



5 Power

5

This chapter is about the power system, both hardware and software:

Hardware

AC adapter
battery pack(s)

Software

Setup utility parameters
power & battery management utilities






The first part covers the battery(ies) and the AC adapter. To see where these fit into the system, review the system layout in *Chapter 1: Introduction*.

The second part is about the power usage and management - how to get the most out of your battery(ies). Part of this involves settings in the *Setup* utility, so you should also refer to *Chapter 4: Firmware*.

Icons

The LED panel has four icons relating to the Power system:

TABLE 5 – 1
LED POWER INDICATORS

LED/Indicator	Name	Variation		Meaning
		System State	Color	
	On/OFF switch	(all states)	no light	system OFF / Save to Disk
			ON	system On / Standby
			flashing	Suspend (to RAM) - 1st ID only
	Power Bar	(all states)	ON	system On Standby / Suspend (to RAM)
			no light	system OFF Save to Disk
			flashing	Suspend (to RAM) - 2nd ID only
	AC-power	(all states)	ON	power from AC adapter
			OFF	battery powered
 	Battery Status	AC-in	green	fully charged
			red	battery is charging
		Battery only	no light	battery charge OK
			flashing green	battery Low



Warning


Only use an approved adapter. The wrong adapter could damage the computer.

POWER HARDWARE

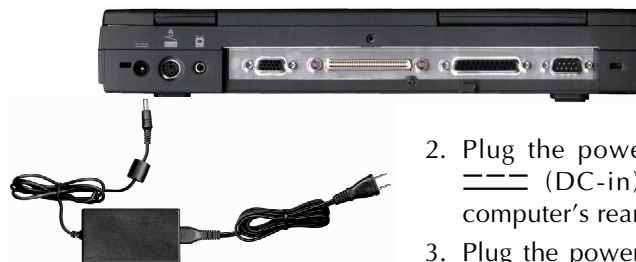
You can operate the notebook on either AC or battery power. The next two sections are about how to use these power sources and other AC/battery power related information.


AC POWER

The notebook comes with an AC power cord and a universal, auto-switching power adapter. You can use the adapter anywhere the voltage is steady, between 100 and 240 volts.

When the adapter is connected to a power source and then to the computer, the  icon on the LED panel lights to indicate the system is receiving AC power. To use the AC adapter:

1. Plug the power cord to the power adapter.



2. Plug the power adapter to the  (DC-in) socket on the computer's rear panel.
3. Plug the power cord into a wall outlet.
4. Press the ON/OFF switch for **one second** to turn the system on.

CONNECTING AC ADAPTER
FIG. 5 – 1

BATTERY POWER

The notebook comes with a rechargeable battery. You can get a replacement battery or 2nd pack (pallet & battery) from your dealer.

FIRST-TIME USE & STORAGE

If you don't use battery packs for a long time (about three weeks), they should be discharged completely and then recharged. The battery that came with your new computer may have been in storage or shipment for some time. So, we **strongly recommend** that you follow these steps when you receive this computer or if you have not used the battery(ies) for a long time. Note that you should follow this procedure regardless of whether or not the AC power source is plugged in during the battery inactivity.

1. Install the battery in its compartment (if it's not already there).
2. Make sure that the AC power source is plugged in. Refer to the AC Power section for details. Turn on the system and press **Ctrl-Alt-S** to enter *Setup*. (If you are not sure how to do this, refer to *Chapter 4: Firmware*.)
3. Open the Power and set the Power Savings to "Disabled" .
4. Save the setting by choosing "Exit Saving Changes" in the Exit menu.
5. Make sure that your operating system does not activate Advanced Power Management (APM). If you are using *Windows 9x*, reboot using "Command prompt only".
Note: if your hard disk is not bootable, insert a bootable floppy disk in drive A: before rebooting.



6. After the system finishes booting, detach the AC power source. Discharge the battery completely by leaving the system on for about two (2) hours for each battery, until the system shuts itself down. Ignore any low power warnings.
7. Plug in the AC power source to recharge the battery. Leave the system off while charging. The battery status icon stays red during charging. When the battery is full, the light turns green. The approximate charge time is about two hours (per battery). Refer to the Using & Charging the Battery Pack section in this chapter for details.
8. Turn on the computer and press **Ctrl-Alt-S** to enter *Setup*. Open the Power menu and reset your preference. Save the setting and reboot.

BATTERY POWER

You can install and charge a battery in both the battery and drive bays.

INSTALLING & REMOVING A BATTERY PACK

First, use one of these methods to protect your work

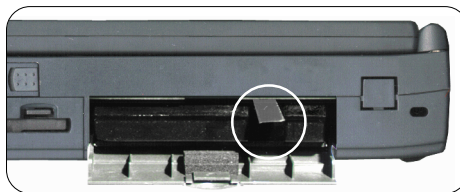
- Use *Save to disk* mode.
- Shut down the system.
- Put the system in *Suspend* mode and make sure power is available from the Power bay or the external adapter module.

INTO THE POWER BAY

Note: The battery pack is packaged separately from the notebook.

1. Open the battery bay door.
2. Remove the used battery if present. Pull it out by its tab (use a paperclip or your fingernail to pull out the tab from the battery's end).
3. Remove the battery from its packaging.

PULL THE BATTERY OUT
BY THE TAB
FIG. 5 – 2





- Slide the fresh battery into the slot. If there is any resistance as you slide it in, check for and remove any foreign objects that may have gotten into the bay.

Note: The battery's connector must be toward the back of the notebook.

- Raise and secure the bay door.

INTO THE DRIVE BAY

Before you can install a 2nd battery, you must mount it in a power pallet. The pallet is secured in the Drive bay with the module latch on the bottom of the computer and a latch on the pallet's front.

- Angle the battery into the battery frame.
- Unlock the drive module (FDD or Zip) and slide it out (refer to *Chapter 3: Modules*).
- Slide the battery frame into the Drive bay until it "clicks" into place. Lock it into position with the front latch.



Warning

If you have a device other than a battery in the Drive bay (e.g. a FDD), DO NOT remove it from the bay while the system is accessing it. Doing so may damage the device, data on the medium, and/or the system to "crash".

2ND BATTERY PACK

FIG. 5 – 3


**Warning**

If your system does not have a “smart battery” (e.g. an SMP-202P), Windows 95’s APM and SystemSoft’s Power Profiler under Windows NT 4.0 do not work.

USING & CHARGING THE BATTERY PACK

When the system is using battery power only, the battery status LED is not lit during normal operation. If the LED flashes green, the battery is low. In this case, *save your work immediately* and do one or more of the following:

- Plug in the AC adapter
- Replace the battery pack while connected to the AC adapter or with a 2nd battery present
- Go into Suspend (to RAM)
- Load a 2nd battery .

When the system receives AC power, the  LED glows and the battery status LED(s) displays a steady red light to indicate AC-in and battery charging. When the battery is fully charged, the battery status light turns green. Refer to *Appendix A: Specifications* for guides to battery life and recharging times.



POWER MANAGEMENT

HARDWARE (BATTERY STATUS & WARNINGS)

After the POST finishes, the Battery status LED indicates the battery's charge level. When the battery is low, this icon flashes. *Save your work immediately* and follow the suggestions on page 5-8.

LOW BATTERY & SUSPEND

If you selected *Suspend* in *Setup* for Battery Low, the system goes into *Save to Disk* or *Suspend* mode (if you haven't given the system more power). When the system goes into *Save to Disk* mode, system status information is recorded to a special file or partition on the HDD and then the system turns OFF. Otherwise, information is saved to the RAM and the system goes into low power mode.

If either of these options starts, the battery should be considered “fully” depleted, though it maintains a small, safety, reserve. If the battery depletes its safety reserve, the system can't be turned on and anything not saved to disk is lost. In this case, you must replace or enhance the power supply.

If you wish to use *Save to Disk*, you need to setup the *Save to Disk* partition, which is described in the side-bar on the next page.



Warning

If you haven't set up the system for Save to Disk, or if the space reserved for the Save to Disk partition isn't large enough, the system will default to Suspend (to RAM) mode and your unsaved data will be lost when power is turned off.

FIRMWARE (SETUP CONTROLS)

The Power menu in *Setup* controls how *Suspend (to RAM)* or *Save to Disk* is activated. Refer to *Chapter 4: Firmware* on how to setup these modes.

SAVE TO DISK

This suspend method records system status information to a special file or partition on the HDD and then turns the system OFF.

Depending on the option you selected in *Setup*, *Save to Disk* can be activated by:

- Critical Low battery power
- Pressing **Fn+F10**
- Specified time-out after the *Suspend (to RAM)* mode

Once the function is activated, the system makes a starting beep. When system status information is being saved into the specially-reserved hard disk area (partition or file), the system shuts down.



Save to Disk Setup

When the BIOS instructs the system to "Save to Disk", it makes use of a special **file** or **partition** on the HDD. This is created and managed by the *PHDISK* utility found on the same floppy as for the CD-ROM driver. Another copy is on the *Drivers/Utilites* CD-ROM.

SPACE

Both partition and file methods occupy the same amount of space on your HDD. The *PHDISK* setup utility will automatically define the space to be reserved according to your system memory size. But if you prefer to define yourself, the size of the space must be greater than the total size of the memory (DRAM) and the notebook's video RAM. A typical setup's space requirement might be:

memory type	size in KB	size in MB
system	65,536KB	64MB
video	4,096KB	4MB
total	69,632KB	68MB
recommended*	70,656KB	69MB

* The recommended space should always be about 1MB more than the total calculated. The extra MB is for data from other chip registers.

(1MB = 1024KB)

Check the specifications for your system before you run the *PHDISK* utility.

Note: If you want to use different setup method (i.e. change from partition to file method, or vice versa) after setup, you must delete the existing partition or file before you can use the new method to do the setup.



Save to Disk Setup (cont.)

THE PARTITION METHOD

Since this method requires you to configure your HDD, you must make sure you have enough **unpartitioned, unformatted** hard disk space to accommodate the size of the partition you expect to have **before** this setup. Follow these steps to prepare the partition:

1. Boot up the computer from a bootable disk.
2. Insert the PHDISK Utility floppy.
3. Run PHDISK.EXE at the DOS prompt, type
a:>PHDISKP [Enter], type "1" [Enter], then
 - to use the default setting, press [Enter]
 - to make a partition the size you prefer (e.g. for a 37MB=37,888KB partition), type "37888" then press [Enter]
4. When finished formatting, choose "3", then press **any key** to reboot the system.

Note: When run your operating system's partition utility (e.g. MS-DOS's **FDISK**), it will tell you that it has found a "Non-DOS" partition. Do not do anything to this partition, and be careful not to format the "Non-DOS" partition.

Other Controls – Reformatting (partition only)

If your Save to Disk partition becomes corrupted or develops too many "bad sectors", you should reformat the partition by typing,

a:>PHDISKP [ENTER], type "1" [Enter]

When finished reformatting, choose "3", then press **any key** to reboot the system.

To resume work, press the ON/OFF button to turn the system back ON. The system will return to the state before it went into *Save to Disk* and turn on all devices.

Security Note: If you setup a password in *Setup*, you will need it to resume from *Save to Disk*.

Ring in Note: Since the system is OFF during this mode, a Ring-in will not wake up the system. If you want a ring-in from a fax-modem to wake the system, do not use this setting.



Warning

Do not remove or change the PC Cards while the system is in Save to Disk Mode. The slots are turned off and any change in the system configuration may cause problems when the computer comes back on.

SUSPEND (TO RAM)

In this mode, the computer is powered down, but still maintains power to the DRAM to preserve the system information stored there.

Depending on the option you selected in *Setup*, *Suspend* can be activated by:

- low battery power
- pressing **Fn+F10**
- after the specified Standby time-out

Pressing any key reactivates the computer. However, each time this happens, you risk depleting the battery beyond its safety reserve and losing any data not saved to a disk.

Security Note: Passwords are not needed to resume from *Suspend*. If you want password protection, use the *Save to Disk* alternative.

Ring in Note: The system will wake if a ring-in is detected from a fax-modem.



Save to Disk Setup (cont.)

THE FILE METHOD (FOR FAT16/FAT32 FILE SYSTEM ONLY)

This is a more flexible means of preparing your hard disk for the *Save to Disk* power saving system. However, it is not compatible with all types of file system. To setup this file you should,

1. Make sure your hard disk is defragmented (there are numerous utilities available for this).
2. Reboot the computer in the DOS mode.
3. Insert the *PHDISK* Utility floppy.
4. Run *PHDISK.EXE*
a:>**PHDISK** [Enter], type "2" [Enter], then
 - to use the default setting, press [Enter]
 - to make a partition the size you prefer (e.g. for a 69MB=70,656KB partition), type "70656" then press [Enter]
5. When finished creating, choose "3", then press **any key** to reboot.

Note: When finished, the utility will save the file, **SAVE2DSK.BIN**, as a hidden, system, and read-only file in your root directory of drive "C:".

Other Controls – Deleting (partition or file)

If you want to remove the partition or file, type
a:>**PHDISK** [ENTER] (for partition method),
or a:>**PHDISK** [ENTER] (for file method), then type "2" [Enter]. When finished deleting, choose "3", then press **any key** to reboot.

Note: This deletes the contents of the partition if you use the partition method. To make the partition DOS-usable, next use DOS's *FORMAT* utility.



SOFTWARE (UTILITIES)

Your system is designed to work with two power management utilities: APM and SystemSoft's PowerProfiler.

APM

Developed by Microsoft and Intel, Advanced Power Management (APM) is embedded in the *Windows 9x* operating systems. Use the **Power** icon on *Windows 9x*'s Control Panel to access *APM*. For best results, use default settings.

For more information about *APM*, refer to your operating system documentation.



Additional Power Management

You can conserve power by reducing the amount of disk caching *Windows 9x* does. From the Control Panel, select System. From the **Performance** tab, select **File System....** On the **Hard Disk** tab, select "Mobile or docking system" under "Typical role of this machine:". Your system performance may not be as fast, but the battery should last longer.

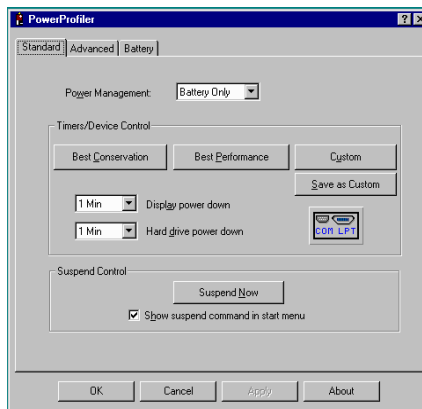
SYSTEMSOFT POWERPROFILER

Available in *Windows NT 4.0*, SytemSoft's PowerProfiler utility provides a full range of power management options. It allows you to set power management parameters and various alarms to monitor declining battery power and control overall power consumption.

The installation adds an icon, Suspend, in the Start menu, and another icon, PowerProfiler, in the Programs group. PowerProfiler is set to automatically load with *Windows NT*. Once activated, a small battery icon appears on the right bottom corner of your screen. You can use this icon to invoke *PowerProfiler* or to put the system in *Suspend*.

POWERPROFILER

FIG. 5 – 4



Installing SystemSoft PowerProfiler

To install *PowerProfiler* for *Windows NT 4.0*:

1. Insert the Drivers/Utilities CD-ROM.
2. From the **Start** menu, select **Run....** Then **Browse...** Navigate to:
D:\drivers\nt40\powerprofile\SETUP.EXE*
*This assumes your CD-ROM is drive "D:".
3. Click on **Open**, then **OK** and **Next** to proceed.
4. Click **Next** to accept the default installation directory. Or click on **Browse...** to select an alternative directory.
5. After the installation is complete, select **Yes** to read the README file. Or select **No** to proceed.
6. Click on **Finish** to restart.