

PCMCIA ATA/ATAPI Card

Installation and Operation Guide

DataStor Technology

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Features:

- PCMCIA to ATA/ATAPI interface adapter card
- PCMCIA type II card, Plug 'n' Play compliant
- Built-in CIS (Card Information Structure) to take advantage of Windows 95 embedded ATA/ATAPI support
- Support external ATAPI CD-ROM, Enhanced IDE, LS-120 drives and two-drive configuration in Windows95
- Work with standard Card and Socket service software interface
- Support 'Hot Swapping' - dynamic card removal or insertion
- 16-bit data access, transfer rate up to 3 MB/SEC
- Low power consumption and power management APM compatible
- Perfect for adding CD-ROM or extra storage for portable systems

Hardware requirement:

PCMCIA type II or III slot
PC compatible 386 w/4MB RAM or better system

Software requirement:

MS DOS 5.0 and up
PCMCIA Release 2.1 compliant Card/Socket service
MS Windows 3.1/Windows 95/NT

Legend:



Where to go



Special Note



Apply to CD-ROM only



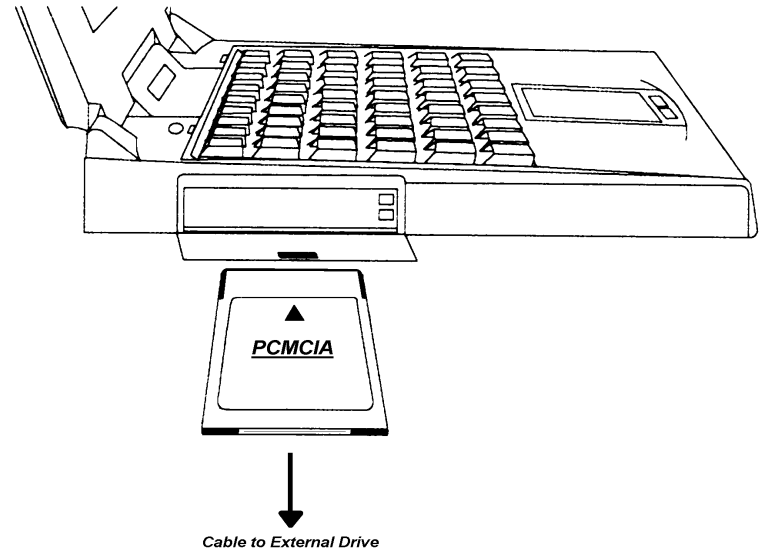
Apply to Disk Drives only



Apply to both CD-ROM and Disk Drives

Hardware Installation:

Before the actual installation, make sure the drive power is off. First attach the 44 pin connector on one end of the card to the back of the drive where marked PCMCIA. Turn on the drive power, insert the PCMCIA card to computer, if you sense any resistance, DO NOT force it in, this may damage the delicate connector inside, make sure the card is right on the guiding rail and try again.



Just this easy, the hardware installation is complete.



When doing the card removal, please do not try to pull card out of the socket from the cable, instead, using the card eject button.

Windows 95 installation:

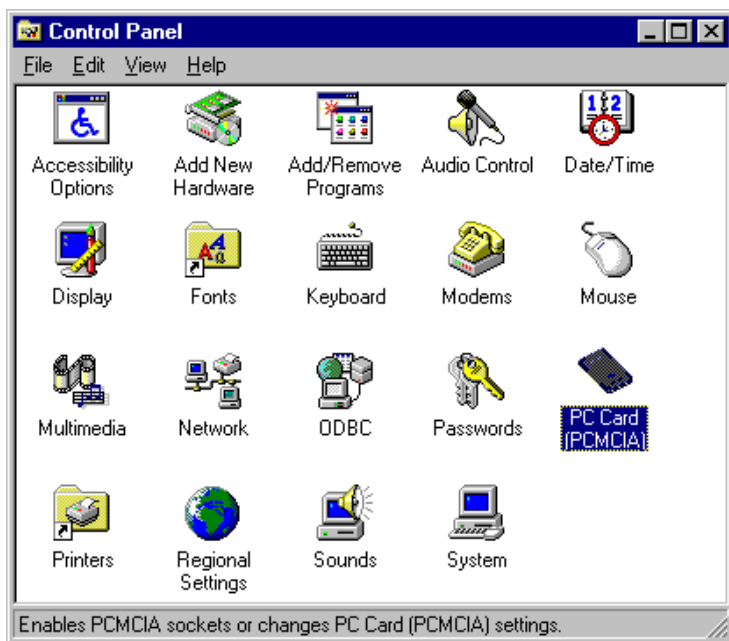


Introduction:

Windows 95 has embedded PCMCIA support in the operating system. Since this ATA/ATAPI card is truly Plug 'n' Play compliant, all you have to do is to answer few questions, Windows 95 will take care rest for you.

Step 1: Make sure PCMCIA socket is recognized by system

Before you insert the ATA/ATAPI card into the PCMCIA socket, please check the Control Panel under **My Computer** icon, if you see a **PC card [PCMCIA]** icon present, this means operating system recognized the PCMCIA socket hardware during initial Windows 95 installation.



If you do not see it, refer to Windows 95 manual, use **Add New Hardware** icon to install the software driver.



Checking the Windows 95 version currently installed in your system by using the right mouse button click on **My Computer** icon, then **Properties**. Check on the **General** folder under system, if you read:

*Microsoft Windows 95
4.00.950a*

This indicates the version is original release. If you read:

*Microsoft Windows 95
4.00.950 B*

This indicates Windows 95 version OSR2 or release B

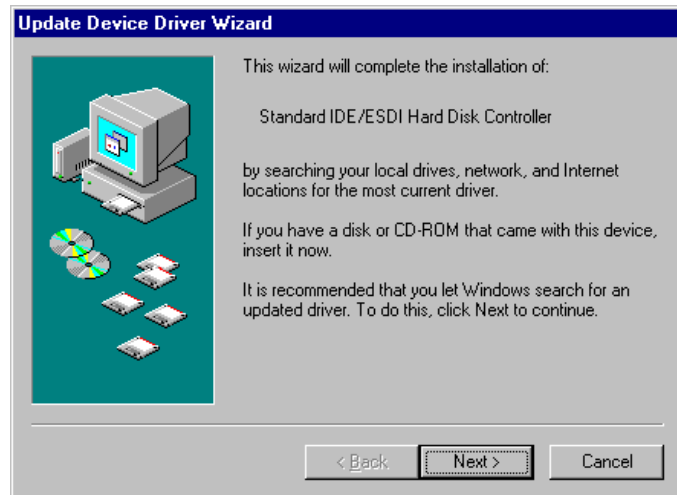
Step 2: Install the disk drive or CD-ROM driver

First, make sure the cable connectors are securely connected between the drive and card and drive power is on, then insert the ATA/ATAPI card into the PC socket (either socket is OK if you have two), within 2 to 3 seconds, a window pops up, ask you the driver option for the card, just select the default driver then click OK, your Windows 95 installation is essentially done.

For users of original Windows 95 release version:



For users of Windows 95 Version OSR2:

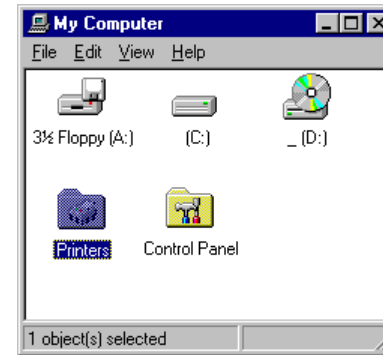


Click **Next** or press **Enter** to accept the default

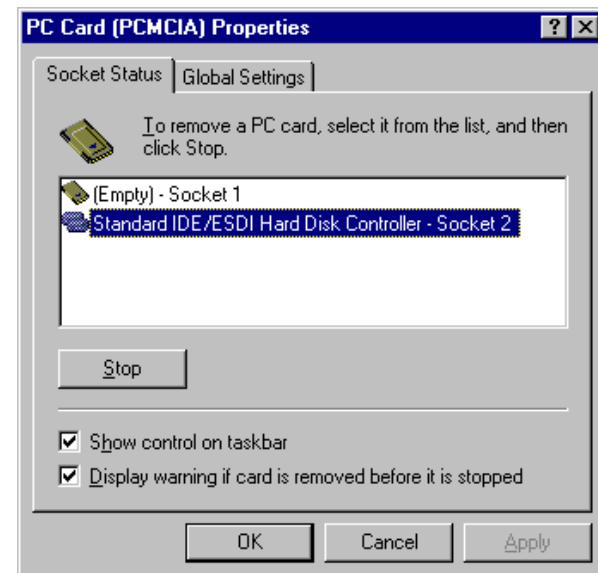


Click **Finish** or press **Enter** to accept the default

To verify the installation, open the **Myc Computer** icon, you should see extra drive(s) appearing.



Click **Control Panel** then **PCMCIA**, you should be able to see the following



Card Removal:

If you finish your work and wish to install another card (such as modem card), you can unplug this card and release the system resources. Although this ATA/ATAPI card support 'Hot Swapping', which means allowing you to insert or remove the card without turning power off, certain procedure still has to be followed. Otherwise, it may cause unpredictable result.

Double click the **PC card [PCMCIA]** icon under Control Panel, a status window will show up like the one in previous diagram, select the card you wish to unplug, then choose OK, within 2 to 3 seconds, a window will show up, after that, remove the card then choose OK to close the window.



Formatting a Hard Disk Drive in Windows 95:

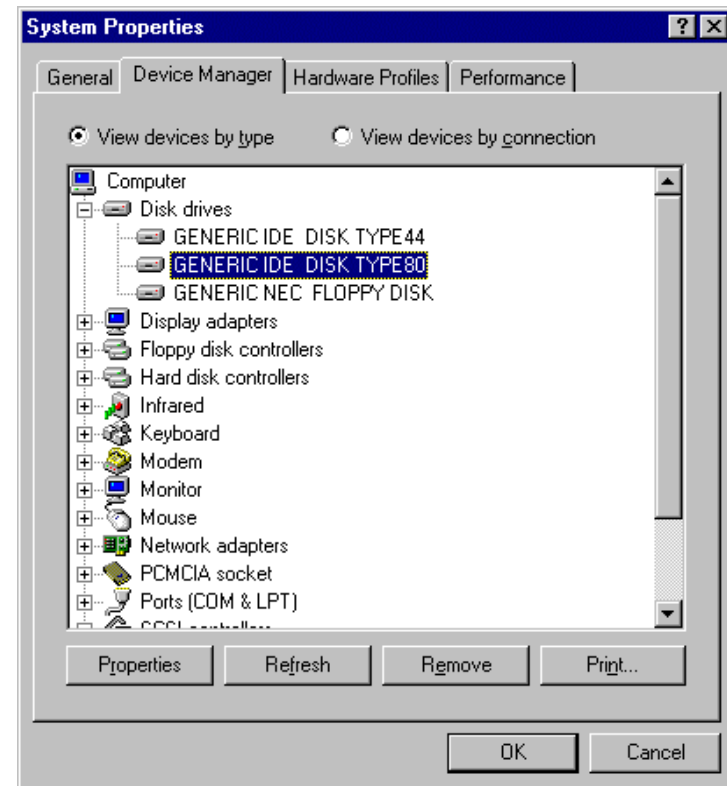


Due to the fact that Windows 95 FDISK program is not able to handle PCMCIA hard disk drives larger than 528MB, CDISK.EXE utility is provided to support large capacity drives.

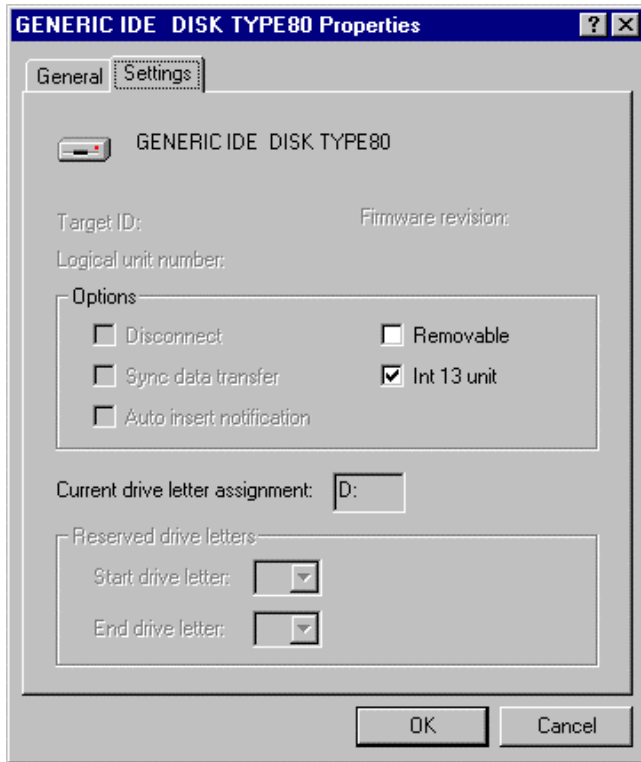
Two Step Procedure:

1. Hook your disk drive to INT 13H and reboot system
2. Run CDISK utility

Click on **My Computer**, **Control Panel**, **System**, **Device Manager** then **Disk drives**. You will see a window display like below.



Click on **GENERIC IDE DISK TYPE 80** then **Settings**.
Check on **Int 13 unit** and click on **OK**, you will be asked to reboot the system. After system boots up again, run CDISK partition/format utility from the shipping disk.



Windows NT Installation



Use the selection path:

Control Panel->SCSI Adapter->Drivers

Click on **Add**, put shipping disk in drive A:, then click on **Have Disk** and **OK**, click on the **DataStor Technology** driver for NT. After installation, you will be asked to reboot, then shut down the system, new drive icon will show up after booting.

If the hard drive has never been used in the NT system before, drive icon may not be present after reboot. If this happens, please go to the **Disk Administrator** to activate the drive and partitions.



There is no PCMCIA Plug'n'Play support in Windows NT, card must be present during boot time, removing card with active NT session on may cause system to crash.

DOS/Windows 3.1 Installation:



If your system is already loaded with Windows95, please skip this section.

Introduction:

The DOS/Windows PCMCIA drivers are organized as layered structure. (Fig. 1) All the PCMCIA related functions go through a software interface called *Card Service*. The Card Service driver manages system resources, like I/O, memory addresses, interrupts, DMAs and PC card configuration. Down below, there is another layer under Card Service called *Socket Service* that provides standard software interface of controlling PCMCIA bridge controller chip such as Intel 82365SL, Vadem, Cirrus Logic, VLSI and DataBook. Socket Service also has the functionality of configuring a socket for different PC card operating environment such as setting up the I/O address and interrupts.

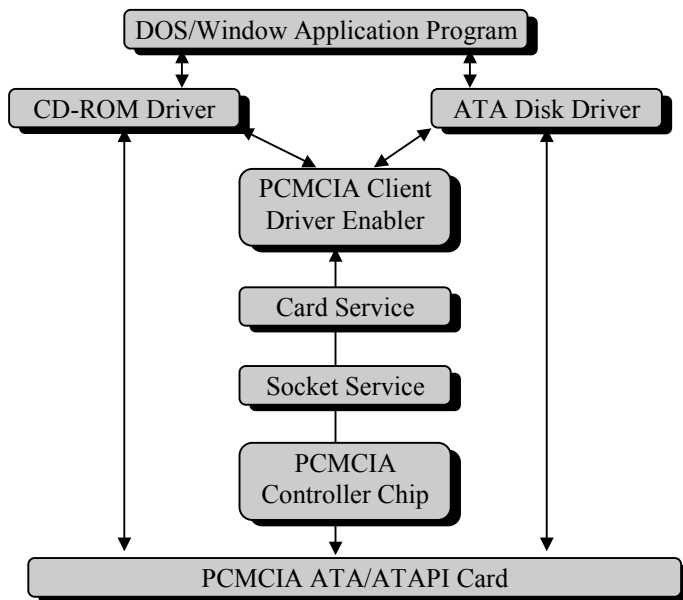


Fig. 1

The Card and Socket Service software package should come with your notebook computer or desktop PC card reader, such as SystemSoft's CardSoft, Card Wizard, Phoenix Technology, IBM ez-play, DataBook or Award Software. They must be PCMCIA specification 2.1 compliant or better. Talk to your local supplier for latest version update.

Following is a two-step guide, it will help you through the installation process and solve possible system conflicts. Please read it carefully and follow the guide step by step.

Step 1: Install PCMCIA System Software

Your PCMCIA software may come pre-installed in the factory, if it doesn't, please find the original diskettes and follow the installation procedure to setup the software.

Step 2: Install ATA/ATAPI drivers

Please find the installation diskette shipped with you card, put that disk in drive A and type

```
A:>install
```

then you will be asked to install a CD-ROM, a Hard Disk or a LS-120 unit.

For CD-ROM unit installation:



CD-ROM drivers installation is very straightforward. Basically, it does three things

1. Copy all necessary files to destination directory (default C:\COMMUTER)
2. Backup and modify CONFIG.SYS file, adding DEVICEHIGH=C:\COMMUTER\PATAPICD.SYS lines to the file
3. Backup and modify AUTOEXEC.BAT file, adding C:\DOS\MSCDEX.EXE line to the file

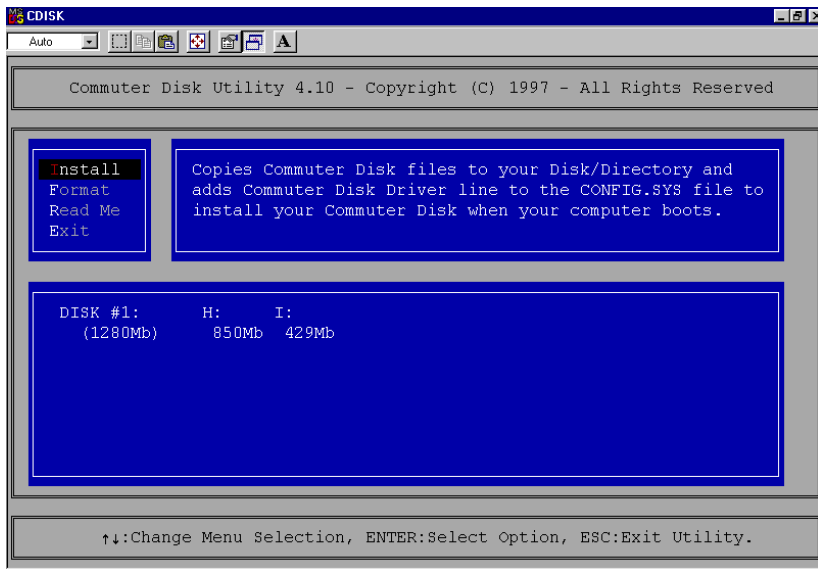
For Hard Disk unit installation:



The new hard disk drive must be properly partitioned and formatted before initial use. The installation program will first check the hardware. If it finds the drive, the installation will first copy the driver, utility and ReadMe files to a default or user specified directory, then start to partition and format the drive, at the end it will show the readme file. After finish the installation or disk format, you need to re-boot your system, then DOS will load device driver and assign a drive letter for Commuter Disk.



Note: Partition size - for DOS and Windows 95 FAT file system, the maximum partition size is 2GB, otherwise, it won't be recognized by OS. You may have to use CDISK.EXE utility to create multiple partitions which are less than 2GB.



The installation utility program is menu-driven and very user-friendly. The screen display is divided into three major windows. On the top left is the main menu, it clearly defines the functions of each installation step. By using the arrow key or simply typing in the letter to move cursor and choose the proper operation, then press ENTER to execute. You may backup to previous menu at any time by pressing the ESC key. The upper right windows is a context sensitive help of each function is currently selected. On the bottom is the drive list including drive letter (logical) and size.

Install - will copy all necessary files to a default (C:\COMMUTER) or a user defined directory and add a driver command line in CONFIG.SYS file automatically.

Format - This function will first ask you to re-partition the drive or not. If you decide to convert single partition to multiple partition or from multiple partition to single partition. This function helps you to change current drive partition table. After re-partition, it will perform format function automatically. If you decide not to re-partition the drive, simply use this function to wipe out all the data in the drive. Select no, then go to format directly. **Warning:** re-partition or re-format a disk will delete all the data in the drive, backup data before using it. If you are an experienced computer user, you can also use DOS FDISK and FORMAT utility to get the same effect. Note: There is no need to perform any low-level format. That may cause damage to the drive unit.

Read Me - display README file for more user information on current release

Exit - quit installation and back to DOS prompt

For LS-120 drive installation:

It does two things to install the LS-120 driver

1. Copy all necessary files to destination directory (default C:\COMMUTER)
2. Backup and modify CONFIG.SYS file, adding DEVICEHIGH=C:\COMMUTER\PATAPISF.SYS lines to the file

There is no need to use CDISK.EXE utility to partition or format the disk. Super floppy format is supported for 120MB disk, no need to partition. Just use DOS format command to format the disk to the right capacity, or using that simply for wiping out data on disk.

Sample CONFIG.SYS file



**Note: All the file names in CONFIG.SYS have to be in the right sequence.*

For SystemSoft CardSoft users:

```

REM CardSoft(TM) 3.1 PCMCIA DRIVERS
DEVICEHIGH=C:\CARDSOFT\SSVADEM.EXE
DEVICEHIGH=C:\CARDSOFT\CS.EXE
DEVICEHIGH=C:\CARDSOFT\CSALLOC.EXE
rem DEVICEHIGH=C:\CARDSOFT\ATADRV.EXE
rem DEVICEHIGH=C:\CARDSOFT\MTSRAM.EXE
rem DEVICEHIGH=C:\CARDSOFT\MTDDR.V.EXE
REM *MTDDR.V.EXE NECESSARY FOR FLASH, and SRAM CARDS*
DEVICEHIGH=C:\CARDSOFT\CARDID.EXE

```

```

REM PCMCIA CD-ROM DRIVER
REM MUST BE PRESENT AFTER CARD/SOCKET SERVICES
REM INSTALLED BY COMMUTER UTILITY

DEVICE=C:\COMMUTER\PATAPICD.SYS

```

For PhoenixCARD Manager users:

```

REM by PCM+ V3.0 X=c800-c8ff X=c900-ccff
DEVICE=C:\PCM3\CNFIGNAM.EXE /DEFAULT
DEVICE=C:\PCM3\PCMSS.EXE
DEVICE=C:\PCM3\PCMRMAN.SYS
DEVICE=C:\PCM3\PCMSCD.EXE
DEVICE=C:\PCM3\PCMATA.SYS

REM PCMCIA CD-ROM DRIVER
REM MUST BE PRESENT AFTER CARD/SOCKET SERVICES
REM INSTALLED BY COMMUTER UTILITY

DEVICE=C:\COMMUTER\PATAPICD.SYS

```

Note: If you are installing a hard disk the PATAPICD.SYS will be replaced by CDISK.SYS and PATAPISF.SYS for LS-120



Up to now, the DOS/Windows installation is complete. Reboot your system, we'll go to next step to test the system.

Verify Your Installation:

Reboot the system by pressing Ctrl-Alt-Del three keys at same time. If you see a message displaying



ATAPI CD-ROM Driver Version 4.01
Copyright 1997 DataStor Technology

Initializing...

SLAVE ATAPI CD-ROM drive detected
Port Address: 180h, Interrupt: 15
Drive Info: MITSUMI CD-ROM

Driver Installed successfully!

Followed by MSCDEX.EXE loading and drive letter assignment, this indicates successful installation. You can leave this manual and enjoy using the drive now.



Commuter Disk Driver Version 4.10
Copyright 1997 DataStor Technology

Initializing...

Port Address 180h Port Mode: ISA/PCMCIA

Successfully installed as Drive D:



Otherwise, please read following section carefully for important debugging information.

Solving Resource Problems:



I/O addresses, memory addresses, interrupts and DMAs are considered system resources. PCMCIA system software has the ability to detect available system resources and authority to assign resources. All PCMCIA aware software must go through that manager to request/assign I/O ports and interrupts. Using this scheme can avoid system conflict and minimize system compatibility issues.

All DOS drivers included in the retail disk are PCMCIA aware software drivers, the drivers will automatically interface with PCMCIA system software to request system resources for the devices they are controlling. (either CD-ROM or disk drives)

Sometimes, the PCMCIA system software's resource detection is not 100% accurate due to operator error or peripheral compatibility problems. Resources assigned to us may belong to someone else, thus it may not work properly. Next we will try to force driver to request certain I/O ports or interrupts.

⇒ **Move interrupt request to somewhere else**

- Change the line in CONFIG.SYS to
`DEVICE=C:\COMMUTER\PATAPICD.SYS /I:12 (or 11,10, 9)`

⇒ **Move I/O port base address to 170h**

- Change the line in CONFIG.SYS to
`DEVICE=C:\COMMUTER\PATAPICD.SYS /P:170`

This should solve most of the problems, if it still doesn't work please call for help.

Note:

This two command line options also apply to hard disk and LS-120 drivers.

Operation:

Disk caching software



If the disk caching program is loaded as a device driver, just make sure the Commuter Disk device driver command line

```
DEVICE=\COMMUTER\CDISK.SYS
```

must appear in CONFIG.SYS before any of the disk caching program command. Nothing has to be changed for TSR disk caching program. (like SMARTDRV.EXE)



Note: Starting DOS 6.0, SMARTDRV.EXE is capable of caching CD-ROM drives, please make sure the MSCDEX.EXE must appear before SMARTDRV.EXE in AUTOEXEC.BAT file in order to take advantage of this new feature

```
.  
. .  
C:\DOS\MSCDEX.EXE  
SMARTDRV.EXE  
. .  
. .
```

Data compression software



Commuter Disk works with most of the major data compression program (like Stacker and DOS 6 DBLSPACE). You just have to follow the procedure to compress the Commuter Disk drive as your local hard disk. The only thing you may have to change manually in the CONFIG.SYS file is the order of the device driver. CDISK.SYS must appear before the disk compression driver.

For example:

in DOS 6, the CONFIG.SYS will look like

```
.  
. .
```

```
DEVICE=\COMMUTER\CDISK.SYS  
DEVICEHIGH=C:\DOS6\DBLSPACE.SYS /MOVE
```

Working under network



When Commuter Disk is running under Novell Netware and is connected to any of the network station, it will work as an internal hard drive. But the presence of the Commuter Disk may cause the network drive letter shift one or more (normally F: to G: or higher). Because DOS will assign next available drive letter for Commuter Disk drive, you may have to change your batch file, login script or environment setup to justify these changes. Note: Commuter Disk CANNOT work as a server drive.

Working under MS-Windows



Commuter Disk is recognized by Window operating system or any Window application program. You can also do the concurrent printing even background printing without interfering disk accessing.

APPENDIX A:

44 pin D-SUB IDE Connector Pin Assignment

Pin Number	Pin Name	Pin Number	Pin Name
1	RESET	23	D14
2	D7	24	D15
3	D6	25	GND
4	D5	26	*
5	D4	27	Vcc
6	D3	28	Vcc
7	D2	29	*
8	D1	30	*
9	D0	31	*
10	CS0-	32	*
11	CS1-	33	*
12	A0	34	*
13	A1	35	*
14	A2	36	*
15	*	37	*
16	GND	38	IRQ
17	D8	39	IOCS16-
18	D9	40	*
19	D10	41	IOWR-
20	D11	42	GND
21	D12	43	IORD-
22	D13	44	GND

Limited Warranty

DataStor Technology warrants this product to be free from defects in material and workmanship under the following terms: The effective period of this warranty is **ONE** year for parts and labor from the date of the first consumer purchase, and this warranty may only be enforced by the first consumer purchaser. Under this warranty, DataStor Technology is responsible only to repair or replace any defective hardware component part of such products. The buyer is obliged to pay shipping cost of said defective product to DataStor Technology.

This warranty will not apply when: 1. any product on which the serial number has been defaced, modified or removed. 2. malfunction, damage, deterioration resulting from a.) accident, misuse, neglect, fire, water, lighting or other acts of nature, unauthorized product modification or failure to follow instructions supplied with the product b.) any shipment of the product c.) removal or installation of the product d.) operation with media not meeting or maintained in accordance with DataStor Technology specifications.

Federal Communication Commission R.F. Interference Statement

Warning: This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the installations, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION: FCC Regulations state that any unauthorized changes or modifications to this equipment not expressly approved by the manufacturer could result in violation of Part 15 of FCC rules. A shielded interface cable is required to insure compliance with FCC regulation for Class B computing equipment.

Interference

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference (2) this device must accept any interference received including interference that may cause undesired operations.