

# Chapter 6.

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## USING ATA DISK DRIVE CARDS

### Introduction

PCMCIA ATA hard disk drives represent a major technological breakthrough in terms of portability and exchangeability of large amounts of data. Two main types are available: solid-state devices such as the Sundisk ATA card which is a Type II device and rotating media ATA hard disk drive cards which are Type III devices. Both types are supported by all models of PC/104 PCMCIA Module. Both types of devices function in the same way and all instructions in this chapter apply to both types.

These devices make large capacity hard disk drives as convenient to use as floppy diskettes. With PC/104 PCMCIA Module installed on your desktop, you have instant access to the ATA hard disk drive you use in your notebook. This will save you hours in wasted time copying data to diskettes to transfer data between your portable computer and your desktop, and provides an easy way to install a second hard disk drive without having to open up your system and mess around with cables and connectors.

The PC/104 PCMCIA Module sockets provide full support for all brands of ATA hard disk drives, including the ability to boot from such devices. If you already have two hard disk drives installed on your system, with PC/104 PCMCIA Module models you can expand your system to three or four hard disk drives.

### ATA Hard Disk Drive Beep Codes

Just as with memory cards and I/O cards, when an ATA HDD card is inserted in the PC/104 PCMCIA Module slot, an audible beep is issued to inform you of the status of the card.

**Single low pitched beep = Card not inserted properly, defective card, software improperly installed or, for SRAM cards, low battery**

**Two high-pitched beeps (second has higher pitch than first) = Hardware and software is correctly installed and everything is working fine**

This signal tells you that the ATA card is working correctly. If you fail to hear this beep signal when you insert the card, this may indicate that the card is faulty or damaged.

## ATA HDD Drive Letter Assignments (Non bootable)

The drive letter assigned to an ATA HDD card will depend on the configuration of your system. The basic rules for drive letter assignment are:

The first two drive letters above those existing on the system are reserved for memory cards in Socket 1 and Socket 2. The next four drive letters are reserved for an ATA HDD in Socket 1 and an ATA HDD card in Socket 2.

In order to make this understandable, it is best to take some actual examples to illustrate the driver letter assignments when using **Cardsoft/Cardworks/Cardwizard** software.

### Example 1

If your system has two floppy drives and one hard disk drive formatted into two partitions, the drive letter assignments when running **Cardsoft 3.1** will be as follows:

- Floppy disk drive 1 - A: (no change)
- Floppy disk drive 2 - B: (no change)
- Internal hard disk drive partition 1 - C: (no change)
- Internal hard disk drive partition 2 - D: (no change)
- ATA HDD/ATA Flash card in PC/104 PCMCIA Module Socket 1-E:
- ATA HDD/ATA Flash card in PC/104 PCMCIA Module Socket 2- F:
- Memory card in PC/104 PCMCIA Module Socket 1 - G:
- Memory card in PC/104 PCMCIA Module Socket 2 - H:

### **Example 2**

If your system has two floppy drives and two hard disk drives both formatted into two partitions, the drive letter assignment when running **CardSoft 3.1** will be as follows:

- Floppy disk drive 1 - A: (no change)
- Floppy disk drive 2 - B: (no change)
- Internal hard disk drive 1 partition 1 - C: (no change)
- Internal hard disk drive 2 partition 1 - D: (no change)
- Internal hard disk drive 1 partition 2 - E: (no change)
- Internal hard disk drive 2 partition 2 - F: (no change)
- ATA HDD/ATA Flash card in PC/104 PCMCIA Module Socket 1-G:
- ATA HDD/ATA Flash card in PC/104 PCMCIA Module Socket 2- H:
- Memory card in PC/104 PCMCIA Module Socket 1 - I:
- Memory card in PC/104 PCMCIA Module Socket 2 - J:

### **Example 3**

If your system has two floppy disk drives (A and B) and one hard disk drive with a single partition (C ), the drive letter assignments for your PC/104 PCMCIA Module drives under **Cardsoft 3.1** will be the following:

- ATA HDD/ATA Flash card in PC/104 PCMCIA Module Socket 1- D:
- ATA HDD/ATA Flash card in PC/104 PCMCIA Module Socket 2-E:
- SRAM/Flash card in PC/104 PCMCIA Module Socket 1 - F:
- SRAM/Flash card in PC/104 PCMCIA Module Socket 2 - G:

#### Example 4

If your system has two floppy disk drives (A and B) and one hard disk drive with a single partition (C), the drive letter assignments for your PC/104 PCMCIA Module drives under **Cardwizard** will be the following:

- All cards in PC/104 PCMCIA Module Socket 1 - D:
- All cards in PC/104 PCMCIA Module Socket 2 - E:

### Making ATA HDD/Flash Cards Bootable

The PC/104 PCMCIA Module hardware includes a Boot ROM which allows you to boot from both memory cards and ATA hard disk drive cards. The procedure for making memory cards bootable is carried out using the standard DOS `FORMAT /U/S` command, as detailed in Chapter 4.

The step-by-step procedure for making ATA HDDs bootable with **Cardsoft 3.1** or **Cardwizard** is as follows:

1. Run **Cardsoft/Cardwizard** PCMCIA software.
2. Insert your ATA HDD/ATA Flash card into your PC/104 PCMCIA Module socket.
3. **Cardsoft/Cardwizard** will analyze your card upon the first insertion and return the number of cylinders, heads, sectors and tracks.
4. Run `ATAINIT.EXE`. The software will display the following:

```
SystemSoft ATAINIT Utility Version 1.12 (2178-14)
Copyright 1992-1995 SystemSoft Corporation. All Rights Reserved
Hit <ESC> or <Q> to exit or <F1> for help.

What letter do you want to init?
```

Choose D for the first PCMCIA socket, or E for the second socket.

5. `ATAINIT.EXE` performs a scan of your card and returns the same information that was presented in step 3.

```
Fixed Cylinders: 1008
                Heads: 15
Physical Sectors/track: 17
                <F1> - Help
                <ESC> - Quit
```

Here are the parameters that were returned, examine them carefully to insure they match what was expected.

Hit ENTER to accept and continue or <P> to prompt. [ENTER]

6. ATAINIT.EXE will display the following message:

Do you want a compact format?

Enter Yes and ATAINIT.EXE will wipe the BPB boot sector

7. At the DOS prompt, type:

FORMAT E:/S/U OR FORMAT D:/S/U

8. You should now copy the PC/104 PCMCIA Module drivers and the DOS files HIMEM.SYS and SETVER.EXE from your internal hard disk drive to the ATA drive. Create a CONFIG.SYS file on the drive which loads the PC/104 PCMCIA Module drivers and includes the other statements necessary to load HIMEM.SYS and SETVER.EXE, and set DOS = HIGH with UMBs, as detailed in Chapter 3. If you do not do this, though you will be able to boot from the ATA drive, the PC/104 PCMCIA Module slots will not be activated for any other device since the drivers that are needed to enable the system to recognize PC/104 PCMCIA Module have not been loaded.

**Note**

When using an ATA HDD or ATA Flash card with Boot ROM v.2.0x, the size of the card determines whether it boots as drive A or drive C. If the card is less than 15 MB, it will boot as drive A and the floppy disk will become B; if greater than 15 MB it will boot as drive C and your hard drive will become D. This means that Flash cards (which are typically less than 15 MB) will boot as A, and ATA HDD cards (typically greater than 15 MB) will boot as drive C.

Reboot your system and run the BIOS setup. An ATA disk drive card that is less than 15 MB will be designated as drive A:. Change the boot-up sequence to A, C which is usually found in the BIOS features setup menu.

If you need to recover your floppy disk drive as A, simply remove the PCMCIA card from its slot and type DIR A:. The floppy drive will then reassigned as drive A.

**Bootable ATA Flash Card Letter Assignments**

If you boot from an ATA Flash card the drive letter assignment of your entire system is changed. After boot up, the bootable drive will become the A: drive, as shown by the A> DOS prompt.

In this case the original A: floppy disk drive becomes the B: drive. If you have a second floppy disk drive on your system, this will be inaccessible. To rearrange the entire drive letter assignment back to normal and have access to the second floppy drive, proceed as follows:

1. Boot up from the ATA Flash card.
2. Disconnect the ATA Flash card by pulling it halfway out of the socket.
3. Insert any floppy diskette in the A: floppy disk drive.
4. At the DOS prompt, type A>DIR. The A: directory of the A: floppy disk drive will be displayed.
5. The A: floppy is now restored as A: and the B: floppy can be accessed on B: as normal. All other drive letter assignments are as described in the section above.
6. Re-insert the ATA Flash card in the socket.

### **Note**

If ATA Flash card has been configured with the **CardWizard** driver software, the letter assignments will be the following:

First slot:	A: drive becomes D: drive
Second slot:	A: drive becomes E: drive

If you did not install the CardWizard driver software, the letter assignments will be as follows:

ATA Flash cards $\leq$ 15 MB:	A:
ATA Flash cards $\geq$ 15 MB:	C:

