
Battery Life Guide for the IBM PS/2 Model L40 SX

Introduction

This document contains information on how to get the longest battery life from your IBM* PS/2* Model L40SX.

Battery Conditioning

The rechargeable battery provided with your system is not charged when shipped. Fully charge the battery before using the system under battery power. To accomplish this, install the battery into the L40 SX and plug in the AC adapter. This is described in more detail in the *Quick Reference*. The battery charges with the system unit on or off. Fully charging and discharging a new battery several times conditions the battery for maximum life. Simply using your system on battery power discharges the battery. It is fully discharged when the low-battery warning sounds and the system enters suspend mode. Plug in the AC adapter to begin recharging the battery. After this initial conditioning, the battery will perform best if it is periodically fully discharged. Do this at least once every two weeks. It takes up to 10 hours to fully charge a completely discharged battery.

Suspend/Resume

The PS/2 Model L40 SX has a feature called suspend/resume. Suspend/resume provides a convenient way to temporarily interrupt work. When the cover is closed, the system enters suspend mode and beeps once to signal entering this mode. You can resume the session where you left off by opening the cover. When you open the cover, the system checks its functionality and restores the state of the system to the way it was before the cover was closed. This takes up to 30 seconds. Battery life can be improved by suspending rather than leaving the system on when it is idle for short periods. Turn the system off if it isn't going to be used for a longer period. Do not use suspend as a substitute for the power switch. A system left in suspend mode for an extended period discharges the battery.

Some application software interferes with the power management capability of the system and prevents it from suspending fully. If this happens, the system beeps twice when suspending. To resume, open the cover as with a full suspend. Battery life in partial suspend mode is shorter than in full suspend mode, so avoid leaving the system in this state for an extended period. Also, do not attempt a non-disruptive battery exchange (explained below) after a partial suspend.

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Non-Disruptive Battery Exchange

You can remove a discharged battery and replace it with a charged one without turning the system off. First enter suspend mode by closing the cover. The system beeps once. Wait 10 seconds and quickly replace the discharged battery with a charged one and then open the cover to resume operation. If you hear two beeps, do **not** make the exchange as explained above. (See Suspend/Resume on Page 1.)

Customizing the Model L40 SX

The Reference Diskette contains three batch files you can use to quickly set up your system for either maximum performance or long battery life. After setting up the system and installing DOS¹ copy the following three files to your root directory. Copy the files by starting your system and typing the following commands at the DOS prompt:

```
C:>copy a:default.bat c:\
C:>copy a:battery.bat c:\
C:>copy a:printcom.bat c:\
```

Your hard disk now contains the three programs. To use the programs, type the command: **C:>cd ** and press Enter to ensure that you are in the root directory:

The programs can now be used as follows:

- | | |
|---------------------------|--|
| c:>default | Sets the system for maximum performance and powers on all features and options. The economy switch (blue switch on the left side of the system status display) should be set to M for Manual for maximum performance This option does <i>not</i> yield maximum battery life. |
| c:>battery | Sets up your system for maximum battery life. Also set the Economy Switch to A for Automatic. This enables all of your system's power management capabilities. It also powers off the serial port, parallel port, and the optional Fax/Modem. The printcom program (described below) can be used to enable these options. Setting up the system with the battery program does <i>not</i> provide maximum performance. |
| c:>printcom on | Powers on the parallel (printer) port, serial port, and the optional Fax/Modem. |
| c:>printcom off | Powers off the parallel (printer) port, serial port, and the optional Fax/Modem. |

The screen brightness level is a major factor in determining battery life. To maximize battery life, adjust the brightness setting to the lowest level that allows you to view the screen comfortably. The contrast setting does not affect battery life.

¹ Batch files are also provided for OS/2. The same instructions can be followed at a full screen or windowed OS/2 prompt by replacing the letters bat with cmd wherever they appear in the instructions.

Customizing Further

The L40 SX is a battery operated computer that is powered by a rechargeable nickel-cadmium battery. To maximize battery life, the system contains power management features. The previous section describes how to customize the system using automated batch files. This section describes the underlying features and their effect on battery life. Use them to optimize system performance and battery life. These parameters are set with the "Set Features" program on your Reference Diskette. This program is described in the "Changing Operational Features" section of the *Quick Reference*. The following features are controlled by using the "Set Features" program:

- Power management mode (long battery life or high performance)
- Manual control of processor clock speed
- Setting timers, after a period of inactivity, to:
 - Turn off the backlight.
 - Turn off the hard disk.
 - Put the system into suspend mode.
- Power may be controlled for the following devices:
 - Parallel port
 - Serial port
 - Optional Fax/Modem or Serial port
- Features that can be adjusted using switches on the unit itself:
 - Enabling/disabling power management with the Economy Switch
 - Adjusting screen intensity.

Properly used, these options can tune the battery life and performance of the system. Exact battery life on a laptop computer is difficult to predict accurately. It varies according to how you have set the above options, the application being used, the number of hard disk or diskette accesses, and the initial state of the battery. Typical system use yields battery life in the range of 2 to 3 hours.

The following table provides estimated battery life savings for features that can be selectively powered on and off.

<i>Programmable Feature</i>	<i>Estimated Battery Life Savings</i>
Screen intensity low vs. high	30 minutes
Fax/Modem power off	15 minutes
Hard disk auto power off	10 minutes
Parallel port power	<5 minutes
Serial port power	<5 minutes

Battery life savings due to the processor clock speed setting and the automatic/manual switch are application dependent. Savings of 20 to 40 minutes have been observed by switching from manual 20 mHz to automatic long battery life. Some applications do not allow power management to function in an optimal mode. For these applications, a slow manual clock speed often yields the longest battery life.

To maximize battery life in some environments you can install power management device drivers. These power management device drivers also make it possible to do a full suspend and non-disruptive battery exchange for applications that otherwise would interfere with system power management functions. The device drivers are shipped on the system's Reference Diskette. The environments and installation instructions are as follows:

OS/2* Insert the Reference Diskette and type: A:PMNGINST at the OS/2 prompt.

WINDOWS 3.0 Edit the SYSTE M.INI file present in your Windows directory and add the following line after the line containing [386Enh]:
device=pm_bios.386

Then copy the pm_bios.386 file from the Reference Diskette into the Windows directory.

DOS If not needed by another application, remove the following line from the CONFIG.SYS file:
device=ansi.sys

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