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PCMCIA for PowerBook: Frequently Asked Questions (4/97)

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TOPIC ------------------------------------------------------------

This article answers some frequently asked questions (FAQ) about the PowerBook
PCMCIA Expansion Module for the PowerBook 500 series and the built-in PCMCIA (PC
card) bay for the PowerBook 190, 5300 and 1400 series computers.


Questions Answered in this FAQ:
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1) Can I plug in PC Cards on the fly?

2) Will the Apple PCMCIA modem for the Newton work with PowerBook 500 PCMCIA
Expansion Module, and PowerBook 190/5300/1400 computers?

3) Will Newton storage cards work with PCMCIA capable PowerBooks?

4) If I insert a DOS formatted drive card, will it be recognized?

5) How do I initiate the ejection of a PC Card?

6) How are cards physically ejected and how do I get them out if that method
fails?

7) The card will not come out even when I insert a paper clip. What now?

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9) How much power does the PCMCIA Expansion Module draw?

10) What kind of power draw can I expect from PC cards on the PowerBook
5300/1400 series?

11) How do I protect the PDS connector on the PCMCIA Expansion Module when it is
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removed?

12) I understand there are three types of PC Cards, how many of each type will PCMCIA-capable PowerBooks accept?

13) Are there standards which assure that every PC Card is the same size?

14) Which PC Cards can I use with the PCMCIA Expansion Module and with the PowerBook 5300/1400 computers?

15) I inserted a modem card, but nothing happened. What's wrong?

16) Yesterday I set up my fax software and it worked fine. Now, it never dials.

17) I'm getting the message that the modem card can't be ejected because it's in use, but it's not in use.

18) The PCMCIA modem acts differently than an external modem rated at the same speed with the same software. (It could be the case that the external modem connects while the PCMCIA modem does not, or that the PCMCIA modem connects at a faster or slower speed.) Why is this?

19) I'm trying to eject a storage card, but the computer tells me I can't because the card is in use. But its not in use! There are absolutely no files or programs open.

20) My friend uses a DOS-compatible laptop with a PCMCIA slot. Can I copy documents onto a storage card with my PowerBook so that she'll be able to read them after inserting the card into her DOS machine?

21) What does PCMCIA stand for?

22) I inserted a Maxtor hard drive, and it has trouble ejecting.

23) I get poor and erratic results using a cellular phone with my PCMCIA modem.

24) I'm taking a mass storage card back and forth between a Macintosh and a PC. The problem is that each machine shows a different set of files and folders, and each machine claims to have the entire hard drive! The Macintosh thinks its a Macintosh drive (that is, it does not have the special PC icon), and the PC thinks its a PC drive! This can not be! What's going on?

25) Dragging the icon to the trash (or using the other software controls) to eject a card sometimes does not work. I get a message that the card was not ejected successfully. But sometimes this same card does eject just fine. Why?

26) Some cards are ejected all the way out and slide across my desk. Is this dangerous? Can I damage the card if it falls off the desk?

27) Sometimes I get poor throughput or failed file transfers when I'm using a high-speed modem connection. Sometimes it works fine. Why?

28) Where else can I go for answers?

29) Question: Where can I get the latest Apple software updates for my
PowerBook?

DISCUSSION --

1) Question: Can I plug in PC Cards on the fly?

Answer: Yes, individual cards can be plugged in at any time the PowerBook is
powered on and they will be recognized. If, however, the actual PCMCIA Expansion
Module is inserted or removed while the unit is powered on or in sleep mode, the
unit will shut down.

2) Question: Will the Apple PCMCIA modem for the Newton work with PowerBook 500
PCMCIA Expansion Module, and PowerBook 190/5300/1400 computers?

Answer: Yes, the Apple PCMCIA modem for the Newton will work with PCMCIA capable
PowerBooks provided you are using a communications application that uses the CTB
(Communications Toolbox). The vast majority of communications programs currently
available are CTB compliant.

3) Question: Will Newton storage cards work with PCMCIA capable PowerBooks?

Answer: No, Newton storage cards will not work with PowerBooks. They use a
different PCMCIA implementation and many are too wide to properly fit into a
PowerBook.

4) Question: If I insert a DOS formatted drive card, will it be recognized?

Answer: If PC Exchange 2.0.2 or later is installed, the drive will be mounted on
the desktop and you'll have full access to its files. PC Exchange itself does
not do anything with regard to file format. However, you may or may not have an
application on your PowerBook which can do anything useful with the PC files.

5) Question: How do I initiate the ejection of a PC Card?

Answer: PC Cards should eject if the desktop icon is dragged to the Trash or if
Put Away is selected from the Special menu.

6) Question: How are cards physically ejected and how do I get them out if that
method fails?

Answer: PC Cards are ejected by a mechanism triggered by a thin bi-metalic wire
called NitiNol (Nickel Titanium alloy) which contracts when a voltage is applied
to it. This contraction triggers the mechanism to eject the card. If you are
having trouble ejecting a PC Card, a paperclip can be inserted into the small

hole next to the PCMCIA slot to manually eject the card. Avoid manually pulling the card out of the computer - this could leave the mechanism set in the wrong position (see the next question).

7) Question: The card will not come out even when I insert a paper clip. What now?

Answer: You can pull the card out yourself with a pair of needle nose pliers or sometimes with your fingers, if you have strong fingernails. Once the card is pulled out, try inserting the paper clip again to release the spring mechanism. If you hear the springs release, you can try inserting the card (or a different card) again. Of course, the problem may recur.

Inspect the card for any obvious physical damage, large scratches, or other irregularities. If the ejection problem recurs, especially with various cards, you should have your PCMCIA Expansion Module/PowerBook 5300/190/1400 inspected by an Apple-authorized dealer or returned to Apple by calling 800-SOS-APPL.

8) Question: Can I start my PowerBook from a PC Card?

Answer: The PC Card slots are polled at startup, so if a card is inserted which contains the appropriate resources to start up the PowerBook and the startup control panel has the PCMCIA device selected, it will boot from the card.

9) Question: How much power does the PCMCIA Expansion Module draw?

Answer: Idle with no cards: .460 mA...less than 1 milliamp.

Operating with cards: Typical is 56mA plus inserted cards power draw. Maximum is 58mA plus inserted cards power draw.

The cards can vary from 150mA for modems to 600mA for rotating media. (New ExCA spec is trying to limit cards to 300mA.) Also, some cards have very high peak requirements (spinning up drive).

The PowerBook 500 series PDS connector is rated at 600mA continuous for the entire PDS module.

10) Question: What kind of power draw can I expect from PC cards on the PowerBook 5300/1400 series?

Answer: The following numbers are based on initial testing by Apple Computer. Some cards may vary from these numbers.

(Use mono-spaced font for best viewing)

Type of Card	Plugged In	Active
Modems	100-300mA	100-390mA

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Memory              3-21mA               100mA
Hard Disks      200-300mA           300-350mA
Ethernet        285-480mA           285-480mA
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11) Question: How do I protect the PDS connector on the PCMCIA Expansion Module when it is removed?

Answer: A small cover for the connector is included with the module. This cover should be in place any time the module is removed from the PowerBook.

12) Question: I understand there are three types of PC Cards, how many of each type will PCMCIA-capable PowerBooks accept?

Answer: There are two card slots which can accept one each Type I or Type II, or a single Type III card in the bottom slot.

13) Question: Are there standards which assure that every PC Card is the same size?

Answer: The PCMCIA PC Card standard only defines a specification for the pin configuration and the height of the card. The most common variations are the width of the card and rounding of the corners. If you have problems with the fit of a PC Card, try using the bottom slot.

The specification defines all dimensions for a Type II except radius of corners. In reality, not all cards (but most) conform to the spec. Some modem Type II specs exceed the 5mm height. The 5mm is a maximum.

What is undefined for Type III cards is the top case minimum dimensions. The maximum is defined, so cards that conform to the maximum work with the connector. Variants of the spec (unusual shapes and divots) in the top case cause problems.

14) Question: Which PC Cards can I use with the PCMCIA Expansion Module and with the PowerBook 5300/1400 computers?

Answer: With the PCMCIA Expansion Module for the PowerBook 500 series, you can use modem cards that conform to the PCMCIA 2.1 standard and flash cards and hard disk cards that conform to the ATA standard.

PCMCIA on the PowerBook 5300 and 1400 offers full Card and Socket Services support. This means that any 3rd party developer can modify their software drivers to make their cards available on the Macintosh. Card and Socket Services is part of the PCMCIA industry standard.

Apple will offer Card and Socket Services for the 500 series expansion module in the near future.

Through Apple's automated fax info system, you can obtain a list of currently

available PCMCIA products for PowerBook computers. Call (800) 462-4396 and
request document #10307. Note that document ID's sometimes change so you might
want to have a catalog of available documents faxed to you first.

15) Question: I inserted a modem card, but nothing happened. What's wrong?

Answer: In release one of the PCMCIA Expansion Module, modem cards don't appear
on the desktop. If the PCMCIA Quick Eject control strip module is visible, then
its appearance will reflect that either the upper or lower slot (or both)
contains cards. If the control strip isn't visible (or isn't installed) then
there will be no visible change when a modem card is inserted. However, the
insertion of a modem is sensed by the software, and the modem is added to the
list of devices available in the CTB (Communications Toolbox).

Programs which support the CTB (including MicroPhone, ARA) will display either
upper card slot or lower card slot (or both, if you've inserted two PCMCIA
modems) when you have the program open and are looking at the Connection dialog.
The name and location of this setup command will vary from program to program.
There's a popup menu in which you specify which port contains the modem you wish
to use. With a PCMCIA modem, the names of the ports will always be either upper
card slot or lower card slot. These ports only show up in the list while a modem
is inserted in a slot.

This is different from the traditional printer and modem ports, which always
appear, regardless of whether you have an external modem plugged into them. In
the case of the PowerBook 500, 5300, 1400,and 190 series, which has only one
physical serial port, it's called Printer-Modem Port.

With the PowerBook 5300, 1400 and 190 series, a PC Card's icon should always
appear on the desktop if it is being recognized. If the icon does not appear,
check to make sure all of the appropriate software is installed.

16) Question: Yesterday I set up my fax software and it worked fine. Now, it
never dials.

Answer: Sometimes software doesn't successfully store the identity of the port
to which your modem is connected. The software may have fallen back to its
default of the Printer-Modem port. Or, you might have inserted the modem into a
different slot than you used last time. Check the connection settings of your
software; for the port, select either upper card slot or lower card slot as
appropriate.

17) Question: I'm getting the message that the modem card can't be ejected
because it's in use, but it's not in use. I don't have any programs running,
other than the Finder!

Answer: Some software, such as fax modem software, will put the modem into
auto-answer mode. The modem may have to be considered busy while the modem
listens for an incoming call. This can happen with a background process or a
system extension, in which case there doesn't have to be an open application.

Launch your software and check the setup controls to see if auto-answer is on. For example, if there's a control for Answer on <3> rings, you might have to temporarily turn the modem software off or set it to Answer on <never> to free up and then eject the modem. Refer to the users guide which came with your modem software for more information.

18) Question: The PCMCIA modem acts differently than an external modem rated at the same speed with the same software. (It could be the case that the external modem connects while the PCMCIA modem does not, or that the PCMCIA modem connects at a faster or slower speed.) Why is this?

Answer: The answer to this question is very much the same as the answer for a customer just starting to use any new modem. Modems differ in their use of the Hayes command set. The PCMCIA Expansion Module and PowerBook 5300/1400 allow you to plug in a modem, but operating the modem and setting up your software to use the modem and connect to other services is not within the control of the PCMCIA hardware and software. You need to consult the user guide and/or the tech support service of your modem manufacturer and your modem software publisher to determine the correct AT commands.

To determine whether or not the modem is being made available (which is all that Apple's software is responsible for), get into the setup connection dialog. Its exact name and location varies from program to program. The method or tool (again, terms vary) should usually be Serial Tool. In some cases, Apple Modem Tool will also work.

When Serial Tool is selected, a window containing choices for port should appear. This window might have a horizontal scroll bar. The window will likely contain icons named, for example, modem/printer and upper card slot. If either upper card slot or lower card slot appears, then the PowerBook is working correctly (If the window also contains internal modem, then you have a built-in internal modem. This is not the same as your PCMCIA modem.) You should click the upper card slot (or lower card slot) icon to select the PCMCIA modem.

Further modem configuration, such as speed, handshaking, setup strings, AT commands, and so on, are the responsibility of the user, and the modem and software provider. Those settings should not be affected by whether the user has a modem plugged into the PCMCIA slot or an external modem plugged into the back of the computer. The PCMCIA Expansion Module and the 5300/1400 makes the modem available, but it does not control it.

19) Question: I'm trying to eject a storage card, but the computer tells me I can't because the card is in use. But its not in use! There are absolutely no files or programs open.

Answer: This is a common phenomenon when people start using any type of removable media, such as Syquest drives or PCMCIA cards. If File Sharing is on, then any drive which was in the computer when it started up can not be dismounted. Temporarily turn off File Sharing by using either the Control Strip module which looks like a folder or the Control Panel named Sharing Setup. After removing the card, you can turn File Sharing back on.

20) Question: My friend uses a DOS-compatible laptop with a PCMCIA slot. Can I copy documents onto a storage card with my PowerBook so that she'll be able to read them after inserting the card into her DOS machine?

Answer: Maybe. If you initialize a PCMCIA storage card on your Macintosh, it will be a Macintosh formatted volume, and your friends computer will probably not be able to recognize it unless her computer has software meant to translate Macintosh disks.

However, if you're using PC Exchange 2.0.2 or later, then a PCMCIA card formatted on a DOS machine should be readable. PC Exchange version 1.x handles DOS floppies only (not hard disks or removable devices like PCMCIA).

21) Question: What does PCMCIA stand for?

Answer: It stands for Personal Computer Memory Card International Association.

22) Question: I inserted a Maxtor hard drive, and it has trouble ejecting.

Answer: Some Maxtor drives use a case that's not perfectly rectangular. The unusual shape can cause problems during ejection. If any card can not be ejected, even when you insert a paper clip into the proper hole, the card will need to be removed by an Apple technician.

Note: The following unsupported workaround allows use of Maxtor cards: Insert a type I or Type II card (such as a modem or ATA flash card) into the top slot. Using a pair of needle nose pliers, pull the card out of the top slot. (If it was a storage card, and its icon had appeared on the desktop, drag the icon to the trash.) Physically pulling the card out of the slot without using any of the software ejection controls will leave the springs and levers in the top slot cocked back out of the way. The Maxtor drive can then be inserted, used, and ejected normally. When you're done using the Maxtor drive, insert a card into the top slot (as you do so you will not feel any resistance, because the springs are already cocked back). Then use the control panel or control strip to remove the card. It will auto-eject, and the springs will return to their normal position. At this point, attempting to insert a Maxtor drive may again result in problems.

23) Question: I get poor and erratic results using a cellular phone with my PCMCIA modem.

Answer: Cellular modem connections can suffer from a variety of problems:

Signal Strength

We have seen situations in which even though the phone itself indicates a strong signal, and voice calls are fine, data connections are unreliable. If possible, try moving to a different area, preferably away from buildings and towards a

known cell site.

Connection Speed

Connecting at 4800 bps or 7200 bps is often more successful than either 2400 or
9600 bps. If you add the AT command %B4800 or %B7200 to the modem initialization
string of your communications program, your modem will only try to connect at
that speed. It won't negotiate a speed with the other modem. We have seen this
significantly improve connections.

Sensitivity To Temporary Carrier Loss

Cellular connections undergo temporary interruptions much more often than
traditional land-based phone lines. For example, when your connection is handed
off from one cell to another (which can occur even when you are not moving),
it's not uncommon for the carrier signal to disappear for an instant and then be
reconnected. This happens automatically, usually without your noticing.

Modems use the S10 register to determine how long to wait before permanently
hanging up the connection when a loss of carrier is detected. The duration of
carrier loss which a modem will withstand before giving up the host varies from
modem to modem, but many of the modems you're likely to connect to (such as
those at online services) are likely to have a very short duration specified in
the S10 register.

Even if your cellular modem's S10 register has been set (via a connection script
or options file) to be tolerant of long periods of carrier loss, if the remote
modem to which you're connecting to has a small value in the S10 register, your
connection may fail often. If possible, ask the person in control of the other
modem to set a larger value in the S10 register. Most modems allow a value from
1 to 255 (measured in tenths of a second). The default is often 14 tenths.
Increasing this value to, say, 100 or more tenths.

24) Question: I'm taking a mass storage card back and forth between a Macintosh
and a PC. The problem is that each machine shows a different set of files and
folders, and each machine claims to have the entire hard drive! The Macintosh
thinks its a Macintosh drive (that is, it does not have the special PC icon),
and the PC thinks its a PC drive! This can not be! What's going on?

Answer: This can happen if you take a Macintosh-formatted card, then initialize
it on certain PC configurations, and then bring it back to the Macintosh for use
under PC Exchange.

The Mac files and folders should all be gone, (because of the PC initialization)
but they're still visible. During the initialization on the PC, the part of the
disk which contained the Macintosh directory information wasn't deleted as it
should have been. The drive is now in a dangerous and vulnerable state! Some of
the files may still be openable (on each respective machine), but there are no
guarantees, and the drive will certainly become corrupted if you continue to put
more files on it.

If you have a drive in this state, you should immediately copy the files to a

different location, such as the computer's internal hard disk. Do this both on the Macintosh and the PC. You may receive error messages, and some of the files may not be copied successfully, because each computer thinks it has full ownership of the same areas of the disk.

So far, this behavior has been seen only when the PC initialization is done with the IBM driver on a ThinkPad. The driver which comes with Ventura Micro software does not have this problem. Other versions of C&SS (Card & Socket Services) running on the ThinkPad are still under investigation.

If you reinitialize the drive in the Macintosh (using the Erase Disk command in the Special menu), it will no longer be recognizable to the PC, and you will be able to use it again safely if you use it only in the Macintosh.

Cards which are formatted on the PC (and never formatted on the Macintosh) can be used successfully going back and forth. The problem only occurs when a Macintosh-format card is re-formatted on a PC.

25) Question: Dragging the icon to the trash (or using the other software controls) to eject a card sometimes does not work. I get a message that the card was not ejected successfully. But sometimes this same card does eject just fine. Why?

Answer: Occasionally a card may not seat itself fully and cock the springs back quite all the way, so that the springs cannot push the card out when you request an ejection. Try pushing first on one corner of the card, making sure its firmly seated, then try the ejection again. If that does not work, push the other corner of the card and try the ejection.

If the card still does not auto-eject, you'll have to manually eject the card by inserting a bent paper clip into the hole next to the card. Notice that the upper and lower slots each have their own ejection hole.

SunDisk flash cards are particularly susceptible to this phenomenon when they're inserted into the top slot.

26) Question: Some cards are ejected all the way out and slide across my desk. Is this dangerous? Can I damage the card if it falls off the desk?

Answer: The amount of force necessary to disconnect the card from the internal connector and push it out varies widely from card to card. Type III hard drives are much heavier than Type I ATA flash cards, for example. For that reason its inevitable that some cards may come out far enough to leave the computer completely. PCMCIA cards are designed for the unpredictable rigors of portable computer users, and the chance of damaging the card is very low.

27) Question: Sometimes I get poor throughput or failed file transfers when I'm using a high-speed modem connection. Sometimes it works fine. Why?

Answer: This might be caused by a long-standing issue with Macintosh serial

communications; if you have LocalTalk active, it can interfere with other high-speed serial activity. Modem connections with DTE or port speeds of 19,200 and above can be particularly sensitive to this issue.

If you're using LocalTalk, consider turning AppleTalk off (using the Chooser) while you're doing modem transfers. Keeping your DTE or port speed the same as your modem connection can help. Using hardware handshaking can also help. Consult the documentation for your modem and communication software for more information about DTE speed and hardware handshaking.

28) Question: Where else can I go for answers?

Answer: If you haven't done so already, check the other PowerBook FAQ documents. Also, depending on where you found this FAQ, you should have access to Apple's Technical Information Library - located on the Internet at: <http://til.info.apple.com/>. This library is Apple's offical tech support database and contains thousands of technical articles which are easily searchable using boolean search strings.

This article is one of many available through the Apple Fax center. For a complete list of available fax documents, search the Tech Info Library for Apple Fax Document Index or call the Apple Fax line at 1-800-505-0171 and select document number 20000 (Apple Fax - Document Index - Product Support Literature). The Apple Fax center is available free of charge 24 hours a day, 7 days a week.

29) Question: Where can I get the latest Apple software updates for my PowerBook?

• On the Internet at the following sites:
  - Worldwide Web: <http://www.info.apple.com/swupdates>
  - ftp: <ftp://ftp.info.apple.com/>
• On America Online, use keyword: applecomputer

• On CompuServe, use GO: APLSUP

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