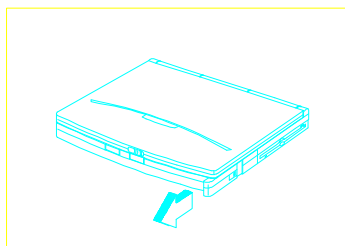


Operating on Battery Power

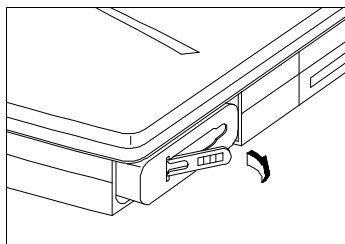
This chapter contains the information you need to know to operate the notebook on battery power.

2.1 Battery Pack

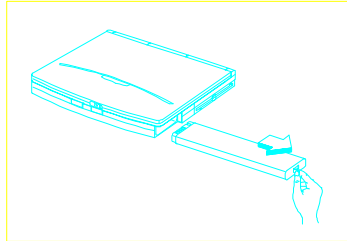
Whenever possible, use the AC adapter. The battery will come in handy when you travel or during a power failure. It is advisable to have an extra fully-charged battery pack available for backup. The battery pack is installed in the primary battery compartment. Before removing the battery pack, make sure the notebook power is off. Follow these steps to remove the battery.



1. Press the cover release and slide the cover out.



2. Flip-out the battery handle.



3. Using the handle, pull out the battery pack.



Do not expose battery packs to temperatures below 0°C (32°F) or above 60°C (140°F). This may adversely affect the battery pack.



If the notebook is to be stored for more than two weeks, we suggest that you remove the battery pack. Battery power (from a fully charged battery pack) depletes in roughly ten days with the notebook in standby mode. In suspend mode or power-off condition, the battery power depletes in one month.

2.1.1 Battery Pack Characteristics

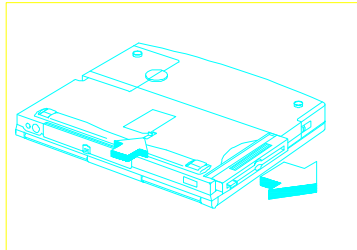
The battery pack has the following characteristics:

- **Battery pack self-discharge** Battery packs self-discharge slowly, which may result in a low battery power condition after being stored for weeks.
- **Memory effect** This is a phenomenon wherein charging finishes in one-third the normal charge time. This leaves the battery pack not fully charged. This situation can usually be improved by conditioning the battery pack at least twice. Please refer to section 2.3.2 for details on how to condition the battery pack.

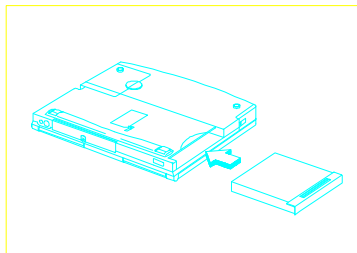
2.1.2 Installing a Secondary Battery Pack

The notebook's modular design allows you to use two battery packs at the same time. The primary battery pack is inserted into the primary battery compartment. A secondary battery can be inserted into the accessory bay when you need it.

Follow these steps to install a secondary battery pack.



1. Turn off the power or enter suspend mode. Then, remove the internal diskette drive by unlocking the accessory bay lock and pulling the diskette drive out. Set aside.



2. Slide the secondary battery pack into the accessory bay and click into place.
3. Power on the notebook or resume from suspend mode.

2.2 Charging the Battery

Place the battery pack inside the battery compartment and plug the AC adapter into the notebook and an electrical outlet.

The adapter has three charging modes:

- Rapid mode

The system uses rapid charging when the notebook (with a battery pack installed) is turned off and a powered AC adapter is connected to it. In rapid mode, a fully depleted NiMH battery gets fully charged in approximately one and a half hours. The power indicator turns orange in this mode.

- Charge-in-use mode

When the notebook is in use with the AC adapter, the notebook also charges the battery pack if one is installed. In this mode, the power indicator displays two colors — green and orange.

- Trickle mode

When the battery is fully charged, the adapter changes to trickle mode to maintain the battery charge level.

2.3 Optimizing Battery Life

This section helps you get the most out of battery operation. Optimizing battery life prolongs the charge/recharge cycle and improves recharge efficiency.

2.3.1 Maximizing Battery Power

Follow these suggestions to maximize battery power:

- Purchase an extra battery pack
- Use the system utility ASTDK to reserve hard disk space for the zero-volt suspend function once the system is installed with DOS.
- Condition the battery pack to reduce the possibility of memory effect. Refer to section 2.3.2.
- Use the AC adapter whenever possible so that the battery is reserved for on-the-go computing.
- Disable the parallel and serial ports if no devices are connected to these ports. You can do this through Setup.
- Make use of the power-saving modes described in sections 2.4 and 2.5.
- Eject the PCMCIA card from the card slot when not in use, since the PCMCIA card draws extra power

When using a network card, logout first before ejecting the card.

- Use the disk cache utility SMARTDRV (bundled with MS-DOS) or create a virtual disk (RAMDRIVE) to lessen the loading of the hard disk drive.
- Store the battery pack in a cool, dry place. The recommended storage temperature for battery packs ranges from 10 to 30 degrees C. The higher the storage temperature, the faster the battery pack self-discharges.

- The batteries can be recharged about 500 times when used as directed. Excessive rapid recharging decreases battery life.


2.3.2 Conditioning the Battery Pack

Conditioning the battery pack reduces the possibility of memory effect. We recommend that you condition the battery pack at least once every month, preferably twice a month. A battery discharge utility helps you discharge the battery pack quickly.



The secondary battery pack (Li-Ion) does not need conditioning.

Follow these steps to condition the battery pack:

1. Connect the AC adapter.
2. Turn on the notebook (with the primary battery pack installed).
3. Enter Setup by pressing the no-reboot Setup button () or the b-a-| key combination.

Advanced System Configuration	Page 1/2
<div style="font-family: monospace;"> Power Management Mode ----- [Enabled] LCD Standby Timer ----- [1] Minute(s) Hard Disk Standby Timer ----- [1] Minute(s) System Standby/Suspend Timer ----- [3] Minute(s) Battery-Low Warning Beep ----- [Enabled] Standby/Suspend upon Battery-Low ----- [Enabled] Modem Ring Wake Up From Standby ----- [Enabled] Password Check during Resume ----- [Disabled] </div>	
↑↓ = Move Hightlight Bar, →← = Change Setting PgDn/PgUp = Move Screen, F1 = Help, F7 = Discharge Battery, Esc = Exit	

4. Press r to activate the battery discharge function. This disables all power-management functions and uses up the battery power even if the AC adapter is connected. The following screen displays.

System is now powered with an
AC adapter. Please confirm
a battery pack is installed.

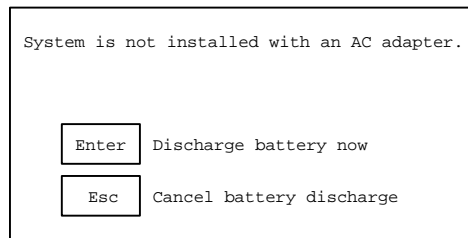
Enter

Discharge battery now

Esc

Cancel battery discharge

If the AC adapter is not installed, the following screen displays.



Press e to discharge the battery or | to cancel the operation.

The battery pack begins discharging. The battery discharge function also deactivates the power-saving features by disabling the Power Management Mode parameter.

After the utility has discharged the battery pack, the notebook power turns off. The AC adapter then charges the battery pack.



We suggest that you perform this function by activating it at night before retiring, letting it discharge overnight before traveling. Also, connect an AC adapter to the notebook and to a power outlet. This ensures a fully charged battery for use the next day.

2.4 Power Management

This notebook has a built-in power management unit that monitors system activity. System activity refers to any activity involving one or more of the following devices: keyboard, mouse, diskette drive, hard disk drive, peripherals connected to the serial and parallel ports, and video memory. If no activity is detected for a specified period of time (called an inactivity time-out), the system switches to one of the power-saving modes to conserve energy. These power-saving modes are LCD standby mode, hard disk standby, and system standby/suspend mode.



The Setup utility allows you to specify the inactivity time-out.

The power management function does not work when the cursor is emulated by software such as Chinese system (ETv3.1), Japanese system (DOSV), Winword, etc.

2.4.1 LCD Standby Mode

Screen activity is determined by the keyboard, the built-in touchpad, and an external mouse. If these devices are idle for the period specified by the LCD Standby Timer, the LCD shuts off until you press a key or move the touchpad or external mouse.



We strongly recommend you to enable the LCD Standby Timer with a shorter time interval to prolong your battery life.

2.4.2 Hard Disk Standby Mode

The hard disk drive enters the standby mode when there are no disk read/write operations within the period of time specified by the Hard Disk Standby Timer. In the standby state, the power supplied to the hard disk drive is reduced to a minimum. The hard disk drive returns to normal once the system accesses it.

2.4.3 System Standby Mode

The notebook consumes very low power in system standby mode. Data remain intact in the system memory.

The necessary condition for the notebook to enter system standby mode is that the reserved disk space size for saving system and video memory is insufficient so the notebook is unable to enter zero-volt suspend mode.

In this situation, there are three ways to enter system standby mode:

- Press the standby/suspend button (**Z**)
- Set a value for the System Standby/Suspend Timer in Setup. If the waiting time specified by this timer elapses without any system activity, the notebook goes into system standby mode.
- Enable the Standby/Suspend upon Battery-low parameter in Setup. If a battery-low condition occurs, the system goes into system standby mode. See section 2.6.

The following signals indicate that the notebook is in system standby mode:

- The buzzer beeps (when you press the standby/suspend button)
- The standby mode indicator (**Z**) lights up

When the system enters system standby mode, power is supplied only to the CPU, DRAM (memory), VGA controller and VRAM (video memory). Power is cut off to the rest of the system.



Unstored data is lost when you turn off the notebook power in system standby mode.

To leave system standby mode and return to normal mode, press the standby/suspend button (**Z**).

2.4.4 Suspend Mode

In suspend mode the system power shuts off. The notebook saves all system information onto the hard disk before it enters suspend mode. The notebook restores this information and resumes where you left off upon leaving suspend mode.

A necessary condition for the notebook to enter suspend mode is that the reserved space for saving system information on the hard disk must be larger than the combined system and video memory size. Under such conditions, the system standby/suspend button acts as the suspend button. See Appendix D for information on the ASTDK utility.

In this situation, there are three ways to enter system suspend mode:

- Press the standby/suspend button (**Z**)
- Set a value for the System Standby/Suspend Timer in Setup. If the waiting time specified by this time elapses without any system activity, the system goes into suspend mode
- Enable the Standby/Suspend upon Battery-low parameter in Setup. If a battery-low condition takes place, the notebook enters suspend mode in about five minutes. See section 2.6.

When the notebook enters suspend mode, the whole system does not consume any power except for the standby/suspend activation circuit.

To exit system suspend mode, press the power switch (**⏻**) or the standby/suspend button (**Z**).



If the notebook is connected to a LAN environment, note that it does not resume connection even after the notebook returns to normal operating mode.

2.5 Advanced Power Management (APM)

This notebook supports the APM standard designed to further reduce system power consumption. APM is a power-management approach defined jointly by Microsoft and Intel. An increasing number of software supports APM to take advantage of power saving features and allows greater system availability without degrading performance.

To use the APM feature under the Windows environment, run Windows Setup and select MS-DOS System with APM as your computer type in the System Information menu. Refer to the Windows user's guide for more information.

You can use the APM feature under the DOS environment by including the POWER.EXE command in the CONFIG.SYS file. See the MS-DOS manual for instructions on how to edit the CONFIG.SYS file. For more information about APM, type the following at the DOS prompt:

```
HELP POWER.EXE e
```



If you enable the Power Management Mode parameter in Setup without installing the APM under DOS or Windows, the system time and date do not display the correct settings after the notebook returns to normal operation from system standby or suspend mode. To update the time and date, reboot the notebook. Enable APM to avoid this problem.



Advanced Power Management greatly prolongs battery life. Use APM whenever possible.

2.6 Battery-low Warning

You never have to worry about battery power as long as you are using the AC adapter. However, when you operate the notebook on battery power, pay extra attention to the warning beeps and the power indicator.

The power indicator flashes when the battery power is low. If a secondary battery pack is installed and the power indicator still flashes, the secondary battery pack is also running low on power.

The following signals indicate a battery-low condition:

- The buzzer generates four continuous beeps every minute, if you enabled the Battery-low Warning Beep parameter in Setup
- The power indicator flashes at regular intervals until battery power is depleted

When you receive a battery-low warning, you have around three minutes¹ to save your work. If you do not connect the AC adapter within this period, the notebook enters suspend mode if the Standby/Suspend upon Battery-low parameter in Setup is enabled and the following conditions exist:

- There is enough battery power left to save system information onto the hard disk.
- The reserved disk space for saving these data is larger than the combined system and video memory size.

Otherwise, the notebook enters system standby mode.



Connect the AC adapter or insert a charged battery pack into the notebook as soon as possible. Data is lost when notebook power is cut off during system standby mode.

¹ You may have less than three minutes if your battery is not fully charged.

Table 2-1 lists the recommended course of action when you encounter a battery-low condition.

Table 2-1 Course of Action for Battery-low Condition

Situation	Recommended Action
AC adapter and power outlet available	<ol style="list-style-type: none">1. Connect the AC adapter to the system.2. Save all necessary files.3. Resume work.4. Turn off the system if you wish to recharge the battery rapidly.
An extra fully-charged battery pack available	<ol style="list-style-type: none">1. Save all necessary files.2. Exit the application.3. Turn off the system.4. Replace the battery pack.5. Turn on the system and resume work.
AC adapter or power outlet not available	<ol style="list-style-type: none">1. Save all necessary files.2. Exit the application.3. Turn off the system.