

Backpack Hard Drive Help and User's Guide

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Getting Started

To get started with backpack, install the software driver from the diskette first. After restarting your computer you will be ready to use the backpack attached to any parallel printer port (LPT port), the backpack PC Card or backpack USB Adapter.

Software Installation

Place the backpack SETUP diskette in your A: drive.

Click Start, Run. In the dialog box enter:

A:SETUP <Press OK>

Follow the prompts that appear.

The backpack software driver should now be installed on your system. You must restart the computer before using the backpack drive.

Hardware Installation

Backpack can connect directly to your computer's parallel printer port or to the optional backpack PC Card or backpack USB Adapter. Carefully follow these steps below in the exact order that they are listed.

If you are connecting backpack to a printer port:

- 1) Locate the parallel printer port connector on your computer. If you have more than one parallel printer port, it doesn't matter which one you use for backpack.
- 2) If you have a printer connected to the parallel printer port, disconnect it and attach the printer cable to the printer port on the backpack drive.
- 3) Plug the backpack power unit into the connector labeled "Power" on the backpack drive first. Then plug the backpack power unit into a wall outlet.
- 4) Connect the backpack cable between the printer port on the computer and the port marked "Computer" on the backpack drive. Make sure that the backpack is connected directly to the computer's parallel port, and not through any other type of device.

If you are connecting backpack to a backpack PC card:

- 1) First make sure you have run the backpack Setup program. After your computer restarts insert the backpack PC Card into your computer.
- 2) Plug the backpack power unit into the connector labeled "Power" on the backpack drive first. Then plug the backpack power unit into a wall outlet.
- 3) Connect the cable from the PC Card to the port marked "Computer" on the backpack drive.

If you are connecting backpack to a backpack USB Adapter:

- 1) First make sure you have run the backpack Setup program. After your computer restarts insert the backpack USB Adapter into your computer.
- 2) Plug the backpack power unit into the connector labeled "Power" on the backpack drive first. Then plug the backpack power unit into a wall outlet.
- 3) Connect the backpack USB Adapter to the port marked "Computer" on the backpack drive.

After a moment the backpack drive will be assigned its drive letter(s) and be ready to use.

INSTALLATION NOTES

- The backpack PC Card and USB Adapter only support backpack drives. Printers cannot be used on the backpack PC Card or USB Adapter, either directly or when connected to a backpack drive.
- The backpack USB Adapter requires Windows 98 or Windows 2000. Windows 95-B (OSR2) is not supported.
- A printer can only be used on backpack's pass-through "Printer" connector if backpack is attached to the computer's printer port.
- Close any running programs before adding or removing backpack. Some programs cannot adjust to drive letters being added or removed.
- Windows NT must be restarted with the backpack attached to a printer port or backpack PC Card before backpack can be used.
- In Windows 95/98 you may need to enable PC Card support on your computer. Click Start, Settings, Control Panel, PC Card (PCMCIA). If PC Card support is not turned on the PC Card Wizard will start. Follow the instructions on your screen.
- Only one backpack can be attached to a backpack USB Adapter. If you want to use several backpacks at the same time, you will need one backpack USB Adapter for each backpack unit.

Operating System Compatibility Notes

In DOS versions prior to Win95 (OSR2), including DOS 6.xx:

MS-DOS versions prior to Win95 (OSR2) did not support FAT32 hard drive partitions, including any partitions larger than 2GB in size. Therefore, backpack hard drives with capacities above 8.4GB will not be recognized by those previous versions of DOS. (see "Repartitioning the backpack hard drive to FAT 16" later in this guide)

In DOS from Win95 (OSR2) or Win98:

Backpack can only be connected to the computer's parallel port (LPT Port). The backpack will not work on the PC Card or USB Adapter under DOS. Hot swap plug in and removal is not supported in DOS. Backpack must be connected to the computer's parallel port before starting the computer.

In Windows 95 (OSR2):

Backpack can be connected to either the computer's parallel port (LPT Port), or to the backpack PC Card. Plug and Play compatibility is provided on both the parallel port and the backpack PC Card. Backpack hard drive will not function in Windows 95-A, since that early Windows 95 release did not support FAT32 hard drive partitions, including any partitions larger than 2GB in size.

In Windows 98:

Backpack can be connected to the computer's parallel port (LPT Port), to the backpack PC Card, or to the backpack USB Adapter. Plug and Play compatibility is provided on the parallel port, the backpack PC Card, and the backpack USB Adapter.

In Windows NT 4:

Backpack hard drive models with capacities above 8.4GB are factory partitioned with the FAT32 file system and will not be recognized by Windows NT4. To use a backpack hard drive above 8.4GB under Windows NT4, the backpack must be re-partitioned to FAT16 (or to NTFS if the backpack will be exclusively used in Windows NT4 and Windows 2000). Review the "Repartitioning the backpack hard drive to FAT16" section of this User's Guide for additional partitioning instructions.

Backpack hard drives that have been repartitioned with the FAT16 file system can be connected to either the computer's parallel port (LPT Port), or to the backpack PC Card. Windows NT4 does not support USB connection. Hot swap plug in and removal is not supported in Windows NT4. Backpack must be connected before starting the computer.

In Windows 2000:

Backpack can be connected to the computer's parallel port (LPT Port), to the backpack PC Card, or to the backpack USB Adapter. Plug and Play compatibility is provided on the parallel port, the backpack PC Card, and the backpack USB Adapter.

Printer compatibility:

Printers can only work on the backpack's pass-through "Printer" port when the backpack is connected to the computer's parallel port (LPT Port). Printers cannot be used on the backpack PC Card or backpack USB Adapter.

The backpack PC Card and backpack USB Adapter are only designed to support backpack drives.

Removing backpack software

To uninstall backpack software use Add/Remove Programs in Control Panel. You will be prompted in Windows 95/98 and Windows 2000 for the backpack SETUP.EXE program, found on the backpack installation diskette.

Understanding the various interfaces

Backpack PC Card

Backpack can be connected to a computer's printer port or to the backpack PC Card. The backpack PC Card is an optional component that plugs into a PC Card (PCMCIA) slot. Most notebook computers have PC Card slots.

Backpack USB Adapter

Backpack can be connected to a computer's printer port or to the backpack USB Adapter. The backpack USB Adapter is an optional component that plugs into a Universal Serial Bus port. USB devices require Windows 98 or Windows 2000. Most Pentium-II and faster computers feature USB ports. Some standard Pentium motherboards also provided USB ports.

Parallel Ports

EPP Parallel Ports

The fastest and most reliable parallel port type is an Enhanced Parallel Port (EPP.) For the best read/write transfer speeds, backpack will automatically use EPP mode, if available on your computer's parallel port. Most Pentium computers are equipped with EPP/ECP ports. If backpack does not automatically configure the EPP mode on your computer, check your computer's BIOS or SETUP utility to make sure it is configured for the EPP or Enhanced parallel port mode.

ECP Parallel Ports

ECP is a high-speed protocol that is compatible with current backpack technology. Backpack Hard Drives can use, but do not require, an ECP parallel port. Most Pentium computers are equipped with EPP/ECP ports.

IEEE-1284 Ports

IEEE-1284 is the industry standard for high-speed parallel ports. Most IEEE-1284 ports are capable of both EPP and ECP modes. Most Pentium computers are equipped with an IEEE-1284 Port. Backpack will automatically use EPP (or ECP) mode on an IEEE-1284 parallel port.

UniDirectional and BiDirectional Parallel Ports

A Uni-Directional parallel port is also known as a Standard Parallel Port and has the slowest input speeds, since only 4 return lines can be used to send data back into the computer. Since a Bi-Directional parallel port is able to send 8 lines of data into the computer, a Bi-Directional parallel port can receive twice as much data into the computer as a Uni-Directional parallel port. Backpack Hard Drives can use both UniDirectional and BiDirectional parallel ports, if necessary.

Checking your parallel port type

Most standard Pentium and faster computers have an EPP/ECP compatible port. Check your computer's documentation to determine whether you need to enable EPP or ECP mode in your computer's BIOS/SETUP.

You can determine the parallel port type:

...In Windows 95/98 or Windows 2000

Use Backpack Finder, located in Control Panel. Click on the backpack device listed beneath the port (LPT1 or LPT2). The Data Transfer Mode is displayed in the bottom window.

...In Windows NT4 (only for Backpacks partitioned using FAT16, or NTFS)

Use the BACKPACK controls, located in Control Panel.

In the information box at the right-hand side, look at the line beginning with "Tx". This line reports the current parallel port mode. Possible modes are EPP, ECP, Bidirectional and Unidirectional.

If backpack is not running in EPP or ECP mode, the "Tx" value will show "FW."

Troubleshooting

Backpack's Drive Letter

When backpack is connected Windows will assign it the next available drive letter(s). This could be the letter D, E or any other letter - depending on the letters already in use on your computer.

Open Explorer or My Computer and look for an icon(s) similar to a Disk Drive or Removable Drive.

Changing backpack's drive letter

In Windows 95 (OSR2) and Windows 98:

To change the drive letter that Windows assigned to the backpack, use Device Manager (within Control Panel - System). Choose Disk Drives, and select BACKPACK HARDDRIVE. Under the Settings tab you can adjust the Start Drive Letter and End Drive letter that Windows uses to assign backpack its drive letter. If the "Removable" option is unchecked, you will need to check it before those drive letter options become available.

In Windows 2000:

To change the drive letter that Windows assigned to the backpack, use the Disk Management program. Disk Management is located in Control Panel - Administrative Tools - Computer Management. In Disk Management, highlight the backpack's current drive letter. Right click on the backpack drive letter and choose "Change Drive Letter and Path..." You can then Edit the current letter and immediately assign a new drive letter designation.

Checking backpack properties

Backpack settings can be examined or changed from within programs installed in the Windows Control Panel.

If you click Start, Settings, Control Panel you will see an icon for Backpack Finder (Windows 95/98 and Windows 2000) or BACKPACK (Windows NT4). If you're not sure, Open Control Panel and see which icon is installed.

Backpack Finder and Backpack Controls are discussed below.

Backpack Finder in Windows 95, 98 and 2000:

Open the Backpack Finder icon located in Windows' Control Panel. The upper pane under Devices shows:

Parallel port(s), Backpack PC Card Adapter(s) or Backpack USB Adapter(s), if connected. For example: LPT1, LPT2, PCCARD1, PCCARD2, USB1 or USB2.

All backpack drives that have been detected will appear beneath the appropriate port or adapter.

If no backpack devices are detected in Backpack Finder

Check the connections and verify that the backpack is receiving power.

Try disconnecting and reconnecting the backpack drive from the Adapter or printer port.

Click Scan in the "Devices" screen and see if a drive appears.

There are "Finder Settings" that you can change that may correct the problem also. These options are detailed next.

Backpack settings within the Backpack Finder utility

The following changes can be made in Finder Settings screen within the Backpack Finder utility program located in Windows' Control Panel. Try these changes one at a time, in the order listed below. Combinations of these changes are valid as well, but not typically necessary. Restart your computer after making the change(s) to determine whether it corrects the problem.

Clear the **Enable I/O Bus Speed Control** checkbox.

The following Finder Settings only apply to a backpack connected to the computer's parallel port (LPT Port).

Clear the **Enable LPT Interrupts** checkbox.

Clear the "EPP ..." checkboxes.

After changing this value (EPP), power off both the computer and the backpack to fully reset the system.

Clear the **Detect LPT Port Type** checkbox.

Verify that the **ECP + DMA** checkbox is cleared.

If a change does not resolve the issue, set it back to the default and try the next option. Only in rare instances is a combination of changes needed.

Default Settings in Backpack Finder: **All boxes selected, except for ECP+DMA.**

If the LPT port or Backpack Adapter does not appear in Backpack Finder

Click the Scan button in the "Devices" screen and see if the LPT port or Adapter appears.

Remove and reinsert the Backpack PC Card Adapter or Backpack USB Adapter from the computer.

If the backpack software drivers are not properly installed, uninstall and then reinstall the backpack setup software or the Latest Backpack 32-bit Driver from the Software Library of Micro Solutions' Web site.

If the backpack PC Card is not detected you may need to enable 32-bit PC Card support in Windows. Open Windows Help and refer to PC Card in the Index. Review the Troubleshooting PC Card section of Windows Help.

Check the parallel port settings in the computer's BIOS/Setup to confirm that the port has been Enabled and assigned a Port Address other than 03BCh (common on many IBM-brand computers).

Go to Windows' Device Manager and make sure a valid Printer Port appears under 'Ports (COM & LPT)'. If the printer port in Device Manager has an exclamation point in front of it, remove or reconfigure that parallel port entry. Windows should redetect the parallel port with the correct properties upon reboot.

If Backpack PC Card or Backpack USB Cable in the BACKPACK class within Device Manager appears with an exclamation point in front of them, remove and reinsert the Adapter. If the problem persists, highlight the Adapter and choose the Remove (Win95/98) or Uninstall (Win2000) option. Shut down the computer, remove the Adapter completely, restart the computer and reinstall the backpack setup software or the Latest Backpack 32-bit Driver from the Software Library of Micro Solutions' Web site.

Backpack USB Adapter will only appear in Win98 or Win2000, not in WinNT4 or Win95 (including OSR2).

Backpack Controls (Windows NT4): (only for Backpacks partitioned using FAT16, or NTFS)

Open the backpack icon located in the Windows NT4 Control Panel. The large box on the right displays information about the computer's ports and the backpack drive detected by the software.

No backpack(s) Detected during boot process!

Check the connections and verify that the backpack is receiving power.

Backpack must be connected and powered on when the computer starts.

There are settings in BACKPACK controls that you can change that may correct the problem also. These options are detailed next.

Backpack Settings in the BACKPACK controls utility

The following changes can be made in BACKPACK controls. Try these changes one at a time, in the order listed below. Combinations of these are valid as well, but not typically necessary. Restart your computer after making the change(s) to determine whether it corrects the problem.

IRQ from Auto to Off

BUS from Auto to Off

MAX from EPP to Bi (or ECP)

After changing this value (EPP), power off both the computer and the backpack to fully reset the system.

Clear the **Test for Chipset** checkbox.

DMA from Auto to Off

T1 from Auto to 10, 20 or higher

If a change does not resolve the issue, set it back to the default and try the next option. Only in rare instances is a combination of changes needed.

Default Values

Default settings in BACKPACK controls:

T1, T2, T8 = **AUTO**

MAX = **EPP**

BUS = **AUTO**

IRQ = **AUTO**

DMA = **AUTO**

Test For Chipset **Checked**

Auto Insert Notification **(not available)**

Backpack under DOS from either Windows 95 (OSR2) or Windows 98

Backpack Hard Drive must be connected to the computer's parallel port when used in DOS. A DOS version that supports FAT32 partitions must be used. Only the DOS from Windows 95 (OSR2) and Windows 98 (first and second editions) provide FAT32 support. The DOS from Windows 95-A, DOS 6.22 and earlier only support FAT16 partitions and are not compatible with backpack hard drives with capacities above 8.4GB. Backpack hard drive models with capacities of 8.4GB and below were factory configured for multiple FAT16 partitions of 2GB each.

ERROR: A BACKPACK Hard Drive was not found...

Make sure that the Backpack is connected directly to the computer's parallel port, the power supply is connected and plugged in.

Make sure that the computer's parallel port is Enabled within the computer's BIOS or SETUP utility. If the parallel port is set to 'Auto' or 'Disabled' the backpack may not be detected when the computer is booted to DOS.

The backpack DOS device driver (BPHDDRV.SYS) has several parameters that allow you to manually control the parallel port mode that the backpack uses:

device=bphddrv.sys **NOEPP** Turns off backpack's EPP parallel port mode detection.

device=bphddrv.sys **MODE=0** Turns off all of the high-speed protocols used by the backpack.

device=bphddrv.sys **NONSTOP** Prevents the "Not Found" message from appearing during boot.

ERROR: The BACKPACK hard drive contains a FAT32 partition that needs a newer version of DOS.

Warning: No partition table on BACKPACK hard drive.

You must boot your computer with the DOS provided with Windows 95-OSR2, or Windows 98. If you use the DOS from Windows 95A, DOS 6.22, or any earlier version of DOS, you will not have support for the FAT32 partitions used on backpack hard drives capacities above 8.4GB. Review the "Repartitioning the backpack hard drive to FAT16" section of this User's Guide for additional partitioning instructions.

ERROR: BACKPACK hard drive doesn't respond - controller OK.

This error typically indicates that an incorrect power supply has been attached to the backpack hard drive. Make sure that you use original power supply originally packaged with the backpack.

- If your backpack hard drive model features an ON/OFF power switch, the appropriate power supply has an Output voltage of 18vac.
- If your backpack hard drive model features a Universal Power Supply (5pin), the Output is 5vdc/12vdc. Make sure that none of the pins have been broken or bent in the power supply's connector.

If the proper power supply is being used, and the same error occurs on any computer to which the backpack has been attached, this indicates that the hard drive mechanism is not making proper cable contact with the backpack controller board inside of the backpack chassis, or that the hard drive mechanism is faulty.

Repartitioning the backpack hard drive to FAT16

Important Note: The following information requires the use of the Microsoft DOS utility FDISK. Improper use of the Microsoft FDISK program can result in complete data loss on your computer! FDISK should only be used by experienced computer professionals. The instructions provided in this section are intended as guidelines only for individuals who already have expertise in the use of the Microsoft FDISK program. Because of the potential of system data loss when using FDISK, Micro Solutions Technical Support Representatives will not provide step-by-step assistance in the use of the FDISK program.

Before using the FDISK program, be sure to apply Volume Labels to your computer's internal Hard Drive(s), the backpack hard drive, and any other Fixed Disks on your computer. It is recommended to Label your backpack drive with the name: BACKPACK

All Data on the Backpack Hard Drive will be Lost when using FDISK to Repartition the Backpack!

Use any DOS version of FDISK (DOS 4 and above) to repartition the backpack to FAT16.

You will be limited to a maximum partition size of 2GB per partition when repartitioning to FAT16.

You will need to load the backpack 16-bit driver (BPHDDRV.SYS) under DOS, or the backpack 32-bit driver within Windows 95 (OSR2) or Windows 98.

Run the DOS FDISK program. When prompted to "enable large disk support (Y/N)" answer No.

"Change current fixed disk drive" to the backpack hard drive. Make sure to choose the drive that you have labeled as: BACKPACK (see above)

Delete the FAT32 (or UNKNOWN) partition(s) on the backpack hard drive. All Data on Backpack Will Be Lost!

If your backpack hard drive has one single partition, you will only need to choose: "Delete Primary DOS Partition." Confirm that you are deleting the correct partition by typing in the Volume Label (when prompted) that was assigned to the backpack drive.

Choose to "Create DOS partition or Logical DOS Drive", and then "Create Primary DOS Partition." You will be prompted to use the maximum available drive space (2GB) for the Primary DOS Partition. You can choose Yes.

If additional 2GB (or smaller) partitions are desired, Create and Extended DOS Partition and any desired Logical Drives within that Extended DOS Partition.

After all desired partitions have been created in FDISK, exit the program and restart the computer. You will need to use the DOS FORMAT program to format each partitioned drive before use.

The backpack hard drive should then be usable in DOS 4 and above, Windows 95A, and in Windows NT4, in addition to the Win 95 (OSR2), Win98, and Win2000 operating systems already supported.

If you create FAT16 partitions on the backpack hard drive, you will only be able to access the first 8GB of the FAT16 space within DOS. Any partitions beyond 8GB might appear within DOS but cannot be reliably accessed. Any additional partitions beyond 8GB are only recognized within Windows 95 (OSR2), Windows 98, and Windows 2000.

Printer Troubleshooting

If you are using the backpack PC Card or USB Adapter, you cannot use a printer connected to the pass-through "Printer" port on the back of the backpack. The backpack "Printer" connection will only work if backpack itself is plugged into the computer's printer port (LPT port).

Many printing problems can be solved by turning off Backpack Detection, enabling Printer Priority (Win95/98 only), or by turning off print spooling in Windows (detailed below).

Disabling backpack auto-detection

Open Control Panel (Select Start, Settings, Control Panel).
Double click the Backpack Finder icon.
Choose the Finder Settings tab.
Uncheck the 'Enable BACKPACK Detection' option.
Click Apply.

Enabling Printer Priority (for deskjet printers) in Win95/98

Open Control Panel (Select Start, Settings, Control Panel).
Double click the Backpack Finder icon.
Choose the Driver Settings tab.
Check the 'Printer Priority' option.
Click Apply.
Try Printing.

Turning off print spooling in Windows 95 & 98

Select Start, Settings, Printers. Right-click your printer.
Select Properties, Details. Click Spool Settings.
If available, select Disable bi-directional support for this printer and select "Print directly to the printer."
Select Port Settings.
Disable "Check port state before printing."
Restart the computer.

Turning off print spooling in Windows NT 4

Select Start, Settings, Printers. Right-click your printer.
Select Printer, Properties, Scheduling.
Select Print Directly to the Printer.
Restart the computer.

Technical Support

Micro Solutions via Internet

Backpack software is being continually improved. Difficulties are often solved by installing the latest drivers.

Software drivers and Technical Support documents are available on via Internet at:

<http://www.micro-solutions.com>.

Micro Solutions technical help by FAX

You can have technical support information sent directly to your FAX machine. Contact Micro Solutions' Automated Fax Response at 815.754.4600. Automated Fax Response is available 24-hours daily. A complete catalog of faxes and information is available.

NOTE: If you are calling from outside the United States first enter the digits 011 when you are asked to enter your country code and FAX number.

Most questions about backpack and its operation are answered in this guide (CDGUIDE). To solve most problems:

- Check the solutions and procedures in this guide.
- Check the README.TXT files on the backpack installation diskette.
- Visit Micro Solutions on-line at our Web site at:
<http://www.micro-solutions.com>.
- Contact Micro Solutions' Automated Fax Response at 815.754.4600.

If your problem remains unsolved, contact Micro Solutions Technical Support Department at 815.754.4500. Technical Support is available during normal business hours, Monday through Friday, Central Time. Before calling, be sure to have the following information ready:

- The version numbers of your backpack software and your operating system (Windows 95, 98, NT or 2000).
- The name and model of the computer, and the eight-digit serial number found on the bottom of your backpack drive.
- The exact wording of any error message(s) from the backpack program, DOS, Windows or any other application producing the error message.

If possible, be at your computer when calling.

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NOTE: The USB adapter, if included, is intended for use only with IBM compatible UL Listed personal computers.