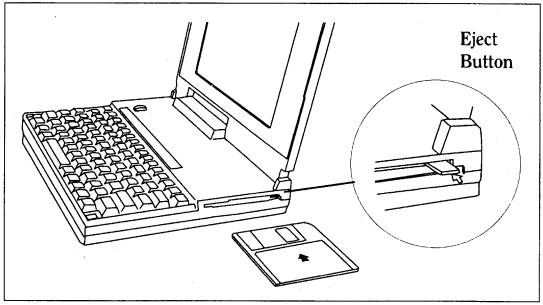
We've already gone over how the power switch works in the previous section. You push the switch toward the front for On and toward the back for Off.

Using The Floppy Drive

The floppy disk drive is designated as drive A. To insert a floppy disk, hold it so that the label is facing up and the metal plate is facing the computer. Push the disk into the disk drive until you hear a click. The disk eject button will pop out. The computer can now access the disk.

Inserting floppy disks

Don't leave a floppy disk in the drive when you transport the computer. The eject button sticks out with a disk in the drive and could break off.



To remove a floppy disk, make sure the drive is not active. The FDD light will flash if the drive is being accessed. If the light is flashing, don't remove the disk.

To remove the disk push the eject button on the drive in. The disk will pop out of the disk drive part-way and you can pull it out.

Firmware Controls

This computer makes extensive use of firmware (software permanently recorded in the computer) controls that you activate with special key commands. The commands control the LCD display, CPU speed and several miscellaneous functions. All the commands use the special Fn command key.

To use <Fn> key combinations on an extended keyboard, press the key combination you chose in the Hotkey section of the Setup Utility.

Display Controls

There are nine commands that influence the LCD display screen as explained below.

Contrast

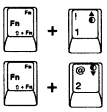
Command: Fn + 1 (Increase) or Fn + 2 (Decrease)

The keys are marked with the standard signs for contrast and direction arrows. Press the Fn key and then hold down the other key until the screen changes to the degree you require.

This function is disabled for TFT Color LCDs.

Your contrast and brightness settings are retained when you turn off the computer. The next time you start up they will be the same.

Contrast Controls

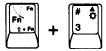


Increases contrast

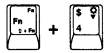
Decreases contrast

Brightness Controls

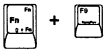
Increases brightness



Decreases brightness



Normal/Reverse Video



Gray-scale Remapping

Brightness

Command: Fn + 3 (Increase) or Fn + 4 (Decrease)

The keys are marked with the standard signs for brightness and direction arrows. Press the Fn key and then hold down the other key until the screen changes to the degree you require.

Norm/Rev - Normal/Reverse Video Switch

Command: Fn + F9

This command toggles the display between Normal (black on white) and Reverse (white on black) modes. In most cases you will probably want to leave it on Normal.

This function is disabled for color LCDs.

AutoMap - Gray-scale Remapping

Command: Fn + F6

Depending on which programs you use you may find that the program screen is somewhat difficult to see clearly. This is because the program interface colors are being converted to gray scales. In some cases the standard display mode does not give the best results and either the contrast is inadequate, or the R(ed), G(reen) and B(lue) color channels as converted do not give the sharpest image. Use this command to switch between the different sets of gray mapping available.

Hold down the Fn key and keep pressing F6 until the display is the way you want it. In text mode this will cycle through the 5 Contrast Enhancement modes and then through the 6 RGB Weighting modes. In graphics mode it will only cycle through the RGB Weighting modes.

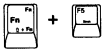
This function is disabled for color LCDs.

Strch - Center/Stretch Screen

Command: Fn + F5

This command will expand the screen image vertically to fill the entire screen.

Center/Stretch Screen



CRT/LCD - Active Display Switch

Command: Fn + F10

This command is a switch that defines whether the LCD, the external monitor or both are active. You can only use it if you have connected an external monitor as described in Section 4. If you use the display default (LCD) in the Setup Utility, when you hold down the Fn key and press F10 the command works as follows:

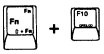
Press once for the CRT only.

Press twice to change to LCD and CRT.

Press three times to return to the LCD only.

If you set a different default display the cycle will change accordingly.

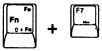
Active Display



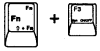
CPU Speed

Sets the CPU on high speed (TURBO)

Sets the CPU on slow speed (non-TURBO)



Speaker



CPU Controls

Command: Fn + F8 (High speed) or Fn + F7 (Low speed)

You can use the commands to change the CPU operating speed. In practice, you should always run at top speed unless you have a problem with some older software operating at the higher speed. There are very few programs with this problem.

You can also save power and extend a battery charge by using the low speed.

Miscellaneous Commands

There are several other commands, most of which are not labelled.

Spk ON/OFF - Speaker Switch

Command: Fn + F3

This command turns the speaker on and off. It is probably better to leave the speaker on unless you want to stop warning beeps from continuing after you are aware of them.

Condition	Press	Result	
Batt. Low & Warning Sound		Batt. Low & Warning Beep	System
Beeping	Fn+F3	Disable	Disable
Not Active	Fn+F3	----	Disable

Mouse Pad

If you haven't installed a mouse you can use this feature to emulate the functions of a PS/2 mouse using cursor and keyboard keys. **This feature only works on the internal keyboard and should not be enabled if you have attached either a serial or PS/2 external mouse.**

To use the Mouse Pad you must enable it in two steps:

1. Set the Mouse Pad to "Enable" on Page 2 of the Setup Utility. Save the new configuration and exit the Setup Utility.
2. Press <Fn + F1> to turn on the Mouse Pad. Pressing the combination again turns it off.

Once enabled, you can use the cursor control (arrow) keys to move the cursor in the four directions indicated or press two keys simultaneously to move the pointer diagonally:

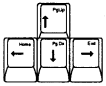
Up	moves the cursor up
Down	moves the cursor down
Left	moves the cursor to the left
Right	moves the cursor to the right
Up + Left	moves the cursor diagonally to the upper left
Down + Left	moves the cursor diagonally to the lower left
Up + Right	moves the cursor diagonally to the upper right
Down + Right	moves the cursor diagonally to the lower right

Before you can use the MousePad, you must first install the MousePad driver. This driver is located on the Utility disk which comes with your computer.
See page 3-24 for information on how to install the MousePad driver.

To turn on the Mouse Pad

Toggles between the Mouse Pad and the arrow keys.

Cursor Control Keys



The page movement functions are unaffected by the Mouse Pad feature and are still usable when it is active. You still need to press <Fn> to access them.

Mouse Button keys

Left button / drag function off

Right button / drag function off

Drag function on/off

The mouse buttons are emulated as follows:

Del	for the Left mouse button, turns off drag function (Ins)
Right Shift	for the Right mouse button, turns off drag function (Ins)
Ins	toggles the drag function on and off.

To use the <Del> key function when the MousePad is active press <Fn+Del>.

There are 4 cursor movement speed modes available. Mode 1 is the slowest. The following arrow key combinations control the speed:

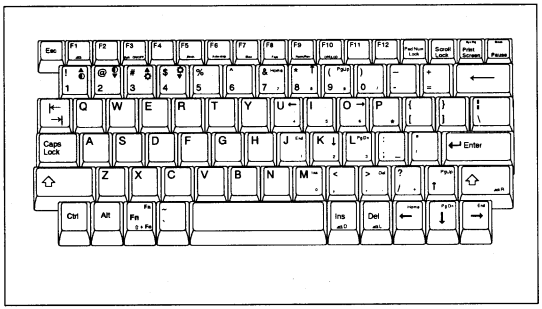
Up + Down	speeds up cursor movement
Left + Right	slows down cursor movement

The default speed is Mode 2.

Pressing all four arrow keys simultaneously enables the "accelerated"mode. The default is disabled.

3b. The Keyboard

The keyboard layout is shown in the following illustration. The keyboard consists of four groups of keys: typewriter keys, function keys, control keys and numeric keypad.



Keyboard

For European language keyboards:

is replaced by

which allows access to the third character on keys that have one.

On a non-American keyboard, the characters of the key to the left of the <1> key on an extended keyboard are embedded on the key to the right of the space bar. The extra key on European language keyboards is moved to the left of the spacebar.

The Typewriter Keys

The Function Keys

The Typewriter Keys

The keys in the typewriter area are arranged in basically the same manner as a standard typewriter keyboard. The typewriter area also contains some keys used exclusively for computer functions. These are the CTRL (Control), ALT (Alternate), Fn (Function) and Caps Lock keys. The functions of the CTRL and ALT keys are determined by the software in use. Consult your software user's manuals for explanations of how they use them.

The Caps Lock key corresponds to the Shift Lock key on a typewriter with one important exception. The Caps Lock key only affects letter keys. In order to enter the symbols above the number keys and alternative punctuation marks the Shift key must still be pressed.

Note that when the Caps Lock key is engaged the Caps Lock status light comes on. Pressing the Shift key and typing a letter at this time will result in a lower case letter rather than an upper case letter.

The Function Keys

There are 12 dedicated function keys located across the top edge of the keyboard. They are labeled F1 to F12. These keys are used in many different ways, depending on the operating system and software in use. They are also programmable. See your operating system and software user's manuals for detailed information.

Control Keys

The control keys are divided into Miscellaneous Control Keys and Cursor Control Keys.

Miscellaneous Control Keys

The miscellaneous control keys include Ins, Del, Print Screen/SysRq, Pause/Break, Num Lock and Scroll Lock.

Ins

The Ins key is used in editing and word processing programs to insert material into a text passage.

Del

The Del key is used to delete data by a wide variety of software programs.

Print Screen/SysRq

Pressing this key will cause whatever is on the screen at the time to be printed. Note that in some software programs, this key may be used in conjunction with other keys for other specific functions. Consult your software user's manual for information.

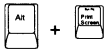
To use SysRq, press the <Alt> key and Print Screen/SysRq together.

Insert

Delete

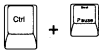
Print Screen

SysRq



Pause

Break



PadLock

Padlock must be on in order to activate the numeric keypad.

Num Lock

Pause/Break

This key temporarily halts operating system scrolling operations such as disk directories that occupy more than one screen. It performs the same function in many software programs such as dBase or WordStar. Pressing any other key will resume the scrolling operation.

To use Break, press the <Ctrl> key and Pause/Break together.

PadLock

Press <Fn> and <PadLock> to activate the embedded keypad. The alternative value for each key of the keypad is printed in blue on the upper right of the key. The PadLock functions will be active until you press <Fn + PadLock> again.

You must also use PadLock to activate the embedded numeric keypad.

Num Lock

This key is used to activate the numeric function of the keypad.

PadLock must already be active for this function to have any effect.

Scroll Lock

Located at the upper right-hand corner of the keyboard. In some text mode applications Scroll Lock may affect cursor movements and text scrolling.

Caps Lock

This key locks letters in their upper case in much the same way as on a standard typewriter. However it only works on the letters. Numbers and function keys are not affected.

Alt Gr

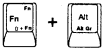
For European keyboards this key accesses the third character for those keys that have it.

To use Alt Gr, press the <Fn> key first and then an <Alt> key combination.

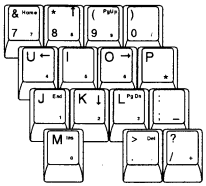
Scroll Lock

Caps Lock

Alt Gr



Embedded Numeric Keypad



The Embedded Numeric Keypad

An embedded numeric keypad is included in the keyboard. It is arranged the same as the keypad on an extended keyboard, with both numeric and cursor movement functions. This feature makes number intensive input more convenient. The numeric assignment of each key is printed in blue on the lower right of each key. The cursor assignments are on the upper right of each key.

You can turn the keys on or off with the following combinations:

PadLock	NumLock	Shift Key	Keypad (result)
On	On	Pressed	Cursor
		Off	Numeric
	Off	Pressed	Numeric
		Off	Cursor
Off	On	Fn + Shift	Cursor
		Fn	Numeric
	Off	Fn + Shift	Numeric
		Fn	Cursor

The Cursor Control Keys

Arrow Keys

The cursor control keys, located at the lower right corner of the keyboard, each have an arrow on them. The cursor will move in the direction indicated by the arrow when a cursor control key is pressed. When the Mouse Pad feature is enabled and in some software programs, the cursor control keys have alternative functions, e.g. selecting options or exiting an operation. Consult your software user's manual for details.

Page Keys

The alternate functions of the arrow keys are marked on the side of each key. You activate the alternate function by holding down the Fn key while you press the key you want to use. These functions are not affected by the Mouse Pad feature described earlier. The alternate functions are:

PgUp - Page Up

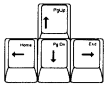
PgDn - Page Down

Home

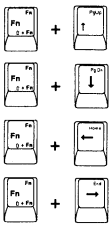
End

These functions are most commonly supported by word processing programs. The page up and down keys move the cursor a page at a time. The home and end keys move the cursor to either the beginning or end of the file or line you're working on.

Cursor Control



Page Keys



3c. Power Options

This section contains information on the power system. The system is comprised of two parts, the AC adapter and the battery system.

The AC adapter has two functions. It converts AC power from a wall outlet into the DC power used by the computer. The adapter also charges the battery pack in the computer.

The battery pack is a set of batteries in a plastic shell. The pack inserts in the battery compartment under the keyboard.

In this section we'll go over how to use the power system and explain the power saving features that are built into the computer.

AC Power Operation

The AC Adapter's provides power to the computer. We've already seen how to connect it to the computer in Section 2. When the adapter is connected to the computer it provides power to it as long as it is plugged into an outlet.

The adapter has an LED indicator light built in. The light will come on when you plug the adapter into either a 115V or a 230V AC power source. If this light does not come on the adapter may not be properly connected or may have a problem.

When you connect or disconnect the power lead, hold it by the connecting jack, not the cable.

You can connect the AC power cable to the computer while it is turned on and running on battery power. Make sure the computer is turned off before you attach the power cable if you are using the computer without the battery installed.

Battery Operation

The removable battery inserts in a compartment under the keyboard. The battery is already installed in the computer when you unpack it. A fully charged battery will provide approximately 2.5 hours of use before requiring a charge or replacement. You can purchase additional batteries.

The Battery & Power Management

You can extend how long you can work on one battery charge by using the computer's built-in power management features. We've already gone over the power management settings that are in the Setup Utility. You can adjust the standard settings to accommodate how you like to work. These features will activate automatically.

Remember, you can conserve additional power by temporarily disabling the serial and parallel ports and the modem port, if you have the fax modem installed. Make sure to turn the ports back on before you try to print or use the serial port. The power management modes mentioned below are explained fully in the section following this one.

The system won't go into Standby mode while the system is accessing a disk drive. If you press the Standby button the effect will be postponed until the system is inactive.

Standby Mode

Other than the automatic features, the main way to extend the life of one battery charge is to avoid leaving the computer operating at full power when you are not actively using it. You can manually activate full power saving at any time by pressing the Standby button.

Get in the habit of pressing the button anytime you stop actively using the computer. You'll end up saving more power than you might think. To reactivate the computer push the standby button again.

Battery Low

When the battery is starting to run low the CHARGE light will start to flash 1 time per second and the speaker will beep 2 times every 10 seconds. This means you have a maximum of 15 to 25 minutes of power left.

Plugging in the AC adapter will stop the warning and start charging the battery.

Battery Warning

The LED flashes 2 times every second and the speaker beeps 4 times every 10 seconds. When this happens you should save your work and attach the AC adapter. You can then resume your work. You should have about 3 minutes of operating power left in which to do this. Attaching the AC adapter will turn off the warning.

Charging The Battery

The AC adapter charges the battery whether the computer is turned on or off. To charge the battery do as follows:

1. Make sure there is a battery pack in the compartment.
2. Attach the AC adapter to the computer as described earlier.
3. Check that the light on the adapter is on.

   If the light is on and constant the battery has started charging.

   If the light does not light this indicates a problem. If this happens, check that all connections in the chain are secure. If you can't locate a problem do not attempt to charge the battery. Consult your dealer for instructions.
4. Charge the battery for approximately 2.5 hours.

   Charging from a fully discharged battery takes approximately 2.5 hours for a battery pack. Always charge the battery completely if possible.

If you purchased one, you can use the optional battery charger instead of leaving the battery in the case. Refer to Section 4 for more information on how to do this.

There is a sensor safety feature that stops the charging when the battery is fully charged.

Extremes of temperature will cause the battery to lose its charge more quickly and can reduce overall battery life. See Appendix B for information about environmental tolerances.

To maintain optimum performance, you should deep discharge the battery regularly.

Deep Discharging The Battery

When you use the battery and repeatedly recharge it, after a period of perhaps 6 to 8 weeks you should completely discharge the battery and then completely recharge it. This ensures that the battery will give you optimum performance and always take a full charge.

If you notice that the battery life seems to be decreasing you should do this as soon as convenient.

You can deep discharge the battery in two ways.

1. Run the computer over night on battery power.

2. If you have purchased the optional battery charger, you can use its discharge function before charging the battery.

The Power Management System

The power management features for this computer are designed primarily to provide power saving measures while you are operating the computer on battery power. We've already seen how you can set control options for these features in the Setup Utility program. This section explains all of the features, what they do and how they work.

Your computer operates in one of three modes, Full Power, Doze and Standby. When you are using the computer it is in Full Power mode. The Doze mode activates the second level of power saving. Standby mode provides maximum power saving. Both of these modes inactivate the computer. When you start to use the computer again it returns to Full Power mode.

Full Power Mode

When the computer is operating in Full Power Mode there are still some power saving features operating behind the scenes. If you have disabled hardware that you aren't using you've already reduced the net power demand.

Powerdown Modes

You can save additional power when operating in Full Power mode by using the "powerdown" features. As we've seen in Section 2, the default power management settings allow you specify a period of time after which the LCD screen, its backlight and the hard disk will turn off. The default setting is for five minutes for the LCD and 2 minutes for the hard disk drive. When you use the keyboard or move a mouse or other input device again the LCD and backlight will turn on.

The hard disk doesn't actually turn off. The part inside that spins (and uses the most power) "spins down" (turns off) when the time limit is reached. The next time the system accesses the hard disk it "spins up" to full activity.

When the computer resumes full power operation after being in another mode, the hard disk also does not come back on until the next time it is accessed. This both saves power and prevents a sudden drain on the battery as the system comes back up which could drain the battery more quickly.

Doze Mode

You can set the timer for the Doze mode in the Setup. The default setting slows down the CPU's clock after 1/8 second of inactivity. It returns to full speed as soon as the keyboard or display memory is used.

Standby Mode

You can put the computer in Standby mode by pressing the Standby button or by closing the cover. It will also switch to Standby mode automatically if you have set it to do so, or are using the default power management settings in the Setup Utility. The default setting is disabled but you can set it to between 1 and 15 minutes. Before the computer switches to Standby mode, the "Standby LED" flashes and whatever you are working on is preserved. When you switch back to full power operation the system comes up exactly as it was before.

The Standby LED flashes once a second when the computer is in Standby mode.

When the system is in Standby mode the following things happen:

1. The processor clock slows down.
2. The LCD and backlight turn off.
3. The hard disk spins down.
4. All keyboard LED indicators turn off.

The Standby indicator light flashes once per second when the computer is in Standby mode.

Exiting Standby Mode

To get out of Standby mode press the Standby button or open the cover. The "Standby LED" will flash and the system will immediately resume full power operation except for the hard disk which will resume the next time it is accessed.

Other Considerations

Battery Charging & Recharging: You can charge the battery while the system is in Standby mode.

Cover Closed Switch

The Standby button also has another function. If you close the computer with the system in full power mode the following happens:

1. The system enters the Standby mode immediately, if Power Management is enabled.
2. The system will beep three times every 2 seconds.

When you open the cover it will exit the Standby mode.

3d. Additional Software

In addition to the utilities and display driver software already mentioned, there is other software included on the disk:

MousePad Driver

To use the MousePad feature described earlier, you must install the MousePad driver.

To install the MousePad driver:

1. Create a new directory on your hard disk (e.g. C:\Mouse).
2. Copy the driver file, "gmouse.com" and its document file, "readme.doc" from the "System" directory on the utility floppy disk to the new directory.
3. Switch to the new directory on the hard disk.
4. Type "gmouse" at the command line and press <Enter>.

At this point the mousepad driver will load and remain active until you reboot or turn off the computer.

After you've installed the mousepad driver on your hard disk, you may want to setup your system to automatically load the mousepad driver every time you reboot the computer. To do this, use a text editor to add the path to your hard disk mouse directory to your AUTOEXEC.BAT file, for example:

```
C:\MOUSE\gmouse
```

Save this new AUTOEXEC.BAT file and reboot your computer.

Refer to page 3-7 for an explanation of how to use the Mouse Pad feature.

3e. Operation Summary

As an end to this section we've provided a summary of the operating key commands, warning beeps and indicator light states for quick reference.

Key Commands

Control	Key Command
Screen Controls	
Increase Contrast	Fn + 1
Decrease Contrast	Fn + 2
Increase Brightness	Fn + 3
Decrease Brightness	Fn + 4
Normal/Reverse Video	Fn + F9
AutoMap Gray-scale Remapping (Contrast Enhancement/ RGB Weighting)	Fn + F6
Center/Stretch Screen	Fn + F5
Active Display	Fn + F10
Mouse Pad	
Mouse Pad ON/OFF	Fn + F1

Keypad

Numeric Keypad On	Fn + Pad/NumLock

CPU

CPU High Speed	Fn + F8
CPU Slow Speed	Fn + F7

Speaker

Speaker ON/OFF	Fn + F3

Miscellaneous

Warning Beeps

Battery Low	2 beeps every 10 seconds.
Battery Warning	4 Beeps every 10 seconds.
Cover Closed	Beeps 3 times every 2 seconds.

Indicator Lights

Mode	**LED**
Standby	Standby flashes once a second
Batt Low	Flash once a second
Batt Warning	Flash twice a second

The next section has information on expanding your notebook with optional upgrades and other equipment.

Notes

Section 4: Expansion Options

In this section we'll go over ways you can add equipment to expand the capabilities of your computer. There are several expansion options available from your dealer. These include an internal fax modem, system memory expansion modules and the expansion module/box combination. In addition, we'll cover the requirements for connecting standard desktop computer equipment that you may already have or might want to purchase to enable you to use the computer as a desktop unit.

The expansion options are described first and followed by an explanation of how to install them.

4a. Internal Options

System Memory

The notebook comes configured with 4MB of RAM on board. The notebook also has two sockets for 2MB or 8MB proprietary memory modules. In various combinations you can raise the total RAM from a 4MB base configuration to 8MB or 20MB.

The proprietary RAM modules fit into easily accessible sockets on the main-board of the computer.

Fax modem Card

The notebook has space for an optional Hayes compatible 9600 baud fax and 2400 baud internal modem. If installed, this card uses the built in LINE IN and PHONE fax modem ports located at the rear of the notebook.

Installing Internal Options

The installation procedures described below are relatively simple however if you have any doubts about you abilities to perform them, consult your dealer.

Before installing any internal options, first make sure that the system is turned off and that you observe anti-static precautions.

Static electricity can damage your equipment but can easily be avoided as follows:

1. Keep your expansion option in its protective anti-static packaging until you are ready to install it.

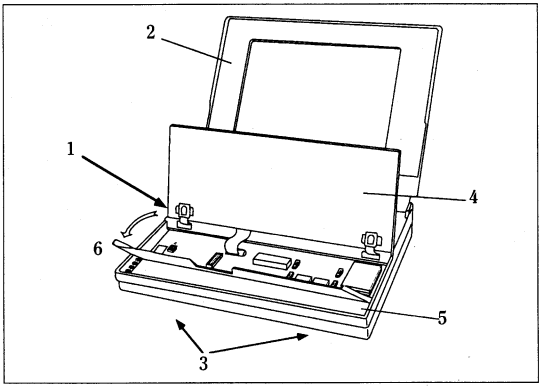
2. Ground yourself by wearing an anti-static wrist strap or by touching a grounded metal object such as a water faucet.

The sockets for the internal expansion options are on an easily accessible part of the notebook's mainboard. To get to them:

1. Raise the keyboard.

2. Remove the battery.

3. Pull the edge of the mainboard access panel closest to the LCD toward you.



Opening the upgrade compartment

1. Make sure the computer is turned off and unplugged.
2. Raise the LCD screen fully.
3. Slide the latches under the front edge outward to release the keyboard.
4. The keyboard will pop up slightly. Grasp it by the corners and tilt it back towards the LCD screen.
5. Remove the battery pack by pulling up on the tab on its right end.
6. Lift the top edge (closest to the LCD) of the upgrade compartment access panel towards you.

Installing Memory Modules

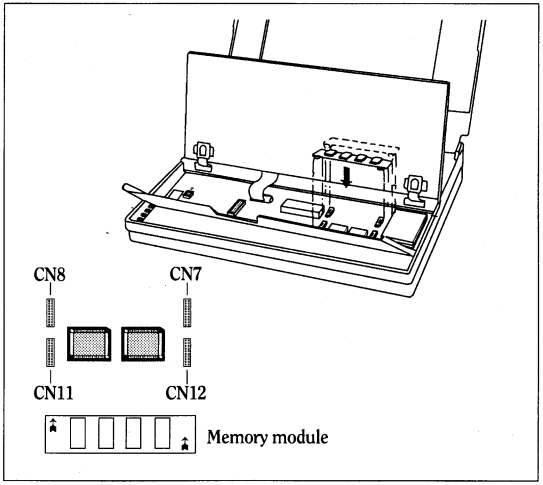
This computer comes configured with 4MB of system memory onboard. Additional memory is available in 2MB or 8MB proprietary memory modules. Each module fits into a pair of sockets.

The modules plug into connectors on the main circuit board. There are two connectors for each module. Plug the modules into both CN7 and CN8 and into connectors CN11 and CN12. You must use both sets of connectors. Refer to the diagram on the next page to see where these are.

The following tables show the possible memory combinations for each of the notebook's configurations.

4MB Base Configuration:

Total Memory	Connectors 1st Set	2nd Set
8MB	2MB	2MB
20MB	8MB	8MB



Installing Memory Modules

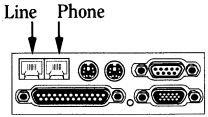
The upper side of each memory card has direction arrows. These must point towards the LCD screen as you make the installation.

When you expand memory, you must install a memory module in both connector set CN7 & CN8 and in set CN11 & CN12.

1. Make sure the arrow on the top of the memory module is pointing towards the LCD.
2. Align the connectors on the underside of the module with the corresponding connectors of the bank you are installing.
3. Press the module into the connectors.

Installing a Faxmodem Card

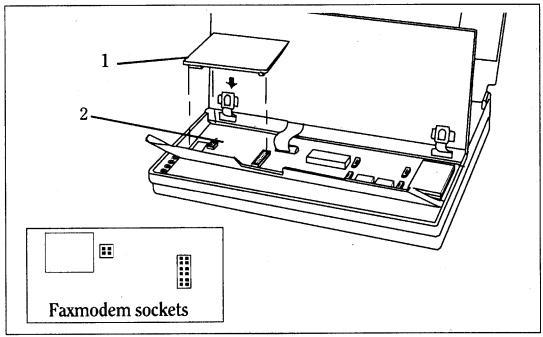
1. Align the connectors on the underside of the card with the two corresponding connectors below.
2. Press the card into the connectors on the board.
With the North American model you can use both the Line and Phone connectors. Connect the telephone line to Line and, optionally, a telephone handset to Phone.



There is a separate European model of the Faxmodem. Please see page B-34 for instructions.

Installing a Faxmodem

The faxmodem card plugs into two connector sockets on the left side:



There are three Faxmodem models available:

	Modem	Fax
1.	2400bps	9600 send, 2400 receive
2.	2400 bps	9600 send, 4800 receive
3.	2400bps	9600 send, 9600 receive

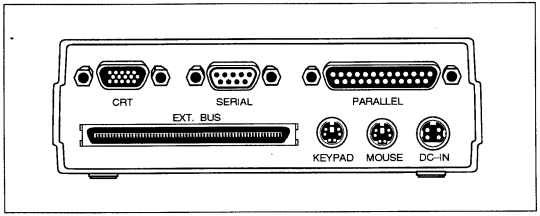
4b. External Expansion Options

The compact size of all notebook computers limits the internal space available for expansion. This section is about how to overcome this problem with the external expansion options. These are the external expansion module, connecting cable and expansion box.

If you want to use expansion cards you will need to use the system expansion box. The expansion box itself connects to the expansion module through a connecting cable. The module in turn attaches to the system expansion port at the rear of the computer.

The expansion module has two functions. It has a connector for the expansion box cable, and it duplicates the I/O ports on the computer. When you attach the module, the other ports are deactivated.

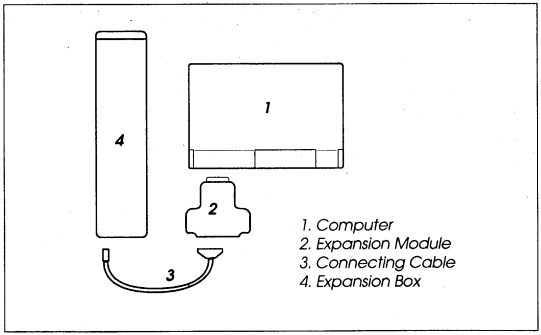
Expansion Module Ports



The expansion module can be used without the expansion box. You can connect whatever peripherals you use at your main location to the module rather than the computer. When you want to take the computer somewhere else, you can unplug the module, leaving your peripherals connected. Upon returning, to set up your main system, you only need to plug the module back on.

Connecting the External Expansion Box.

1. Make sure everything is turned off and unplugged.
2. Attach one end of the connecting cable to the external expansion box.
3. Attach the other end of the connecting cable to the expansion module.
4. Attach the expansion module to the system expansion port at the rear of the computer.
5. Connect the expansion box AC adapter to the box and plug it in.
6. Reconnect the notebook to its power supply and turn it on.



The expansion box comes with its own power supply, AC adapter and a connecting cable. To install an expansion card:

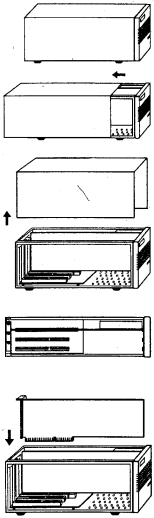
1. Observe anti-static precautions.
2. Open the box by removing the screws on the rear panel and sliding the cover back then lifting it off. Save the box's screws.
3. Setup the card according to its manual.
4. Install the expansion card:

   a. Remove the slot cover corresponding to the position of the expansion slot you want to use. Save the slot cover's screw.

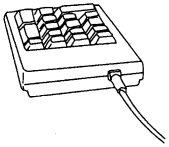
   b. Insert the card in the expansion slot. As you do so, keep it at a 90° angle to the base of the box with the edge connectors aligned to the slot.

   c. Using the slot cover's screw, attach the mounting bracket of the card to the frame where you removed the slot cover.
5. Replace the box cover and secure it with the screws you removed in Step 2.

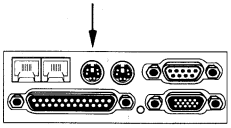
Installing an Expansion Card



External Keypad



Keypad/Keyboard

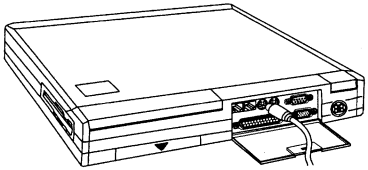


The External Keypad

If you do work that requires frequent use of the numeric keypad, you may want to get the optional external keypad. The keypad connects to the KEYPAD port on the rear panel. It duplicates the function of the embedded keypad using full size, full-travel keys in the same layout as the numeric keypad on a 101/102 keyboard.

To connect the keypad, make sure the computer is turned off and then plug the connector cable into the keypad port.

If you connect an external keypad, the embedded keypad is automatically disabled. Use the NumLock key on the external keypad to enable it.



Plug the external keypad into the port shown

The Quick Charger

If you frequently depend on battery power you may want to get the optional quick charger. You can use it either with or without the computer's AC adapter:

Connected to the AC adapter:

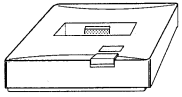
- When you put the battery pack in it will automatically start to charge. The small LCD indicates how much of the battery remains to be charged.
- Pressing the button below the LCD will discharge the battery.

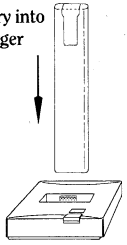
Without the AC adapter:

- When you put the battery pack in it will automatically discharge.

Use the quick charger with the power adapter to charge the battery. Use it unplugged to completely discharge it.

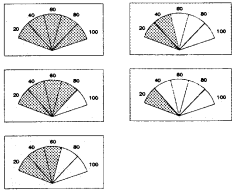
Plug the battery into the quick-charger





The LCD "fan" on the quick charger flashes "20" when the adapter is plugged in and empty. When the battery is fully charged the full LCD fan and the letter "F" flash. If you unplug the charger while the battery is charging or fully charged, it will not discharge and will continue to display its status. When you plug it in again it will reset the protective timer and start charging.

The Battery Quick-Charger



4c. Optional Desktop Equipment

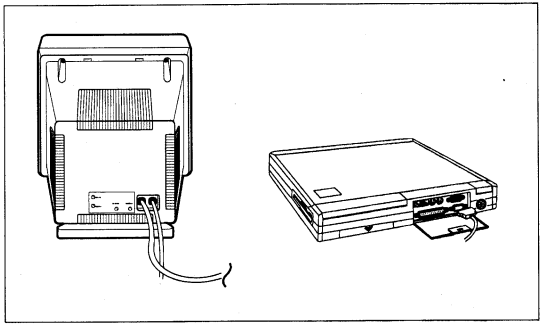
You can use your computer much like a desktop computer by using desktop components with it. By attaching a full size monitor and keyboard you can have, effectively, a desktop computer. This will allow you the full function of a color desktop system, while still providing all the benefits of a notebook computer. It will also save wear on the notebook components.

The rest of this section explains how to connect these devices to your computer.

Connecting a Desktop Monitor

You can use any analog VGA, Super VGA or multifrequency monitor with this computer. The built-in display adapter supports resolutions of 640 x 480 (16 colors) and 800 x 600 (16 colors). In practice, this means that you can use a monitor with a screen up to 17 inches. Although any monitor that meets the required specifications can display either mode, 640 x 480 is optimal for 13 or 14-inch monitors and 800 x 600 for 16 or 17-inch ones. It is possible to use the 800 x 600 mode on a 14-inch monitor, although you may find the text size too small.

The procedure for connecting a desktop monitor is explained below.



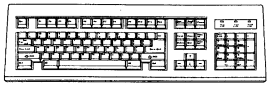
If you want to use the standard mode of 640 x 480 (16 colors) you can use the monitor without further action. To use the other display modes you will need to use the display drivers provided on floppy disk. Refer to Appendix A for information on how to use them and the applications supported.

Attaching an External Monitor

1. Position the monitor in a comfortable viewing angle.
2. Attach the monitor's 15-pin female analog connector to the monitor port on the computer.
3. Connect the monitor to a suitable power source and turn it on.
4. Turn on the notebook.
5. Use the Active Display key command to switch from the LCD to your external monitor.

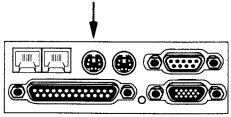
Hold down the Fn key and press the F10 key to activate the external monitor. Press the same combination again to go back to the LCD screen.

Extended Keyboard



You should not use both keyboards at the same time.

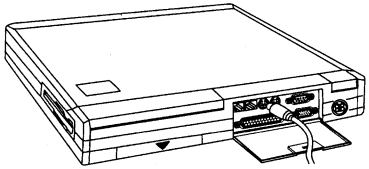
Keypad/Keyboard



Connecting An External Keyboard

If you want to use a full-size 101/102-key keyboard, it must have a PS/2-type mini-DIN connector. You can use an adapter cable if the keyboard you want to use has the larger type of connector commonly used with most desktop PCs.

Plug the keyboard jack into the KEYPAD connector on the rear panel.



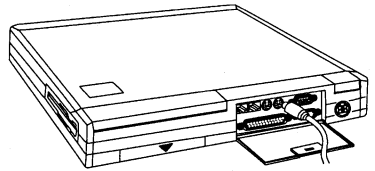
Plug an external keyboard into the port shown

Pointing Device

If you want to use a mouse or other pointing device such as a graphics tablet or a trackball you can attach it to either the SERIAL port or the MOUSE port.

However, you cannot have two pointing devices attached at the same time. If you want to use a serial pointing device and you already have a device attached to the PS/2 MOUSE port, first detach the old device and then install the new. The same procedure applies if you want to attach a pointing device to the MOUSE port.

If you want to attach a mouse to one port and a non-pointing device to the other port, then this restriction does not apply.



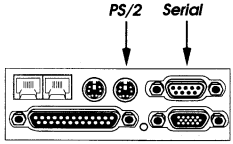
Use the mouse port for a PS/2-type mouse only

Mouse

Attaching a Pointing Device

1. Make sure the computer is off.
2. If the pointing device has a PS/2 compatible mini-DIN jack, plug it into the MOUSE port. If it has a serial connector, attach it to the SERIAL port on the computer.
3. Turn on the notebook.

Connecting a Mouse



Notes

Section 5: System Care

This section has some suggestions on what you can do if your computer develops problems. Afterwards there is some information on maintaining your computer.

5a. Troubleshooting

In this section we'll review some of the problems or seeming problems you might encounter while using your computer system. This section is not meant to be a technical reference or a guide to repair. The questions raised here are more general in nature. If you think your computer has a serious problem you should consult your dealer.

General Considerations

In general, if you find your computer is not operating as you would expect it to, you should first check a few things:

1. Have you set up the computer system and any additional equipment according to the instructions in the relevant manuals?

   Make sure you have made all necessary settings and installed any software required for proper operation.

2. Is all your equipment properly connected?

   Loose connections are often the source of problems.

3. Is everything plugged into to a power source, if necessary, and turned on?

If you check these things first you are likely to find that they are often the source of the problem.

Specific Problems

Problem: When you turn on your computer, nothing happens.

Options:

1. Ensure that your battery is installed correctly and that it is charged.
2. If you are using the AC adapter, make sure that it is attached to the computer correctly and plugged into an electrical outlet. If you still have problems, contact your dealer.

Problem: You switched on the computer and it seems to be working, but the screen stays blank.

Options: First make sure that the screen controls are set correctly, for instance, not turned to the most extreme settings.

If you are using an external monitor, check to see that it is turned on and all the connections have been correctly made and are not loose—the monitor cable to the video port, and the monitor's power cord into an AC outlet. If the connection looks alright, make sure you have activated the external monitor port by using the Fn + CRT/LCD (F10) command.

Problem: The screen on your external monitor is flickering too much.

Options: Check that the connection between the monitor and the computer is secure. If you are using an 800 x 600 driver, your monitor may not support this mode without flickering. Try using the standard 640 x 480 mode.

Problem: Nothing happens when you try to use the embedded numeric keypad, or you get numbers when you want to make your cursor move in a desired manner.

Options: There are several ways to activate the embedded keypad. You may have accidentally activated the either the 'pad' or the 'numeric' features. Check the status lights and if you are still having problems, refer to Section 3 for more details.

Problem: Why won't the computer read a floppy disk when you put it in the disk drive?

Options: Make sure the disk is completely inserted in the drive and that the eject button is sticking out. If it's a new disk, make sure you haven't forgotten to format it first. If you're trying to boot up from the floppy drive, make sure that the disk you are using has the necessary system files on it. If you know that the disk you are using contains program or data files, but the floppy drive does not seem to recognize this fact, you can try to recover the files with a disk maintenance utility program.

Problem: The hard disk drive does not seem to work.

Options: Check to see that the hard disk has been correctly formatted. Do not use FDISK or FORMAT the hard disk unless you know you absolutely have to. If you've already been using the hard disk for some time, it is possible the hard disk may be damaged to some degree. As in the preceding question, it may be possible to recover the files and also review the condition of the disk by using a utility program such as the Norton™ or Mace™ utilities.

Problem: After it boots, the computer just sits there and does nothing.

Options: You are using MS-DOS or a compatible OS which is a command-line driven operating system. The computer will not do anything unless you type in a command at the blinking cursor. If you were expecting something more to happen, such as a DOS shell or MS-Windows to load, and it doesn't, check your AUTOEXEC.BAT file and make sure it is executing properly. Consult your OS manual for more information.

Problem: Your printer is connected but it either won't print or the output looks strange.

Options: Your printer is not supported by the application you're using. You may need to copy some printer files onto your hard disk. Check the manual of the application and your printer manual. Also, check that the parallel port has been properly configured in the Setup Utility.

Problem: You had additional memory installed but don't seem to be able to use it.

Options: System memory above 1024KB (1MB) is not used directly by the MS-DOS operating system and therefore is not used by many programs without first configuring the memory. You may need to configure a program to use additional memory as either extended or expanded memory. How you do this will depend on the applications you are using.

5b. Maintenance

There is very little you are likely to need to do to maintain the Notebook. There are no user serviceable parts inside. In this section we'll go over a few of the general precautions and measures you can take and then focus specifically on the battery system.

General Precautions

Follow these steps and you will increase the functional lifetime of your computer and reduce the chances of damage.

- Do not use the computer in a damp environment or allow it to get wet.
- Make sure that the computer is turned off before connecting or disconnecting any peripheral devices.
- Do not use the computer in a dusty or dirty environment. Contamination could cause malfunction or damage.
- Do not remove the battery if you are not using the computer for an extended time. The main battery supports the RTC and CMOS record through the on-board battery.
- When using the AC Adapter, it is a good idea to use an electrical surge protector. It is also a good idea to unplug your computer when it is not in use if the electrical supply in your area has unsteady current.
- If you should spill liquid on your computer, turn it off immediately. Examine the equipment and try to absorb as much liquid as possible. If you spill liquid into the keyboard you may have to have a service clean it for you. The best solution is to keep liquids in whatever form away from your work area.
- Always disconnect cords and cables by pulling them by the plug or connector and not by the cord or cable. This prevents damage to the wires, plugs, ports, and jacks.

- Do not use your computer on an work surface such as an unstable table, cart, or stand. This could result in the computer falling or being knocked over and damaged.
- Do not operate your computer near a source of high heat or in an area of direct sunlight. Be especially careful to protect your floppy disks from intense sunlight.
- Clean the computer and LCD occasionally with a soft cloth. If you use a cleaner, make sure that it is only a mild detergent.
- Never use solvents like thinner or benzine, or abrasive cleanser because these may cause damage.
- Make sure that the power is turned off when you clean anything. It is safer to unplug any electrical device any time you are using liquids near it.

The best maintenance you can perform yourself is preventive. Try to keep the computer as clean as possible. Avoid transporting or using it in dirty or dusty environments if possible. Use the carrying bag provided or some other clean container when you transport the computer. Be particularly careful to avoid getting dirt and dust in the floppy disk drive.

Another obvious but very important point with such an easily transportable device is Don't Drop It. The computer is so light and easy to move you may be tempted to forget that although sturdy, it is still a sensitive electronic device. Although there is a good chance the hard disk would not crash, the impact could crack the case and damage other components.

Try to keep the keyboard as clean and dust free as possible. Avoid spilling liquids on it at all cost. Remember you are spilling liquid into the computer, not just onto the keyboard if you're not careful. You can vacuum the keyboard with a small computer vacuum to remove dust buildup that can impede key motion.

Always keep the port covers closed when you're not using the ports. This will prevent dust from getting into the connectors and possibly affecting electrical contacts when you attach a device to the computer. You can vacuum the ports occasionally to keep them clean.

Cleaning The Computer

Cleaning The Case

If the case of the computer gets soiled you can clean it. Always make sure that the computer is turned off and the AC adapter is disconnected before you do anything else. You can clean the case with a soft, preferably lint-free, damp cloth. If necessary you can use a mild detergent.

Avoid any cleaner that has abrasives in it and DO NOT use cleaning solvents or isopropyl alcohol-based products. Never spray anything directly onto the computer. Always spray onto a cloth and then wipe the computer with that.

Cleaning The LCD Display

The LCD display panel is covered with plastic. Use a dry or damp lint free cloth. As with the case, DO NOT use cleaning solvents or isopropyl alcohol-based products.

Maintaining The Battery System

The battery system does not require any special maintenance. However, due to the technology of the battery pack, it is a good idea to occasionally "refresh" any battery packs you have. After a period of use, depending on your usage patterns, it is possible for the battery pack to function at a less than optimum level. You can correct or avoid this by using the refresh technique described earlier.

To refresh a battery pack, run the computer on battery power until the pack is exhausted. This is indicated by warning beeps and the indicator light as described in Section 4. Once the battery is exhausted, attach the AC adapter and charge the battery for the full period required. Once recharged the battery will operate for its maximum duration.

As an alternative, you can use the optional Quick Charger to discharge and then recharge the battery. The Quick Charger and its operation is described in Section 4.

Floppy Drive Maintenance

The only part of your computer that is likely to require regular attention is the floppy disk drive.

Floppy disks are a magnetic medium much like recording tape. If you use a floppy drive regularly it will gradually become contaminated by medium that wears off the disks. After some period of time this may begin to inhibit the proper function of the drive. If this happens you can clean the drive head in much the same way a cleaning tape is used for a tape recorder.

To clean a floppy drive you should use the materials in a kit especially designed for this. These inexpensive kits are widely available and most computer stores and dealers sell them.

Notes:

Appendix A: VGA Display Drivers and Utilities

Introduction

This section has the operating instructions for the software utilities and the installation instructions for the display device drivers supplied with your VGA subsystem.

The graphics subsystem is 100% VGA compatible and as such needs no utility software or display drivers to run application software correctly in standard resolutions. However, the utilities provided ease the use of additional features of your VGA subsystem, such as greater speed, emulation modes, and higher resolution. The display drivers described in this manual are supplied because they can provide improved resolution for the appropriate software application packages.

Before you begin

The following instructions assume that the user is familiar with DOS and certain DOS commands. Please review the associated DOS commands before performing the installation.

Notational conventions

Throughout this manual, the term "DOS" refers to both MS-DOS and PC-DOS, except when noting features that are unique to one or the other.

The following typographical conventions are used throughout this section:

Type Style	Description
Bold Italics	User input. The text must be typed exactly as it appears. Text within brackets indicates certain keyboard keys (such as (Enter), (F10), etc.).
Bold	System output. Any message that is displayed by the computer.
ALL CAPITALS	Directory names, filenames and acronyms.

Easy installation

It is important to note that some display drivers need to have the associated vendor's application program already installed on the system prior to loading the VGA subsystem display drivers. In other cases, the loading of the display driver may be an integral part of the vendor's product installation process. Please review the driver product section below for specific instructions.

Section 1: Utility Software

ACADEDIT

ACADEDIT in the ACAD directory is a utility program supplied to modify the appearance and functionality of the Autodesk ADI real-mode and protected-mode display drivers. The menus and functionality are discussed below.

Functionality

ACADEDIT is used to modify the functionality of the ADI display drivers. The characteristics that can be modified are listed below.

Loading an ADI driver prior to modification

Prior to the modification of an ADI driver, the functionality and related values must be identified by the ACADEDIT utility. Because each driver may be configured individually, a driver must first be selected. A driver may be identified to ACADEDIT as follows:

1. Run ACADEDIT by typing ***A:\ACAD\ACADEDIT [Enter]***.
2. The main menu will appear with the **Load** option highlighted in reverse video.
3. Press ***[Enter]*** to select the **Load** option.
4. The load file from disk menu appears prompting for a filename.
5. If the name of the driver file is known, enter it into the highlighted field on the screen. Note that the entire filename (i.e. filename and extension, separated by a period) must be entered in

order to correctly load. If the name of the driver file is unknown, press ***[F10]*** to get a directory listing of the files. If the name of the driver file is known skip to step 9.

6. If ***[F10]*** is selected the directory screen will appear with the DOS file mask *.EXE appearing in the highlighted field. Pressing ***[Enter]*** will display all files having an .EXE file extension. Note that if an ADI protected-mode driver is being selected for modification, the file extension must be modified from .EXE to .EXP. Both real-mode and protected-mode drivers may be displayed by changing the DOS filename mask to *.EX?. Press ***[Enter]*** once the desired filename mask has been entered.
7. Use the arrow keys to scroll through the list of files until the desired ADI driver file is located. When the driver file is highlighted in reverse video, press ***[Enter]***.
8. ACADEDIT will return to the load file from disk menu with the selected filename appearing in the highlighted field on the screen.
9. Press ***[Enter]*** to load the specified ADI driver file. If an error is encountered attempting to load the ADI driver file, press any key to continue, and go to step 5.
10. After the ADI driver file is loaded, the main menu will be displayed. The vendor, resolution, revision, chip type, colors, and build date will all appear at the top of the menu. Note that for the

protected-mode drivers, the resolution will always display as 640x480. For both real-mode and protected-mode drivers the chip type will always be Stingray.

Modifying an ADI driver

Prior to the modification of an ADI driver, the desired ADI driver file must be loaded. If this has not already been done, begin with section "Loading an ADI driver prior to modification" (see above). The options which may be modified are described below.

Interrupt vector

1. From the main menu, select the **Command Line Defaults** option using the arrow keys to highlight the field and press ***[Enter]***.
2. When the command line defaults menu appears, highlight the field corresponding to **Interrupt vector**.
3. Enter the appropriate interrupt vector.
4. Press ***[F10]*** to save the modification.

Screen background

1. From the main menu, select the **Command Line Defaults** option using the arrow keys to highlight the field and press ***[Enter]***.
2. When the command line defaults menu appears, highlight the field corresponding to **Screen background**.

3. Use ***[F5]*** and ***[F6]*** to scroll through the screen background combinations. Note that this option only has two combinations, dark vectors on a light background or light vectors on a dark background.
4. When the desired combination has been selected press ***[F10]*** to save the modification.

Screen colors

The screen colors option provides the user with the ability to modify the logical colors used by AutoCAD (refer to the AutoCAD Reference Manual for additional information on AutoCAD color assignment). Any of the 17 logical colors can be modified. The screen colors are not normally modified by the user, but the ability to do so is provided in the event different screen colors are desired. The screen colors are modified as follows:

1. From the main menu, select the **Screen Colors** option using the arrow keys to highlight the field and press ***[Enter]***.
2. When the screen colors menu appears, highlight the field corresponding to the desired screen entry using the arrow keys.
3. Enter a new value for the item.
4. When the desired entries have been changed press ***[F10]*** to save the modifications.

Color translation

The color translation option provides the user with the ability to modify the 256 color lookup table used by AutoCAD to map any physical color to each of the 256 AutoCAD colors (refer to the AutoCAD Reference Manual for additional information on AutoCAD color assignment). AutoCAD normally maps all colors above 15 to the most intense physical color. The color translation table is normally not modified by the user, but the ability to do so is provided in the event the user desires to do so. The color translation table is modified as follows:

1. From the main menu, select the **Color Translation** option using the arrow keys to highlight the field and press ***[Enter]***.
2. When the color translation table menu appears, highlight the field corresponding to the desired entry in the color table using the arrow keys.
3. Enter a new value for the color table entry.
4. When the desired entries have been changed press ***[F10]*** to save the modifications.

EGA palette

The EGA palette option provides the user with the ability to modify the 16 colors of the EGA palette registers and the Overscan register. Because these values are used directly by the video hardware, they are not normally modified by the user, but the ability to do so is provided in the event the user desires to do so. The EGA Palette table is modified as follows:

1. From the main menu, select the **EGA Palette** option using the arrow keys to highlight the field and press ***[Enter]***.
2. When the EGA palette entries menu appears, highlight the field corresponding to the desired entry in the EGA palette using the arrow keys.
3. Enter a new value for the EGA palette entry.
4. When the desired entries have been changed press ***[F10]*** to save the modifications.

NOTE: If the AutoShade 386 V2.0 P386 ADI rendering driver is being used, the EGA palette must not be modified or indeterminate results may occur.

VGA DAC table

This option is only available in 256 color mode. Therefore, it will not be selectable by the ACADEDIT utility.

Saving a modified ADI driver

After the ADI driver modification is complete the driver must be saved to the disk. The driver may be written out to the disk as follows:

1. From the main menu, select the **Save** option using the arrow keys to highlight the field and press ***[Enter]***.
2. When the Save file to disk menu appears, press ***[Enter]*** to overwrite the previously selected ADI display driver. Alternatively, type in a new filename to leave the originally selected driver file intact.
3. Press ***Y*** in response to the following message to modify the existing file:

   Overwrite? Yes/No

4. After the file is written to the disk, press ***[ESC]*** twice to return to DOS.

Hyper View

The Hyper View utility allows for manipulation of the Windows 3.0 cursors' shape, size and appearance. The utility, when combined with the Cirrus Logic Windows 3.0 display driver, provides a powerful tool that allows for the dynamic doubling of all cursor shapes. This can greatly enhance the use of Windows 3.0 when operating on a flat panel device or on a CRT in high resolution modes.

Installing Hyper View

The Hyper View files must be copied to the hard drive prior to use. This may be accomplished in either one of the following two ways. First, the installation utility supplied for use with the software display drivers may be used to automatically copy the Hyper View files during installation. Second, the files may be manually copied from the software driver diskette to the hard drive. To manually install Hyper View on to the hard drive, copy files from the \HYPRVIEW directory on the software driver diskette into the desired hard drive directory. For example, the following commands will create a directory on the C: drive named \HYPRVIEW and then copy the Hyper View files from the A: drive to directory \HYPRVIEW on the C: drive:

MKDIR C:\HYPRVIEW [Enter]
COPY A:\HYPRVIEW*.* C:\HYPRVIEW [Enter]

Adding Hyper View to the Windows 3.0 Desktop

The Hyper View utility can be added to the Windows 3.0 Desktop by following these directions:

1. Begin a Windows 3.0 session.
2. In the File Manager, choose **File New**.
3. Select **Program Item** and choose **OK**.
4. Type ***HYPER VIEW*** at the **Description** prompt.
5. Press the ***[Tab]*** key.
6. Type the path of the directory where Hyper View is located followed by Hyper View's filename at the **Command Line** prompt. For example:

   C:\HYPRVIEW\HYPRVIEW
7. Choose **OK**.
8. Hyper View may now be run by selecting the Hyper View icon.

Using the Hyper View Utility

For information on Hyper View's capabilities and options, choose Help once Hyper View is running.

Section 2: Display device drivers

The VGA subsystem is 100% VGA compatible and as such needs no display drivers to run application software correctly in standard resolutions. However, the display drivers described in this manual are supplied because they can provide improved resolution for each software application package.

The VGA subsystem can support improved text resolution up to 100x60 characters. Higher text resolutions provide greater clarity and readability when using the supplied drivers in text-based word processing programs. The VGA subsystem also supports graphics resolutions up to 800x600 pixels, with 16 colors. Higher graphics resolutions provide greater clarity and detail when using the supplied drivers in graphics-based programs.

In each application section, there will be a brief introduction describing the application and the revision level of the application supported by the supplied graphics display drivers.

The installation instructions for the graphics driver will follow the introduction. Carefully following the instructions will ensure that the graphics display drivers will be installed correctly.

Before you begin

It is assumed that the user is familiar with DOS and certain DOS commands. Please review the installation instructions and the associated DOS commands before attempting the actual installation.

Microsoft Windows

The Microsoft Windows display driver supports Windows 3.0 at a resolution of 800x600 with 16 colors.

Installing Windows 3.0 drivers

To install the Windows 3.0 drivers, proceed as follows:

1. From your Windows directory, at the DOS prompt, type ***SETUP*** and press ***[Enter]*** to run the Windows SETUP.EXE program. Follow the instructions on the screen. When you come to the screen which lists the hardware and software components such as display adapter (e.g. VGA, CGA, etc.), keyboard type, mouse type, etc., go to the **Display** selection by using cursor keys to move the highlighted bar and press ***[Enter]***.
2. From the next menu listing of display options, scroll to the bottom of the list, and highlight the following text:

   Other (requires disk provided by a hardware manufacturer)

   Press ***[Enter]***, and when prompted, insert the Windows display driver diskette into drive A and type ***WIN3*** as the path name, then press ***[Enter]***.
3. You will see the list of drivers and their associated resolutions, such as:

   Cirrus Logic VGA 800x600 (16 colors)

4. Highlight by moving the cursor to the desired display driver, and then press ***[Enter]***.
5. Remove the software driver diskette from the drive and continue with the remainder of the SETUP procedure.

Autodesk Device Interface (ADI)

The ADI display drivers support AutoCAD V9, AutoCAD V10, AutoCAD 386 V10, AutoCAD 386 V11, AutoShade V1.1, AutoShade 386 V1.1, and AutoShade 386 V2.0 at a resolution of 800x600 with 16 colors.

Installing real-mode ADI drivers

The real-mode drivers are designated by an .EXE file extension. Before beginning an AutoShade or AutoCAD session, the ADI driver must be copied to the AutoShade or AutoCAD directory. For example, type:

COPY A:\ACAD\R4V2800.EXE C:\ACAD [Enter]

To load the driver, type the appropriate driver name at the DOS command prompt. For example, type:

R4V2800 [COMMAND-LINE OPTION(S)] [Enter]

Alternatively, the driver name may be inserted into your AUTOEXEC.BAT file. For example:

C:\ACAD\DRIVERS\R4V2800 [COMMAND-LINE OPTION(S)] [Enter]

The AUTOEXEC.BAT file will automatically load the driver each time the computer is turned on or rebooted.

Driver command-line options

The following command-line options are available when installing a real-mode ADI driver:

-vxxx This option installs a driver at interrupt vector xxxH. The default value for xxx is 07AH.

-i This option inverts the default screen colors. The default is dark vectors on a light background.

-f This option disables the fast fill routine. Disabling fast fill may be necessary because some redraw operations may not function correctly when multiple viewports are displayed with the fast fill routine enabled.

-? Displays the help message for the above options.

Example:

R4V2800 -v07B -i -f [Enter]

Explanation: Loads the real-mode 800x600 ADI display driver at interrupt vector 0x7B. Drawing mode is light vectors on a dark background. Fast fill is disabled.

Configuring real-mode AutoShade

The first time AutoShade is used with an ADI driver, it must be configured for the computer's hardware. AutoShade may be configured for an ADI display driver as follows:

1. Before running AutoShade, delete the SHADE.CFG file by typing:

   DEL SHADE.CFG [Enter]

2. Run AutoShade by typing:

   SHADE [Enter]

3. When prompted, select the appropriate pointing device.
4. When prompted for the display device, select the option that corresponds to the Autodesk Device Interface display driver.
5. When prompted for an interrupt vector, enter the same interrupt value used when the ADI driver was installed or press ***[Enter]*** to select the default value of 07AH (see "Installing real-mode ADI drivers" above).
6. When prompted for a rendering display device, select the option that corresponds to the Autodesk Device Interface rendering driver.

7. When prompted for an interrupt vector, enter the same interrupt value used when the ADI driver was installed or press ***[Enter]*** to select the default value of 07AH (see "Installing real-mode ADI drivers" above). NOTE: This value must be the same as the value in step 5 above.
8. Type ***YES*** and then press ***[Enter]*** in response to the following message:

   Do the display and rendering devices share a single screen (default = NO):
9. Type ***YES*** and then press ***[Enter]*** in response to the following message:

   Does FLIPSCREEN require a redraw (default = NO):
10. When prompted, select the appropriate rendering hard copy device.

AutoShade will then begin execution. When the AutoShade session is terminated, a new SHADE.CFG file will be created.

Configuring real-mode AutoCAD

The first time AutoCAD is used with an ADI driver, it must be configured for the computer's hardware. AutoCAD may be configured for an ADI display driver as follows:

1. Run AutoCAD by typing ***ACAD*** and then press ***[Enter]***.

2. From the AutoCAD Main Menu, select **Configure AutoCAD**.
3. If AutoCAD has been previously configured, the current configuration will be displayed. After reviewing the current configuration, select Configure video display from the configuration menu.
4. From the configuration menu, select **ADI display Vx.x** as the new display driver. Enter the same interrupt code value used when installing the ADI driver or press ***[Enter]*** to select the default value of 07AH (see "Installing real-mode ADI drivers" above).
5. Press ***[Enter]*** to accept the default answers to each of the following questions displayed by AutoCAD.
6. From the configuration menu, select **Exit to Main Menu**.
7. Press ***Y*** in response to the following message:

Keep configuration changes? <Y>

AutoCAD will save the new configuration and return to the Main Menu.

Installing protected-mode ADI drivers

The protected-mode drivers are designated by an .EXP file extension. Before beginning an AutoShade 386 or AutoCAD 386 session, the ADI drivers must be copied to the AutoShade 386 or AutoCAD 386 directory. For example, type:

COPY A:\ACADP\ACADP410.EXP C:\ACAD386 [Enter] or
COPY A:\SHADEP\RENDP410.EXP C:\SHADE2 [Enter]

Next, to set the AutoCAD DSPADI DOS system environment variable to specify the location of the ADI display driver type:

SET DSPADI=C:\ACAD386\ACADP410.EXP [Enter]

If AutoShade will be used, set the AutoShade DOS system environment variables RDPADI and SHADECFG to specify the location of the AutoShade ADI rendering driver and the AutoShade configuration file. Type:

SET RDPADI=C:\SHADE2\RENDP410.EXP [Enter]
SET SHADECFG=C:\SHADE2 [Enter]
SET ACAD=C:\ACAD386;C:\SHADE2\ACADSUPT [Enter]

Alternatively, the above commands may be added to the list of commands in the AUTOEXEC.BAT file. The AUTOEXEC.BAT file will automatically specify the ADI driver location each time the computer is powered up or rebooted.

Configuring protected-mode AutoShade

The first time AutoShade 386 V2.0 is used with an ADI driver, it must be configured for the computer's hardware. AutoCAD 386 V2.0 may be configured for an ADI display and rendering driver as follows:

1. Before running AutoShade, delete the SHADE.CFG by typing:

   DEL SHADE.CFG [Enter]

2. Run AutoShade by typing:

   SHADE [Enter]

3. When prompted, select the appropriate pointing device.
4. When prompted for the display device, select **P386 Autodesk Device Interface display driver** as the display driver.
5. When prompted for the display device resolution, enter the number that corresponds to the desired resolution.
6. When prompted for the rendering device, select **P386 Autodesk Device Interface rendering driver** as the rendering driver.
7. When prompted for the rendering device resolution, Enter the number that corresponds to the desired resolution.
8. Type ***YES*** in response to the following message:

   Do the display and rendering devices share a single screen? (default = NO):
9. Type ***YES*** in response to the following message:

   Do the display and Autodesk Renderman rendering devices share a single screen? (default = NO):
10. Type ***YES*** in response to the following message:

    Does FLIP SCREEN require a redraw? (default = NO):
11. When prompted, select the appropriate rendering hard copy device.

AutoShade will begin execution after step 11. When the AutoShade session is terminated, a new SHADE.CFG file will be created.

Configuring AutoCAD 386

The first time AutoCAD 386 is used with an ADI driver, it must be configured for the computer's hardware. AutoCAD 386 may be configured for an ADI display driver as follows:

1. Run AutoCAD 386 by typing ***ACAD [Enter]***.
2. From the AutoCAD 386 Main Menu, select **Configure AutoCAD**.
3. If AutoCAD 386 has been previously configured, the current configuration will be displayed. After reviewing the current configuration, select Configure video display from the Configuration Menu.
4. From the available video displays menu, select **ADI P386 Vx.x display** as the new display driver.
5. When prompted, select the desired display device screen resolution.
6. Press ***[Enter]*** to accept the default answers to each of the following questions displayed by AutoCAD 386.
7. From the configuration menu, select **Exit to Main Menu**. Press ***Y*** in response to the following prompt:

   Keep configuration changes? <Y>

AutoCAD 386 will save the new configuration and return to the main menu.

CADVANCE

The CADVANCE version 4.x display driver supports a resolution of 800x600 with 16 colors.

Installing CADVANCE display drivers

NOTE: CADVANCE must be installed prior to running the INSTALL program supplied with the VGA subsystem.

To install the CADVANCE high resolution graphics driver supplied with your VGA subsystem, follow these instructions.

1. Install CADVANCE following the instructions included in the CADVANCE User Guide. Follow the instructions to install a VGA (Video Graphics Array) when installing a graphics driver.
2. Copy the file GS800.DRV from the \CADVANCE directory on the display driver diskette into your CADVANCE directory, by inserting the CADVANCE driver disk into Drive A and typing:

   COPY A:\CADVANCE\GS800.DRV C:\CAD [Enter]
3. Copy the desired resolution driver to GS.DRV by typing:

   COPY GS800.DRV GS.DRV [Enter]

Framework III

The Framework III version 3.0 display driver supports a resolution of 800x600 with 16 colors.

Installing Framework III drivers

To install the Framework III high resolution graphics driver supplied with your VGA subsystem, follow these instructions:

1. Install Framework III following the instructions included in the Framework III User Guide. Follow the instructions to install an IBM Model 50, 60, and 80 driver (VGA) when installing a screen driver.
2. Copy the file CL800.SC from the \FW3 directory on the software driver diskette into your Framework III directory by typing:

   COPY A:\FW3\CL800.SC C:\FW3 [Enter]
3. Run the Framework III setup program SETUPFW.EXE to install the new driver by typing:

   SETUPFW [Enter]
4. Follow the instructions to change the current configuration, and then choose **Change hardware configuration, screen driver.**
5. When shown a list of screen drivers, choose **The screen driver I need isn't listed here**, then choose **I want to enter my own driver filename.**
6. When prompted, enter ***CL800.SC [Enter].***
7. Finish the installation by following the directions to save the current configuration.

GEM/3

The Gem/3 version 3.x display driver supports a resolution of 800x600 with 16-colors.

Installing GEM/3 display drivers

To install the GEM/3 drivers, proceed as follows:

1. In the following three steps, you create a disk known as the GEM DRIVER PAK. Using the standard DOS FORMAT utility, format a blank diskette by inserting it in drive A: and typing the following:

   FORMAT A:/V [Enter]

   The DOS FORMAT utility will then prompt for the volume label by displaying:

   Volume Label? (11 characters max) Press Enter for none.

   At this prompt, type the following volume-label name in upper case:

   GEM DRIVRPK [Enter]

2. Using the DOS COPY utility, copy the following files from the GEM/3 screen disk (comes with GEM/3) to the newly formatted GEM DRIVRPK diskette. Type the following sample commands assuming that the GEM/3 screen disk is on drive A and the GEM DRIVRPK diskette is in drive B:

COPY A:GEMVDI.EXE B: [Enter]
COPY A:MDGEM?.SYS B: [Enter]
COPY A:GEMSETUP.TXT B: [Enter]

3. Using the DOS copy utility, copy the following files from the software driver diskette containing the GEM/3 driver to the newly formatted GEM DRIVRPK diskette. Type the following sample command assuming that the software driver diskette is in drive A: and the GEM DRIVRPK diskette is in drive B:

   COPY A:\GEM3*.VGA B: [Enter]

4. Install GEM/3 (following the instructions provided in the product's manual), selecting the standard EGA (IBM Enhanced Card and 16-Color Display (640x350) driver.
5. After successfully completing installation, insert the GEM/3 System Master Disk in drive A:.
6. Move to drive A by typing **A:** ***[Enter]***.
7. Then type ***GEMSETUP [Enter]***.

   Follow the GEM/3 installation instructions up to the CHANGE EXISTING CONFIGURATION stage. When prompted for a screen driver choice, highlight:

   OTHER (DRIVER PACK)

8. When prompted to insert a screen driver into drive A, insert the newly created GEM DRIVRPK diskette.

Generic CADD

The Generic CADD version 1.X display driver supports a resolution of 800x600 with 16 colors.

Installing Generic CADD drivers

Before beginning a Generic CADD session, the Generic CADD driver must be copied to the Generic CADD directory. For example, type:

COPY A:\GENCADD\GCAD800.VGD C:\GENCADD
[Enter]

The first time Generic CADD is used with a display driver, it must be configured for the computer's hardware. Generic CADD may be configured for a display driver as follows:

1. Run **CONFIG.EXE**, Generic CADD's configuration utility by typing ***CONFIG [Enter]***.
2. When prompted, enter the option that corresponds to the selection of a **Video Graphics Display**.
3. Search the list until the desired display driver is located.
4. Enter the number that corresponds to the desired display driver.
5. After all the configuration options are selected, enter the option that corresponds to **Exit to DOS**.
6. Press ***Y*** in response to the following message:

Do you wish to keep the changes? (Y, N) >>

When the configuration session is terminated, Generic CADD will save the new configuration information.

Locus Computing PC Xsight

The X Window System is a network based graphics window system developed at MIT in 1984. PC Xsight is a MS-DOS program that allows a PC to be a graphics server for the X Window System.

Configuring PC Xsight

To run PC Xsight on your VGA subsystem in 800 x 600 resolution, follow these instructions:

1. Run the PC Xsight installation program INSTALL.EXE provided with PC Xsight. Please note that this is a different INSTALL.EXE than the one provided with the VGA subsystem.
2. Choose either **Full Installation** or **Change Configuration**.
3. Follow the instructions and specify your system's configuration.
4. On the prompt that says Server Options, type:

   /D GENERIC:1:0x64 [Enter]
5. PC Xsight will now run in 800 x 600 resolution with 16 colors.

To find out more about the ***/D*** option, consult the Configuration section in the PC Xsight Server Reference provided with PC Xsight.

Lotus 1-2-3, Symphony, and Report Writer

The Lotus display driver support text mode operations for Lotus 1-2-3, version 2.xx, Symphony, and Report Writer at a resolution of 100x60.

Installing a Lotus display driver

To install a Lotus display driver, proceed as follows:

1. Copy all of the .DRV files from the software driver diskette subdirectory LOTUS to the disk or directory containing the Lotus INSTALL files. For example, if you are operating from a hard disk C:, after the C:> prompt, type:

   COPY A:\LOTUS*.DRV [Enter]

2. From within the Lotus sub-directory type:

   INSTALL [Enter]

3. From the next menu, select **Advanced Options**.
4. From the next menu, select **Add New Drivers to Library**.
5. From the next menu, select **Modify Current Driver Set**.
6. From the next menu, select the following display and resolution configuration:

   VGA (100x60)

7. From the next menu, select **Return To Menu**.
8. From the next menu, select **Save Changes**.

9. Enter the name you have selected for the driver set. We recommend that the driver set name reflect or include the driver's resolution (e.g. 100x60) NOTE: The default driver set name assigned by the program is 123.SET.

   You may create multiple driver sets with different display resolutions. To run Lotus 1-2-3 or Symphony with a specific driver set, type:

   123 SETNAME [Enter] or
   SYMPHONY SETNAME [Enter]

   where ***SETNAME*** is the name of the desired driver set.

OrCAD

The OrCAD versions 3.x and 4.x display driver supports a resolution of 800x600 with 16 colors.

Installing OrCAD drivers

The OrCAD display driver may be installed in either of two ways; it may be copied from the driver disk or it may be created using the OrCAD GENDRIVE utility.

Before beginning an OrCAD session, the OrCAD driver must be copied to the OrCAD directory. For example, type:

COPY A:\ORCAD\ORCAD800.DRV C:\ORCAD\DRIVER [Enter]

Using the OrCAD GENDRIVE utility

GENDRIVE.EXE is a utility supplied by OrCAD that has the ability to create an 800x600 driver. The utility is located on the OrCAD driver diskette that is shipped with OrCAD. The GENDRIVE.EXE utility should be copied to the OrCAD directory. For example, type:

COPY A:GENDRIVE.EXE C:\ORCAD [Enter]

The driver may be created as follows:

1. Run the GENDRIVE utility by typing **GENDRIVE** and then press ***[Enter]***.
2. Press ***S*** in response to the following message:

   Enter a Display Card Number or S(Special), M(More) or Q(Quit):
3. Type ***800*** and then press ***[Enter]*** to create a 800x600 driver in response to the following message:

   Number of Screen Columns (640, 800):
4. Type ***600 [Enter]*** to create a 800x600 driver in response to the following message:

   Number of Screen Rows (350, 480, 600):
5. Type ***64 [Enter]*** to create a 800x600 driver in response to the following message:

   AX Value for Initializing INT 10H (hex):

6. Type ***0 [Enter]*** in response to the following message:

   BX Value for Initializing INT 10H (hex):

7. Type ***OrCAD 800x600 generic driver*** to create an 800x600 driver in response to the following message:

   Identification displayed during driver initialization:

   Driver Name:

8. Press ***Q*** to abandon redefinition of EGA/VGA Palette Definition.
9. Type ***ORCAD800.DRV [Enter]*** in response to the following message:

   Please Enter Filename for updated driver:

The OrCAD display driver has now been created.

Configuring OrCAD

The first time OrCAD is used with a display driver, it must be configured for the computer's hardware. OrCAD may be configured for a display driver as follows:

1. Run OrCAD in the configuration mode by typing ***DRAFT /C [Enter]***.
2. Type ***DP*** at the OrCAD command prompt to select the command used to configure the driver prefix.
3. Type the path where the OrCAD drivers are stored. For example:

   C:\ORCAD\DRIVER\ [Enter]

4. Type ***DD*** at the OrCAD command prompt to select the command used to configure the display driver.
5. Select the ***S*** option to specify a non-listed driver.
6. Enter the name of the driver to install. For example:

   ORCAD800.DRV

7. Press ***U*** at the OrCAD command prompt to select the command used to update the configuration information.
8. Press either ***R***, the option to run OrCAD, or ***Q***, the option to quit the configuration and return to DOS, at the OrCAD command prompt.

OS/2 Presentation Manager

The OS/2 Presentation Manager display driver supports OS/2 Presentation Manager version 1.x at a resolution of 800x600 with 16 colors.

There are two ways to install the high resolution OS/2 driver supplied with the VGA subsystem. The driver may be installed the first time OS/2 is installed or after OS/2 has already been installed.

Installing OS/2 Presentation Manager drivers

Note: The media type of the Cirrus Logic supplied display drivers must be the same as the media type of the OS/2 installation package. If the media types are different, the OS/2 display drivers must be copied from the Install diskette labeled OS/2. This may be accomplished by inserting a formatted floppy (using the DOS format command) in the target drive, inserting the software driver diskette (DISK 2) in the source drive and issuing the DOS COPY command. For example:

COPY A:*.* B: [Enter]

would use the A: drive as the source and the B: drive as the destination.

To install the high resolution driver during OS/2 installation, follow these instructions:

1. Follow the instructions for installing OS/2 supplied in your OS/2 User Guide.

2. When asked which graphics card you would like installed, choose **IBM Video Graphics Array (VGA)**.
3. When asked if you would like to install a device support diskette, choose **YES**.
4. Follow the instructions to install the device support diskette. The device support diskette is the software driver diskette labeled OS/2.

To install the high resolution driver after OS/2 has already been installed on your system, follow these instructions:

1. Start a full-screen OS/2 window.
2. Use the change directory command to change the directory to the \OS2\INSTALL directory. Type ***CD \OS2\INSTALL [Enter]***.
3. Run the OS/2 supplied program DDINSTAL.EXE by typing ***DDINSTALL [Enter]***.
4. Follow the directions given by DDINSTAL.
5. DDINSTAL will make reference to a device support diskette. This is the software driver diskette labeled OS/2.

Personal CAD (PCAD)

The Personal CAD version 4.5. display driver supports a resolution of 800x600 with 16 colors.

Installing PCAD drivers

Before beginning a Personal CAD session, the Personal CAD driver must be copied to the Personal CAD directory. For example, type:

COPY A:\PCAD\PCAD800.DRV C:\PCAD\DRV [Enter]

The first time Personal CAD is used with a display driver, it must be configured for the computer's hardware. The Personal CAD display drivers are loadable device drivers which must be identified to the Personal CAD loader. The Personal CAD system file PCADDRV.SYS is used for this purpose. This file must reside in the root directory of the disk drive which PCAD runs on. The file contains information used by Personal CAD when it begins operation. An example of the file follows:

```
SYSTEM   \PCAD\DRV\SIBMPC.DRV
INPUT    \PCAD\DRV\IHPMOUSE.DRV
DISPLAY  \PCAD\DRV\DIBMVGA.DRV
```

The PCADDRV.SYS file must be modified in order for the loader to use a new display driver. The file can be modified using a text editor or word processor. Only the line DISPLAY needs to be changed. Using a text editor or a word processor in non-document mode, make the modification. An example of the modified file appears below:

```
SYSTEM   \PCAD\DRV\SIBMPC.DRV
INPUT    \PCAD\DRV\IHOMOUSE.DRV
DISPLAY  \PCAD\DRV\PCAD800.DRV
```

When the PCADDRV.SYS file has been changed, Personal CAD will use the new driver the next time the program is run.

SCO Open Desktop

The SCO Open Desktop version 1.1 supports a resolution of 800x600 with 16 colors.

Installing SCO Open Desktop drivers

To install the display driver for SCO Open Desktop, follow these instructions:

1. Login as the root or as another user with superuser capability.
2. Make /usr/lib/grafinfo your working directory by typing:
   cd /usr/lib/grafinfo [Enter]
3. Create a new subdirectory called cirrus by typing:
   mkdir cirrus [Enter]

4. Place the VGA subsystem driver disk in the A: drive (usually assigned to /dev/fd0: - defined in /etc/default/msdos).
5. Copy the file CLVGA.XGI from the driver disk into the cirrus directory created above, by typing:

   doscp -r a:/sco/clvga.xgi cirrus/ [Enter]

6. Activate the desired graphics mode using the mkdev graphics configuration script, by typing:

   mkdev graphics [Enter]

7. Select **Update** from the menu presented.
8. Scroll through the list of graphics adapters presented to select **VGA subsystem**.
9. Choose the desired resolution from the list presented.
10. Associate the adapter with all console TTY devices by choosing **Default**, or associate a particular TTY device by choosing **Specify**.
11. If the configuration is correct, select **Quit** from the main menu.
12. Select **Save** from the final menu. The system configuration will be updated, pressing return will exit the configuration script.

The configuration change takes effect the next time Open Desktop is invoked on the affected TTY device. It is not necessary to restart the system to activate this change.

Ventura Publisher

The Ventura Publisher version 2.x display driver supports a resolution of 800x600 with 16 colors.

Installing Ventura Publisher display drivers

To install the Ventura Publisher driver, proceed as follows:

1. Install Ventura Publisher V2.0 as instructed in the product's manual, specifying the Hercules driver.
2. Upon completing installation of Ventura V2.0, insert the display driver diskette with the Ventura driver into drive A: and type ***A: [Enter]*** at the DOS prompt. Then type ***CD VP2 [Enter]***.

After the A: prompt appears, run the VPDRV2_0.EXE program by typing ***VPDRV2_0 [Enter]***.

Follow the step-by-step installation procedure as it appears on the screen and select the desired driver when prompted. Ventura Publisher V2.0 is now configured for the selected screen resolution and 16-color graphics.

VESA BIOS Extension

The VESA display driver supports the Video Electronics Standards Association (VESA) BIOS Extensions version 1.1. The following table shows the modes supported:

VESA mode	Resolution	Colors	Mode
6A Hex	800 x 600	16	Graphics
102 Hex	800 x 600	16	Graphics
108 Hex	80 x 60	16	Text

Installing the VESA BIOS Extension driver

To install the VESA BIOS Extension driver supplied with your VGA subsystem, follow these instructions:

1. Create a directory called \VESA, by typing:

   MD \VESA [Enter]

2. Copy the file \VESA\CLVESA.COM from the software driver diskette into your \VESA directory. Type:

   COPY A:\VESA\CLVESA.COM C:\VESA [Enter]

3. To invoke the VESA BIOS extension driver from the DOS command prompt type:

CLVESA [Enter]

Alternatively, the driver name may be added to the list of commands in your AUTOEXEC.BAT file. For example, the following line may be inserted into your AUTOEXEC.BAT file:

C:\VESA\CLVESA

The AUTOEXEC.BAT file will automatically load the driver each time the computer is powered up or rebooted.

The system is now capable of running VESA applications in any of the modes from the above table.

Microsoft Word

The high resolution Microsoft Word 5.0 and 5.5 driver supplied with your VGA subsystem supports both high resolution text and graphics. When using a Microsoft Mouse with the driver, please ensure that your mouse driver version level is 7.0 or above.

Installing Word display drivers

To install the Word high resolution text driver supplied with your VGA subsystem, follow these instructions:

1. If you have not already done so, install Microsoft Word onto your computer system. Follow the instructions supplied with Word. When asked for a screen display type, choose **IBM Video Graphics Array (VGA)**.
2. Copy the file \WORD\SCREEN.VID from the software driver diskette into your Word directory, typically \WORD5.

   CD \WORD5 [ENTER]
   COPY A:\WORD\SCREEN.VID [Enter]
3. The new driver is now installed, and to use it, run Word as you normally would. To view and change the screen resolutions, use options, move the cursor to display mode, and press ***[F1]***. Choose the desired video mode from the list presented.

Creating your own screen driver

Also provided with the software driver diskette are the associated .CSD and .GSD files to create your own screen driver manually. Word allows the user to create a screen driver manually, in order to provide functionality not supplied with normal screen drivers. Please see **Creating a Video Driver Without Running Setup** in the manual **Getting Started with Microsoft Word** supplied with Word to determine if you need to create your own screen driver. The MAKEVID.EXE program is used to create screen drivers manually. To create the SCREEN.VID supplied on the software driver diskette, type the following command:

MAKEVID SCREEN.VID -Lfr CLVGA.CSD -Lfp CLVIOVGA.CSD -Lfs CLVGA.GSD [Enter]

WordPerfect

The high resolution WordPerfect version 5.1 driver supplied with your VGA subsystem supports both high resolution text and graphics. WordPerfect allows graphics and text drivers to be set up separately, so be sure to install both of these drivers.

Installing WordPerfect display drivers

To install the WordPerfect high resolution text driver supplied with your VGA subsystem, follow these instructions:

1. If you have not already done so, install WordPerfect onto your computer system. Follow the instructions supplied with WordPerfect.
2. Copy the file \WP\CIRRUS.VRS from the software driver diskette into your WordPerfect directory, typically \WP51. Type:

   COPY A:\WP\CIRRUS.VRS C:\WP51 [Enter]
3. Start WordPerfect, and go into SETUP by typing ***[Shift-F1]***.
4. Choose Display ***2***, then text screen type by pressing ***3***.
5. Move the cursor to where VGA subsystem appears on the list, and choose SELECT.
6. A sub-menu will appear, listing all the choices of resolutions supported by the Cirrus Logic text driver. SELECT the desired resolution.

To install the WordPerfect high resolution graphics driver supplied with your VGA subsystem, follow these instructions:

1. If you have not already done so, install WordPerfect onto your computer system. Follow the instructions supplied with WordPerfect.
2. If you have not already done so, copy the file \WP\CIRRUS.VRS from the software driver diskette into your WordPerfect directory, typically \WP51.

   Type:

   COPY A:\WP\CIRRUS.VRS C:\WP51 [Enter]
3. Start WordPerfect, and go into SETUP. Press ***[Shift-F1]***.
4. Choose Display, by pressing ***2***, then graphics screen type, by pressing ***2***.
5. Move the cursor to where VGA subsystem appears on the list, and choose SELECT.
6. A sub-menu will appear, listing all the choices of resolutions supported by the Cirrus Logic text driver. SELECT the desired resolution.

WordStar

The WordStar display drivers support both WordStar version 5.5 and 6.0 and WordStar 2000 version 3.5.

Installing WordStar drivers

To install the WordStar high resolution text driver supplied with your VGA subsystem, follow these instructions:

1. If you have not already done so, install WordStar onto your computer system. Follow the instructions supplied with WordStar.
2. Copy the file CL800.WGD from the driver diskette by typing:

   COPY A:\WORDSTAR\CL800.WGD \WS [Enter]
3. Edit the file FONTID.CTL in the WordStar directory and change the CRT_TYPE line to read:

   CRT_TYPE=CL800.WGD
4. When WordStar is executed, the display driver will be used.

Appendix B: Technical Information

CPU

- Intel 486DX or 486SX

Cache

- 8KB internal cache inside the 486DX or 486SX

System Memory

- 4MB standard configuration, expandable to 8MB or 20MB.
- Full support for LIM EMS 4.0.
- Flash ROM for System BIOS and VGA BIOS.

Fixed (Hard) Disk Drive

- 60 or 80MB HDD or larger.

Floppy Disk Drive

- 3.5" 1.44MB floppy disk drive

Display

- 1. Paper white, non-glare CCFT backlit LCD
  2. Color Active matrix, non-glare CCFT backlight LCD
  3. Color Passive matrix, non-glare CCFT backlight LCD
  panel depends on your model.
- 640x480 pixels resolution
- VGA compatible
- VGA controller supports simultaneous display for LCD and CRT.

Keyboard

- 80 keys PC/AT compatible keyboard and embedded numeric keypad, supporting full functions of a 101- keys keyboard with 12 function keys

External Interfaces

- 1 PC/AT compatible parallel port
- 1 PC/AT compatible RS232C serial port
- Mouse interface for IBM compatible PS/2 mouse or trackball
- D15 external VGA analog monitor connector
- External keyboard connector for PS/2 ™ and PC/AT compatible keyboard or numeric keypad.
- Connection module interface to support serial, parallel, VGA, Modem and AT-compatible bus connectors.

Status Panel LED Indicators

- STANDBY
- CHARGE/ BATT. LOW
- POWER
- HDD in use
- FDD in use
- Cap lock
- Pad lock
- Num lock
- Scroll lock

External controls

- Power on/off switch
- STANDBY switch

Standard Accessories

- AC adaptor with battery charger

Battery

- Rechargeable Ni-MH battery with 14.4V and 2200mAH capacity.
- 2.0 - 3 operation hours*
- 2.5 - 3 hours fast charge*

* may vary depending on operating temperature, battery type and condition and use of power management features.

Power Management

- System activity monitor
- Automatic transition between modes (full/Doze/Standby)
- Other intelligent power management technology

Dimensions

- 11(W) x 8.5(D) x 1.7(H)Inches ; (280(W) x 220(D) x 43(H)mm)

Weight

- 3.0Kg (6.6lb) including battery

Options

- Internal Hayes compatible 9600 baud FAX and 2400 baud MODEM data modem
- Additional battery pack
- Expansion box for cards
- Connection module to support serial, parallel, VGA, Modem and AT-compatible bus connectors.

Environmental Tolerances

Battery Operation

NiMh:	5° to 35°C

Computer Operation

Temperature:	5° to 35°C
Humidity:	20% to 80% RH with no condensation
Vibration:	5-500-5 Hz 0.2G, 1oct/minute 3 minutes dwell at all resonance points
Shock:	0.5G, 1/2 sine wave, 10ms
Altitude:	8,000 feet

Computer Storage

Temperature:	-20° to 60°C
Humidity:	8% to 90% RH with no condensation
Vibration:	5 to 100 Hz 0.015in, 100 to 200 Hz -6dB/Oct, PSD 1.57G squared per Hz on 3 axes
Shock:	30G, 1/2 sine wave, 10ms (unpacked)
	40G, 1/2 sine wave, 10ms, 3axes / 6 surfaces (packed)
Altitude:	40,000 feet

I/O Port Addresses & Interrupts

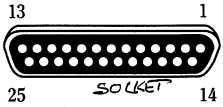
	Port	Base Address	Interrupt Source
Serial	Com1	3F8H	IRQ4
MODEM	Com2	2F8H	IRQ3
or			
Serial	Com2	2F8H	IRQ3
MODEM	Com1	3F8H	IRQ4
Parallel	LPT1	278H	IRQ5

I/O Port Pinouts

Modem Connection

Line jack (Europe & USA)		Phone Jack (USA only)	
1	+5VSYS	1	RING
2	Ground	2	NC
3	RXD(TIP)	3	NC
4	TXD(RI)	4	TIP1
5	OH		
6	RI		

Parallel Port Pin Assignments



Parallel Port

Pin	Signal
1	Strobe
2	Data Bit 0
3	Data Bit 1
4	Data Bit 2
5	Data Bit 3
6	Data Bit 4
7	Data Bit 5
8	Data Bit 6
9	Data Bit 7
10	Acknowledge
11	Busy
12	P.End (out of paper)
13	Select
14	Auto Feed
15	Error
16	Initialize Printer
17	Select Input
18-25	Ground

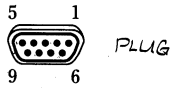
Serial Port

Name	Pin	Signal
CF	1	DCD (Data Carrier Detect)
BB	2	RX (Receive Data)
BA	3	TX (Transmit Data)
CD	4	DTR (Data Terminal Ready)
AB	5	GND (Signal Ground)
CC	6	DSR (Data Set Ready)
CA	7	RTS (Request to Send)
CB	8	CTS (Clear to Send)
CE	9	RI (Ring Indicator)

PS/2 Mouse Port

1	MDATA
2	NC
3	Ground
4	+5
5	MCLK
6	NC

Serial Port Pin Assignments



Mouse Port Pin Assignments

CRT Port Pin Assignments

Keypad Port Pin Assignments

VGA Port

Pin	Signal
1	Red
2	Green
3	Blue
4	MS2
5-8	Ground
9	NC
10	Ground
11	MS0
12	MS1
13	BHSYNC
14	BVSYNC
15	NC

Keypad/Trackball Port

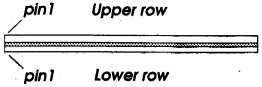
1	KPDATA
2	TBDATA
3	Ground
4	+5
5	KPCLK
6	TBCLK

Expansion Module Connection

1	-EXTON	2	RESETDRV	3	+5VSYS	4	IRQ9
5	NC	6	DRQ2	7	+5VSYS	8	-0WS
9	+5VSYS	10	Ground	11	-SMEMW	12	-SMEMR
13	-SIOW	14	-SIOR	15	-DACK3	16	DRQ3
17	-DACK1	18	DRQ1	19	-REF	20	SYSCLK
21	IRQ7	22	IRQ6	23	IRQ5	24	IRQ4
25	IRQ3	26	-DACK2	27	TC	28	BALE
29	+5VSYS	30	DSEXTON	31	Ground	32	-MECS16
33	IOCS16	34	IRQ10	35	IRQ11	36	IRQ12
37	IRQ15	38	IRQ14	39	-DACK0	40	DRQ0
41	-DACK5	42	DRQ5	43	SA19	44	-DACK6
45	-DACK7	46	DRQ7	47	-MASTER	48	-SBHE
49	Ground	50	RED	51	GREEN	52	BLUE
53	MS2	54	DSON	55	-DTR1	56	-RTS1
57	-DCD1	58	RXD1	59	-1EARD	60	TBDATA
61	-DIAG	62	KPDATA	63	Ground	64	MDATA
65	Ground	66	-HDCS1	67	SLCT	68	PE
69	BUSY	70	-ACK	71	-SLIN	72	-INIT
73	-ERR	74	-AFD	75	-STB	76	Ground
77	Ground	78	VADS	79	VADS	80	VADS

Expansion Module Connection:

Upper side, 80-pins, 1.27mm pitch connector



Power Connection Port

AC Adaptor Connection

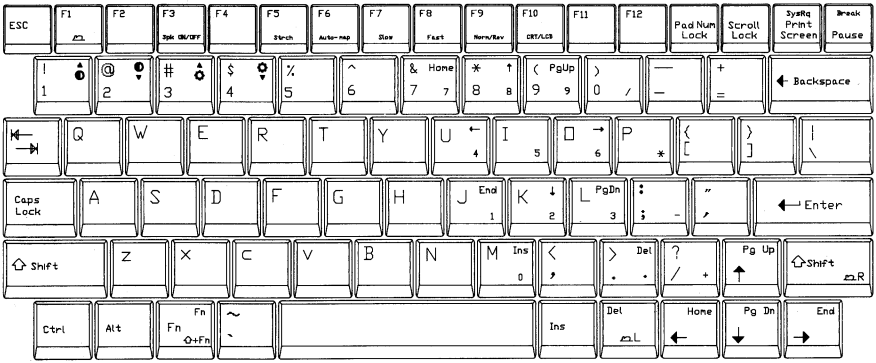
1 VA
2 VB
3 MCHG
4 GND

Specifications are subject to change without notice.

Power Connection Pin Assignments

Keyboard Layouts

U.S. Keyboard



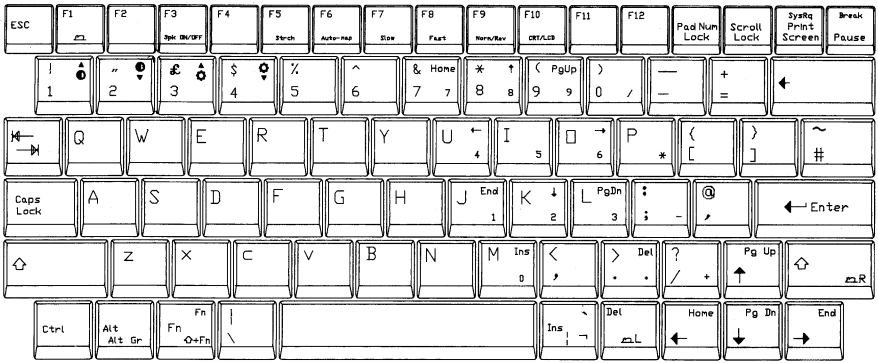
Expansion Module Connection:

Lower side, 80-pins, 1.27mm pitch connector

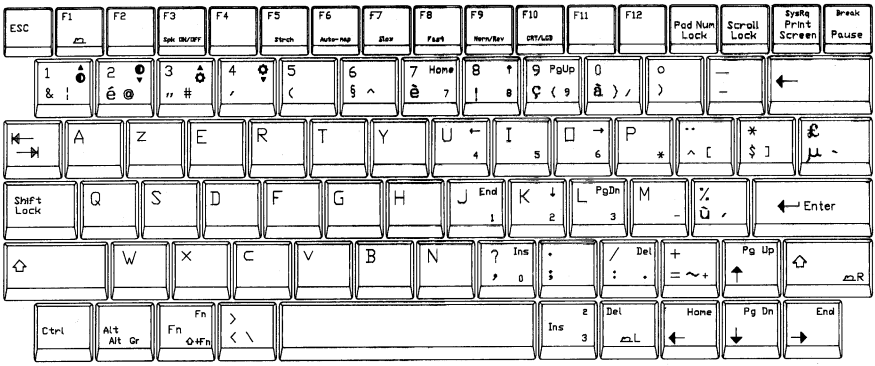
Expansion Module Connection

1	-IOCHCK	2	SD7	3	SD6	4	SD5
5	SD4	6	SD3	7	SD2	8	SD1
9	SD0	10	IOCHRDY	11	AEN	12	SA19
13	SA18	14	SA17	15	SA16	16	SA15
17	SA14	18	SA13	19	SA12	20	SA11
21	SA10	22	SA9	23	SA8	24	SA7
25	SA6	26	SA5	27	SA4	28	SA3
29	SA2	30	SA1	31	SA0	32	LA23
33	LA22	34	LA21	35	LA20	36	LA19
37	LA18	38	LA17	39	-MEMR	40	-MEMW
41	SD8	42	SD9	43	SD10	44	SD11
45	SD12	46	SD13	47	SD14	48	SD15
49	Ground	50	MS0	51	MS1	52	HSYNC
53	VSYNC	54	Ground	55	-RTS1	56	TXD1
57	CTS1	58	DSR1	59	-1EAWR	60	TBCLK
61	HD7	62	KPCLK	63	+5VSYS	64	MCLK
65	+5VSYS	66	-HDCS0	67	PD7	68	PD6
69	PD5	70	PD4	71	PD3	72	PD2
73	PD1	74	PD0	75	Ground	76	MMCHG
77	Ground	78	Ground	79	VBDS	80	VBDS

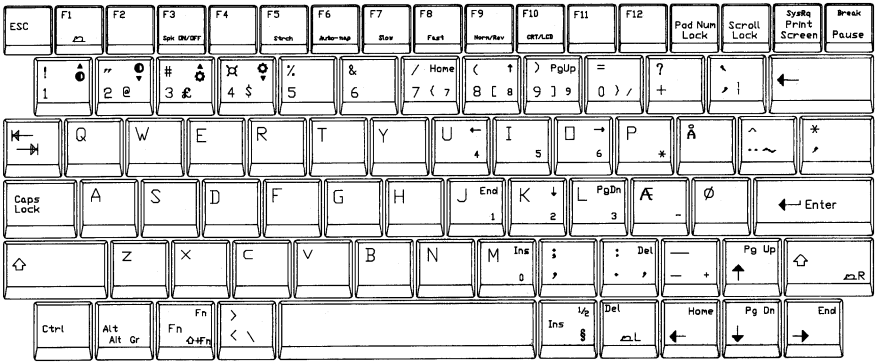
U.K. Keyboard


ESC
F1
F2
F3
3pk ON/OFF
F4
F5
Stretch
F6
Auto-rep
F7
Slow
F8
Fast
F9
Norm/Rev
F10
CRT/LCD
F11
F12
Pad Num Lock
Scroll Lock
SysRq Print Screen
Break Pause
Caps Lock
Enter
Ins
Del
Home
End
Pg Up
Pg Dn
Ctrl
Alt
Alt Gr
Fn

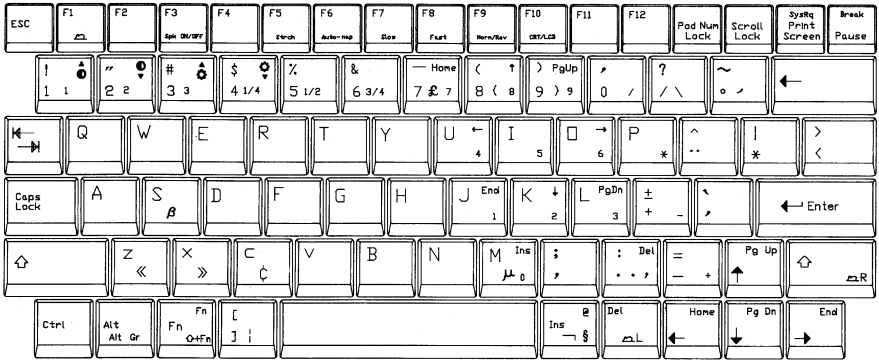
Belgian Keyboard



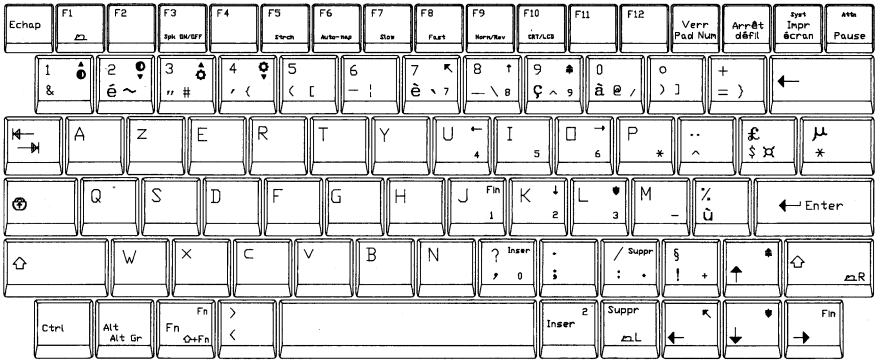
Danish Keyboard



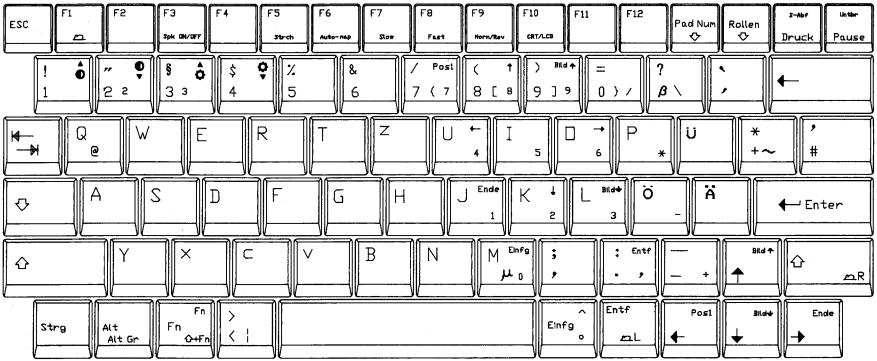
Dutch Keyboard



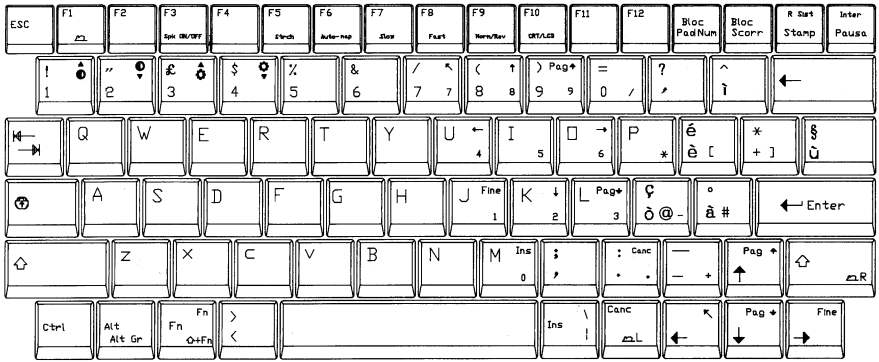
French Keyboard



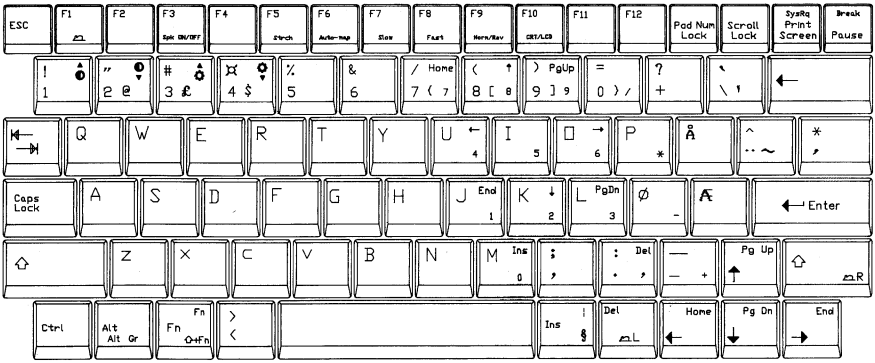
German Keyboard



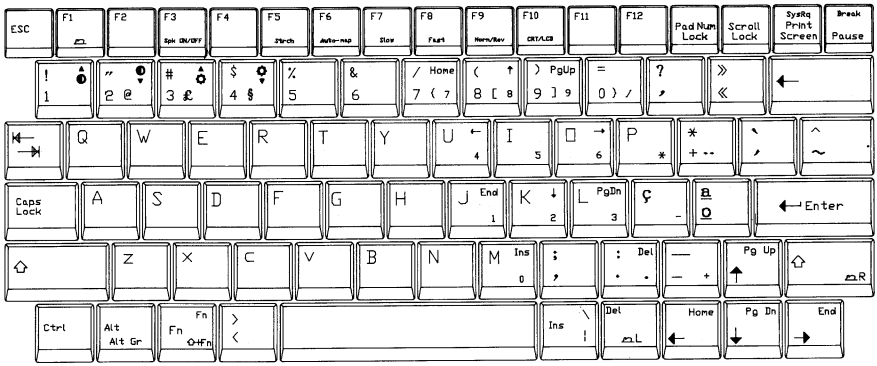
Italian Keyboard



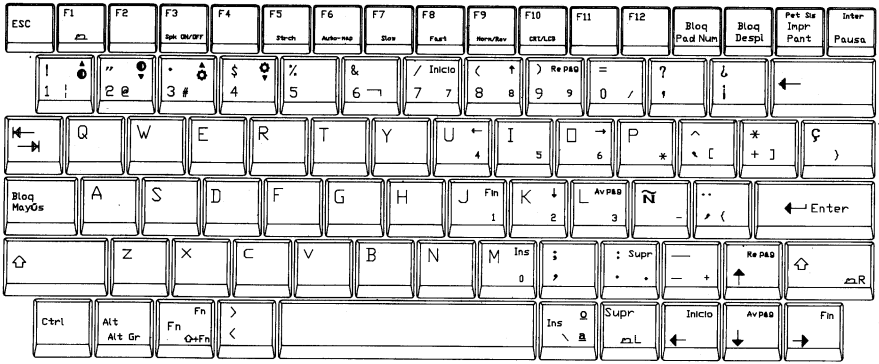
Norwegian Keyboard



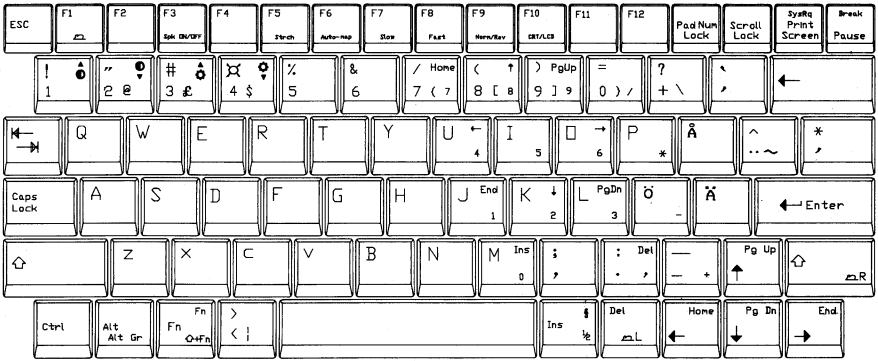
Portuguese Keyboard



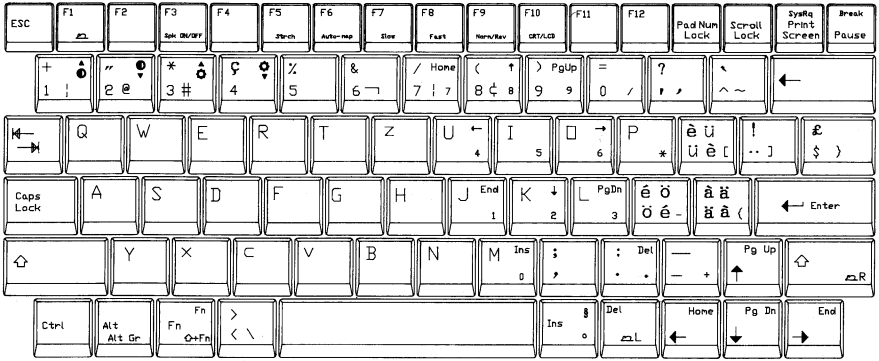
Spanish Keyboard



Swedish Keyboard



Swiss Keyboard



POST & Boot Error Messages

The following is a list of error messages you might encounter during the POST (Power On Self Test) that the computer runs when you turn it on. In most cases you will need to refer to your vendor for a solution if a problem persists. You can sometimes overcome a problem by turning the computer off and then on again. Try this several times before you take the unit in for service.

If the error message concerns the hard disk and you are later able to get the computer to run, use a hard disk utility program to check the condition of the disk.

Always try to eliminate the possibility that a problem has to do with your software configuration, which is more common and more likely than a hardware failure. Computers can sometimes display problems that are temporary and not serious. If you experience a problem and you feel certain that your software configuration is not responsible, Try the following:

1. Turn the computer off, wait a moment and then try turning it on again. The "problem" may very well have disappeared.

2. Check any and all hardware connections you can to make sure that the problem isn't being caused by a loose connection somewhere. These will mostly be whatever you've connected to the computer. Don't fool around in the upgrade compartment unless you really know what you are doing. Also make SURE that you don't do anything to void your warranty. Whatever you do, don't try to take the computer apart.

If any problem persists or is intermittent but consistent, send the computer in to be checked.

In the list below the message is given first, followed by a brief explanation of its meaning and suggested action.

Message: Floppy Disk Controller Error

Meaning: There is a problem with the chip that controls the function of the floppy disk drive. This does not mean that the chip has failed. It could be a problem with the controller chip, the floppy disk drive, or the connection between them.

Suggested Action:

1. Turn the computer off and on. The problem may not recur.

2. Put a bootable floppy disk in the disk drive, turn on the computer and see if it boots. If it does, take the disk out and restart the computer to see if it will work without the disk in the drive.

3. If the message persists, contact your vendor for instructions.

Message: Unable to reset hard drive/controller error

Meaning: The hard disk controller electronics are having a problem. This does not mean the hard disk is broken. The problem could be temporary; there may be a problem with the control electronics or there might be a problem with the connection between the hard disk and the mainboard.

Suggested Action:

1. Turn the computer off and on. The problem may not recur.

2. Put a bootable floppy disk in the disk drive, turn on the computer. If the computer boots, try to access drive C:. If you can access the drive the problem is probably at the software level. Try using a disk maintenance utility program.

3. If the message persists, contact your vendor for instructions.

Message: Unable to calibrate hard drive

Meaning: This message is similar to the one above, but the problem is most likely in the hard disk.

Suggested Action:

1. Turn the computer off and on. The problem may not recur.

2. If the message persists, contact your vendor for instructions.

Message: Hard disk sector verify error

Meaning: The system is unable to successfully complete a test of the hard disk drive. This may indicate a problem with the hard disk hardware.

Suggested Action:

1. Turn the computer off the on again. The problem may not recur.

2. If the message persists, contact your vendor for instructions.

Message: Unrecognized hard drive

Meaning: The hard drive installed in your computer is not supported. This is quite unlikely to happen, but, if you had a third-party vendor install a hard disk drive different from the original one this could possibly happen.

Suggested Action:

1. Replace the hard disk concerned with one that your vendor confirms is supported by the computer.

Message: Keyboard error

Meaning: There is some kind of problem related to the keyboard. This can happen for a number of reasons, some of them temporary and inconsequential. The cause can range from you accidentally holding down a key or keys during the POST to a loose connection between the keyboard and the computer's mainboard.

Suggested Action:

1. Turn the computer off and try again. Make sure no keys are pressed.

2. If the message comes up again, try to get into the setup program and see if the keyboard will work in it. Make sure the "Keyboard Type" setting is set to simulate the keyboard you have, e.g. an American keyboard should be set for "US" and a British one for "Non-US".

3. If there is still a problem, turn the computer off, open the upgrade compartment and look at the ribbon cable that connects the keyboard to the mainboard (its obvious, its the only thing that goes between them) and see if it looks loose. You can push or wiggle it gently, but don't try to fix it if it is coming out. The cable connector is not a standard plug-on type. If it has worked loose you should have your vendor take care of it for you. In any case this isn't very likely to happen.

Message: CMOS checksum error-defaults loaded

Meaning: The configuration record stored in the computer was not usable so the computer automatically loaded a the default settings stored in the ROM BIOS.

Suggested Action:

1. You will need to run the Setup program and enter your customized settings again, if you had any. If this problem arises it could indicate that the on board battery that supports the CMOS memory record of your settings is nearing the end of its usable life span. If you want to replace it before it fails, have your vendor change it for you.

Message: CMOS Battery has failed

Meaning: The on board battery that supports the small amount of CMOS memory where the hardware configuration information is stored is no longer usable. This is not the main battery the computer uses for power.

Suggested Action:

1. Have your vendor replace the battery.

Message: Memory error during memory test

Meaning: A problem was detected in the system memory during the POST. This could be caused by a number of things, most of which you can't do anything about yourself. It can be caused by a problem in the memory circuitry, a memory chip gone bad or a loose connection.

Suggested Action:

1. Turn the computer off and try again. The message may not come up again. If it doesn't, whatever caused the problem the first time was probably unimportant. If it happens repeatedly however, you should have the computer checked.

2. If the message still comes up, turn the computer off, open the upgrade compartment and gently push down on any memory expansion modules installed. MAKE SURE to take static electricity prècautions before you do this or you could end up damaging the modules or even the computer. If you don't have

any expansion modules installed, the problem is with the memory on the mainboard. Close the computer up and turn it on again. If you still get the message, you'll need to have your vendor solve the problem.

Message: BIOS checksum error

Meaning: The POST has detected a problem with the BIOS, the basic software permanently stored in a ROM chip on the mainboard that is necessary for the computer's basic function.

Suggested Action:

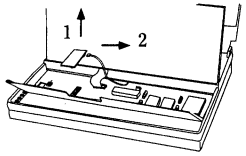
1. Turn the computer off and try again. If the message comes up again your vendor will have to solve the problem. There's nothing you can do about this yourself.

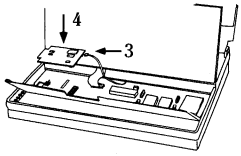
Installing A European Model Faxmodem

The European model faxmodem has different installation and use procedures than the North American model shown in Section Four. Refer to the following instructions if you have a European model fax modem.

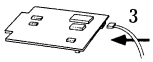
Installing a European Faxmodem

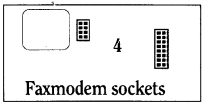
1. Remove the temporary spacer board from the faxmodem socket and detach the cable.
2.Attach the cable to the connector on the faxmodem.
3. Align the connectors on the underside of the card with the two corresponding connectors in the computer.
4. Press the card into the connectors on the computer board.





1. Remove the temporary board
2. Detach the cable
3. Connect the cable to the faxmodem
4. Press the faxmodem into the sockets

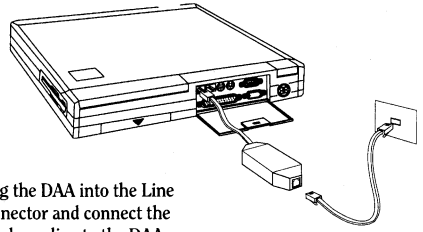




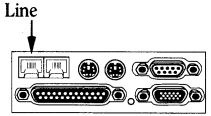
Technical Information

Connecting a European Faxmodem to the Telephone Line

To use the faxmodem in Europe you must use a connecting device called a DAA. Plug the DAA into the Line connector and the telephone line into the DAA.



Plug the DAA into the Line connector and connect the telephone line to the DAA



Notes:

Printed Taiwan R.O.C.
HD0SK400105 10/92 Rev.1