Technical Notes

The Apple system software, in the form of the Power Manager, constantly monitors your battery voltage. As your battery voltage drops, the Power Manager will perform the following actions:

First warning

First, the Power Manager will issue an initial warning, and cut the backlighting by half to help conserve power. The initial warning states "You are now running on reserve power and your screen has been dimmed. Please plug your power adapter into an outlet, and then connect it to your PowerBook to begin recharging the battery."

Second warning

If your battery voltage continues to drop, the Power Manager will issue a second warning, and cut the backlighting by half again. The second warning states "Very little of the battery's reserve power remains. Please plug your power adapter into an outlet, and then connect it to your PowerBook immediately."

Final warning

If your battery voltage drops even lower, you'll get the final warning. This warning states "No reserve battery power remains. Your PowerBook will go to sleep in 10 seconds to preserve the contents of memory." As the warning says, in 10 seconds your PowerBook will go to sleep.

Hardware shutdown

While the software warnings mentioned above are supposed to prevent you from letting the battery get too low, there is also a hardware method that kicks in if the battery voltage gets very low. Unfortunately, this shutdown is not graceful - the Power Manager performs what is called a "hard shutdown" - and any unsaved files can be lost. Your PowerBook will only perform a hardware shutdown under very extraordinary circumstances.

Altering the warnings

The Power Manager determines when to issue the warnings by monitoring the battery voltage. When the voltage reaches predefined values, the Power Manager issues the warnings. Threshold allows you to alter these warnings, so you can control when they occur.

Threshold actually only lets you control the first warning. The second and final warnings are then adjusted automatically.

Threshold will only let you lower the warning voltage to a certain point. The threshold voltage for the first warning cannot be reduced so that the final warning is lower than the hardware shutdown point. Threshold will always keep the final warning several millivolts above the hardware shutdown, so you will still get all the appropriate warnings.

PowerBook differences

When the default warnings occur is different on some earlier models of PowerBooks, as reflected in the table below. Threshold automatically calibrates itself to your PowerBook, so your warnings will always match your PowerBook.

Model	First	Second	Final	Shutdown
Macintosh Portable	5.90v	5.85v	5.70v	5.65v
PowerBook 100	5.90v	5.85v	5.70v	5.65v
PowerBook 140	5.85v	5.77v	5.66v	5.60v
PowerBook 170	5.85v	5.77v	5.66v	5.60v
PowerBook 145	5.85v	5.77v	5.66v	5.60v
PowerBook 160	5.85v	5.77v	5.66v	5.60v
PowerBook 180	5.85v	5.77v	5.66v	5.60v
PowerBook 165c	5.85v	5.77v	5.66v	5.60v
PowerBook 145B	5.85v	5.77v	5.66v	5.60v
PowerBook 180c	5.85v	5.77v	5.66v	5.60v
PowerBook 165	5.85v	5.77v	5.66v	5.60v