

## RUNNING BASIC PROGRAMS

Programs written in IBM's BASIC or BASICA run on your GRiDCASE 1535 EXP computer if you use GRiD'S GW-BASIC instead of IBM's BASIC (refer to Figure 10-2). If you use a batch file that references BASIC or BASICA, rename the GWBASIC.EXE file to BASIC.EXE or BASICA.EXE, depending on the name specified in the batch file.

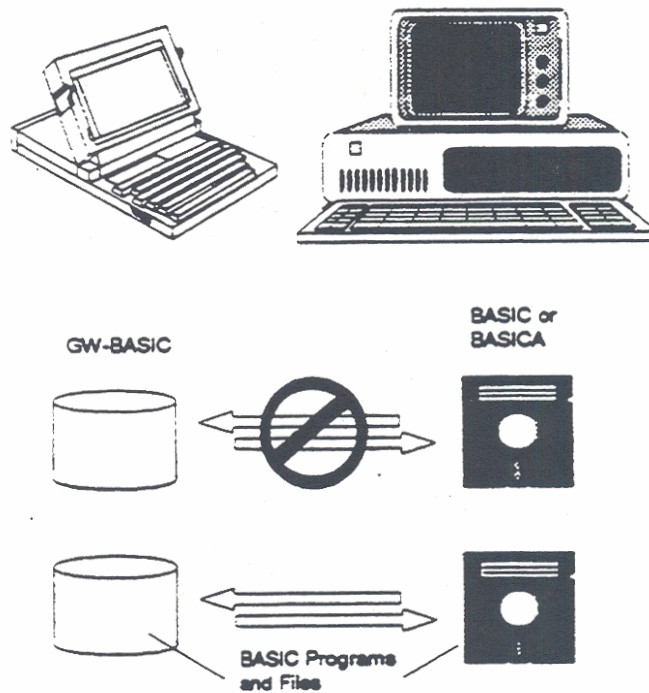


Figure 10-2. Running BASIC Programs on a GRiDCASE 1535 EXP Computer

The GRIDCASE 1535 EXP computer doesn't support light pens, joy sticks, or cassettes; consequently, BASIC programs that require those devices cannot run on a GRIDCASE 1535 EXP computer.

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## THE INTERNAL MODEM

The GRIDCASE 1535 EXP internal modem (2400 baud modem or MNP 2400 baud modem) permits communications through the telephone system. The internal modem behaves just like a Hayes Smartmodem; it has symbolic software switches that correspond to the Hayes switches. You can change the symbolic switches to match any setting of the Hayes switches. The MNP modem also provides MNP level 5 for error detection, correction, and data compression. For more information on using the internal modem installed in your computer, see the *Internal Modem User's Guide*.

If your application requires different switch settings than the defaults, you can reset the switches using the MODE command. For example, the following command sets the switches to the factory setting for the 2400 baud modem (only switches 1 through 6 are supported for the MNP modem):

```
MODE MODEM=UDDDDUUD
```

The *D* and *U* characters in the above command stand for "down" and "up," respectively, indicating the position of the switch. The switches in the internal modem now indicate the following settings:

Switches 2, 3, 4, 5, and 8 are down (off)

Switches 1, 6, and 7 are up (on).

The meaning of each of the switch settings is given in Table 10-2.

*Table 10-2. Internal Modem Switch Settings (Defaults Shown in Bold)*

Switch	Position	Meaning
	Up	Modem requires DTR active
	Down	Modem does not require DTR active
2	Up	Result codes sent as English words
	Down	Result codes sent as single digits
3	Up	No result codes are sent
	Down	Result codes are sent
4	Up	Echo characters when in command mode
	Down	No echo
5	Up	Auto answer on first ring
	Down	Don't answer
6	Up	Carrier detect real
	Down	Carrier detect forced
7	Up	Always up
8	Up	Disables command recognition
	Down	Enables command recognition

MS-DOS restores the initial (default) settings when you restart the operating system (either by pressing **Ctrl-Alt-Del** or by turning the computer off and back on).

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## MOVING APPLICATION PROGRAMS TO A GRIDCASE 1535 EXP COMPUTER

If you run application programs on an IBM PC-compatible computer using 5¼-inch diskettes and want to run these same programs on your GRIDCASE 1535 EXP computer, there are two methods of moving the programs and data files:

- Executing programs you currently use on an IBM PC from the original diskettes placed in a GRiD external 5¼-inch pouch diskette drive.
- Copying programs and files from IBM PC 5¼-inch diskette drives to the GRIDCASE 1535 EXP internal drive using the PC File Transfer Utilities (PCMASTER/PCSLAVE)—for use when an external 5¼-inch diskette drive isn't available.

Before using either procedure, read the caution about copy-protected application programs below.

### A Caution About Copy-Protected Application Programs

You can take greatest advantage of the full portability of your GRIDCASE 1535 EXP computer when your application programs and data files reside on 3½-inch diskettes. This allows you to operate from an internal drive and leave your pouch floppy diskette drive behind when you leave your work area.

You can make a back-up copy of an application program from a 5¼-inch to a 3½-inch diskette if the program isn't copy-protected. A copy-protected program contains an encoded lock that makes duplication impossible. Attempting to duplicate a copy-protected program results in an error.

To find out if an application is copy protected, read the installation instructions that come with it. If it is protected, either try running the program diskette from a pouch floppy diskette drive, as described below, or contact a GRiD representative to find out if a version of the program is available on 3½-inch diskettes.

## Using A GRiD External Diskette Drive

This procedure describes how to run IBM PC application programs on 5¼-inch diskettes from an external diskette drive. The procedure applies equally to external 5¼-inch diskette drives and external 3½-inch diskette drives, although Figure 10-3 only shows a 5¼-inch diskette drive. Device letter assignments are shown in Figure 10-3. (The 5¼-inch pouch drive must be powered by a separate power pack.) This procedure assumes that your system is equipped with a hard disk.

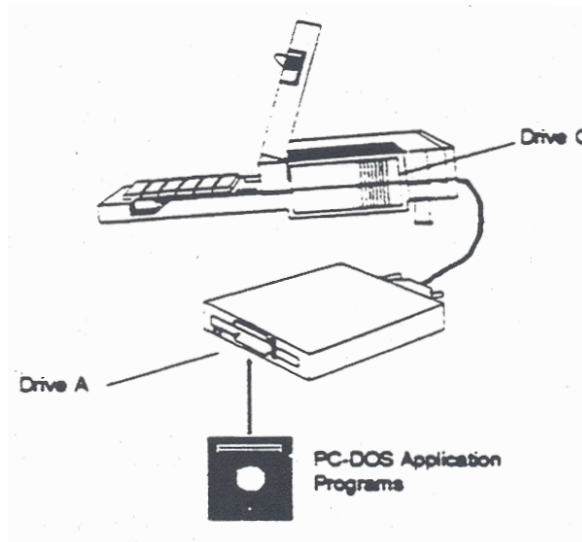


Figure 10-3. Running a Program from the GRiD Model 3402 5¼-inch Pouch Diskette Drive

To run an application program from a GRiD external diskette drive, follow the steps listed below.

1. Set the switches on the back of the external drive to 00 (both switches are in the DOWN or OFF position); this causes the external drive to be assigned device letter A.

#### CAUTION

Be sure to turn off power to the external drive and the computer before changing the switch settings; otherwise, damage to your equipment could result. In addition, MS-DOS recognizes the new settings only after a "cold" start—when you turn on the power switch of the computer.

2. Insert the application program diskette into the pouch diskette drive.
3. Start up (boot) the computer. MS-DOS is automatically loaded from the hard disk.

After start-up, the system prompt appears, indicating the internal drive:

C>

MS-DOS assigns the device letter A to the external drive.

4. Change the default device from Drive C to Drive A by entering:

C>A:

5. The system prompt appears, indicating the external drive:

A>

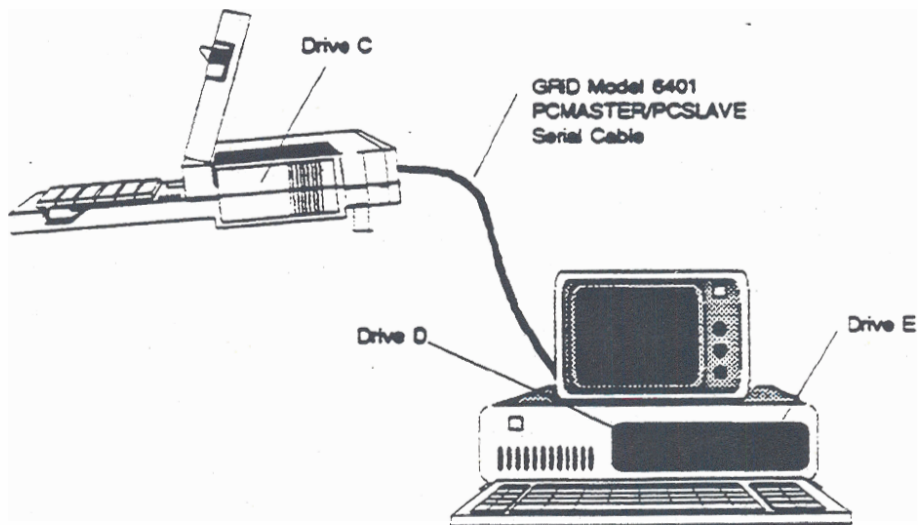
Enter the name you normally use to invoke your application program and try using it.

## Using The PC File Transfer Utilities

This procedure describes how to use the PC file transfer utilities (described in detail in Chapter 12 of the *MS-DOS Reference* manual) to move files from storage devices on an IBM PC-compatible computer to GRiDCASE 1535 EXP storage devices. These utilities are most useful for transferring files when an external diskette drive is unavailable. You can also transfer files from your GRiDCASE 1535 EXP computer to an IBM PC.

The PC File Transfer utilities consist of two programs, PCMASTER and PCSLAVE. The programs run concurrently, one on a GRiDCASE 1535 EXP computer and one on an IBM PC connected by a cable attached to a serial port on each computer.

Figure 10-4 shows a typical PCMASTER/PCSLAVE configuration; the procedure that starts below assumes this configuration of storage devices, although many others are possible.



*Figure 10-4. Moving Files Using the PC File Transfer Utilities*

As shown in Figure 10-4, GRiD MS-DOS assigns the letter C to the GRiDCASE internal hard disk drive, and D and E respectively to the drives on the IBM PC. (Normally, PC-DOS assigns A and B to these two drives.)

If the PC had one diskette drive (instead of two as shown in Figure 10-4) and a hard disk, GRiD MS-DOS would have assigned drive D to the diskette drive and drive E to the hard disk.

To use the transfer procedure, you need the following:

- Access to the GRiD MS-DOS PCMASTER.SYS file, which can be on the MS-DOS diskette, in ROM, or on the hard disk.
- The GRiD-supplied 5¼-inch diskette that contains the PCSLAVE.EXE file.
- A PC-DOS boot diskette for your IBM PC.
- The GRiD Model 6401 PCMASTER/PCSLAVE Serial Cable, which connects the serial ports of the two computers. (If a null-modem cable is available, you can try to use it instead, though not all null modem cables will work. See Chapter 12 of the *MS-DOS Reference* manual for details.)
- If you are using the standard serial port on an IBM PC, you will need a 9-pin-to-25-pin adapter cable, included with your PC or available from your computer dealer.

**NOTE:** The computer system that is running the most current version of MS-DOS must be the master station. For example, if you are using an IBM PC/AT running PC-DOS 3.1 and a GRiDCASE 1535 EXP computer running MS-DOS 3.3, then the GRiDCASE must be the master station.

Below are the steps to follow in transferring files from an IBM PC with two diskette drives, to the GRiDCASE internal hard disk drive. In this example, the GRiDCASE is the master station and the IBM PC is the slave station. To reverse the master/slave stations, follow the same steps listed below, except perform all of the actions that you would normally perform at the GRiDCASE station on the IBM PC, and vice versa.



1. Turn off the power to both the IBM and GRIDCASE computers.
2. Connect the serial ports of the two computers using the GRID Model 6401 cable or your own null modem cable as shown in Figure 10-5.

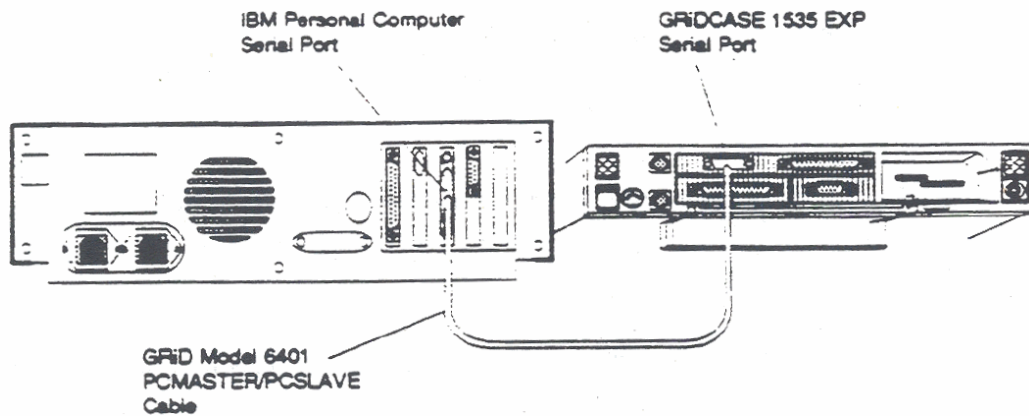


Figure 10-5. PCMASTER/PCSLAVE Cable Connection

3. At the IBM PC:
  - Insert the PC-DOS boot diskette into the first diskette drive and start up PC-DOS by turning on the power.
  - Replace the boot diskette with the 5¼-inch diskette that contains PCSLAVE.EXE.
  - To indicate transfer through the COM1 serial port, enter the following command:

A>PCSLAVE

If you already have a device attached to the COM1 serial port, you can use the COM2 serial port. To indicate transfer through the COM2 serial port, enter the following command:

A>PCSLAVE 2

The following messages are displayed after you enter either PCSLAVE command:

Slave station ready  
Enter commands at master station  
Enter Ctrl-C upon completion

**NOTE:** It may take several seconds for the above messages to appear.  
Don't go to the next step until you see the messages.

4. At the GRIDCASE 1535 EXP computer:

- Turn on the power to the computer and start MS-DOS from the hard disk.

**NOTE:** Always start up MS-DOS at the master station after start-up of the slave station (Step 3). This allows MS-DOS to accurately assign letters to the storage devices at the slave station.

- Create a CONFIG.SYS file on the GRIDCASE start-up device that contains the following statement (or add the statement to an existing CONFIG.SYS file):

DEVICE=PCMASTER.SYS 2

(If this statement is already in CONFIG.SYS, disregard this step and go to Step 5.) Instructions on creating or modifying a CONFIG.SYS file are given later in this chapter.

**NOTE:** If the IBM PC is the master station and you want to use the COM1 serial port, use the statement DEVICE=PCMASTER.SYS.

- Restart MS-DOS by performing a warm restart (Ctrl-Alt-Del).
5. At the IBM PC, insert into Drive E the source diskette containing the files to be copied (see Figure 10-4).

6. At the GRiDCASE EXP computer, you can specify any device on either the GRiDCASE (drive C) or the PC (drives D and E) in all MS-DOS commands except the following:

FORMAT  
DISKCOPY  
DISKCOMP  
FDISK

You can execute the above commands successfully only when they refer to devices at the master station.

For example, if you want to look at the directory of drive E on the PC (see Figure 10-4), enter

```
C>DIR E:
```

and the directory of files appears on the GRiDCASE screen.

To copy all the files from the diskette in drive E to the GRiDCASE internal hard disk, enter the following command:

```
C>COPY E:*.* C:
```

7. Continue copying files as required from drive E. Upon completion of file transfer operations, go to the next step to disconnect the two computers.
8. At the IBM PC, press **Ctrl-C** after completing the file transfer.
9. At the GRiDCASE EXP computer, continue normal operations. If you don't intend to use PCMASTER/PCSLAVE again, you may want to delete CONFIG.SYS or, if applicable, restore the original CONFIG.SYS file. (If you do reinstall a former CONFIG.SYS file, you must restart MS-DOS before it takes effect.)

## File Transfer Error Messages

During a file transfer, messages that require action on your part may appear. Here are the messages you can receive and what you should do about them.

Message:	Serial port specified does not exist on system
What to Do:	You issued a PCSLAVE command. Either the serial port you specified doesn't exist, or your computer doesn't have a serial port. To use the COM1 serial port, enter either of the following commands:  PCSLAVE  or  PCSLAVE 1  To use the COM2 serial port, enter the following command:  PCSLAVE 2
Message:	Data error reading drive x
	Abort, retry, ignore?
What to Do:	Make sure that the null modem cable connecting the serial ports of the two computers is firmly attached and try again (enter <i>R</i> , for <i>retry</i> ).

**Message:** Not ready error reading drive x

**What to Do:** Check the following:

- Make sure the diskette is properly inserted.
- Make sure the diskette is in the drive that corresponds to the device letter you specified in the command.

## File Transfer Troubleshooting

If you have problems with the file transfer utilities, be sure to check the following items:

- Make sure that you have the most current versions of PCMASTER.SYS and PCSLAVE.EXE.
- Make sure that the system running the highest numbered version of MS-DOS or PC-DOS is the master station.
- Make sure that you are using a GRiD Model 6401 cable, or equivalent, such as an INMAC null modem serial cable. Refer to Chapter 12 of the *MS-DOS Reference* manual for cable details.
- If more than one serial port exists on the IBM PC system, make sure that the card switches are set correctly and the cable is plugged into the correct serial port.
- Make sure that the serial port specified in the PCSLAVE command is the port that the cable is plugged into.
- At the PCMASTER station, make sure that the CONFIG.SYS file on the boot device contains the statement `DEVICE=PCMASTER.SYS [1|2]` (always specify 2 on the GRiDCASE 1535 EXP). Also, make sure that the serial port configuration hasn't been changed from the system default. (This can be changed by the MODE command, printer drivers, or communications programs.) You can reset the serial port by rebooting.

- Some programs bypass the file system and access disks directly. Trying to access a slave device from the master station does not work when using one of these programs. For example, FORMAT, FDISK, DISKCOPY, and DISKCOMP will not recognize devices at the slave station.
- The file transfer utilities transfer data at 115,200 baud. If you encounter frequent errors during file transfer, you may be able to correct the problem by slowing the data transfer rate to 9600 baud. To do so, use the following form of the DEVICE statement in your CONFIG.SYS file:

```
DEVICE=PCMASTER.SYS ,9600
```

or

```
DEVICE=PCMASTER.SYS 2,9600
```

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## CREATING A CONFIG.SYS FILE

This section gives a procedure for creating a CONFIG.SYS file using the COPY command.

To create a CONFIG.SYS file using the COPY command, follow the steps listed below.

1. If you have an existing CONFIG.SYS file, save it as follows:

```
A>COPY CONFIG.SYS CONFIG.TMP
```

2. Enter the COPY command as shown below and press Return.

```
A>COPY CON CONFIG.SYS
```

This statement makes MS-DOS place all characters you enter from the keyboard into the CONFIG.SYS file.

3. Enter any statements that you want to insert into the CONFIG.SYS file (note that the system prompt will not appear after Step 2). Press **Return** after each statement, including the last one.

Examples are:

```
FILES = 20  
BUFFERS = 15  
DEVICE=PCMASTER.SYS
```

4. Enter **Ctrl-Z** (or press **F6**) and press **Return**.

Step 4 halts the insertion of characters into the CONFIG.SYS file, saves the file, and returns you to the system prompt.

After you complete the above steps, you can display the CONFIG.SYS file using the **TYPE** command to check the accuracy of your entries.

**NOTE:** The CONFIG.SYS file must be present in the root directory of the diskette or hard disk from which you boot the computer. You must warm restart your system for the new statements in the CONFIG.SYS file to be recognized.

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## APPENDIX A: TESTING THE MODEM

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If you suspect that your modem is not working properly, run the GRIDSCAN program (see Chapter 8) to ensure that your computer recognizes the modem as a valid device. If the modem is recognized, do the following test to see whether your modem or your telephone line is causing the problem. This procedure can be used for either the 2400 baud modem or the MNP modem.

MS-DOS users can use any data communications software that runs under MS-DOS to perform the test. You cannot perform this test if you need telephone operator assistance to make a phone call.

To test your modem, follow the steps listed below.

1. Run your communications software according to the instructions supplied with it. Enter the phone number (415) 657-2448 to connect to a loopback modem at the GRiD Resource Center. This modem is used for testing; any data you send to it is automatically transmitted back to you.
2. Set the Baud Rate to its maximum value (2400 baud).

It should take less than 30 seconds to connect to the modem at the GRiD Resource Center. If you don't make a connection within that time, disconnect and call again. You may have a bad phone line. If you still can't connect to the modem after five more attempts, your modem is probably faulty. Try the test again from a different phone line to make sure that the problem is with the modem and not the phone line.

If you do establish a connection to the modem at the GRiD Resource Center, you will see a message on the screen indicating that you have made a successful connection. Once you have established a connection, perform the next step to make sure your modem is working properly.



3. Type a few characters on the keyboard. If your modem is working properly, the characters you typed should be echoed back to your screen from the modem at the GRiD Resource Center. If your communications software is set to echo characters to the screen as you type them, you may see each character twice. If you get an error message, see characters other than those you typed, or see a different number of characters than you typed, disconnect and try the test again. You may have a bad phone line. If you still get unsatisfactory results after several attempts, try another phone line. If that does not correct the problem, your modem is probably faulty.

If you complete all of the above steps successfully, you can be fairly sure your modem functions properly. If you have any trouble with the test and you have ordered a GRiD Customer Support Service (CSS) contract with your GRiDCASE 1535 EXP computer, call the GRiD Resource Center at 1-800-284-GRID (4743). Make sure you know the tracking number of your computer; it is stamped on the back of the computer, under the handle.

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## **APPENDIX B: PRINTER SWITCH SETTINGS**

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This appendix gives the switch settings for two printers commonly used with GRIDCASE 1535 EXP computers.

**NOTE:** The switch settings on external devices are read when the computer starts up. If you change the switch settings after your computer has started up, you must restart it for the new settings to take effect.

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### **SETTINGS ON DICONIX 150 PORTABLE PARALLEL PRINTERS**

The switch settings for the mother board in the Diconix 150 printers are as follows:

Switches 1 through 10 down (0)

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### **SETTINGS ON HEWLETT-PACKARD 2225C THINKJET PARALLEL PRINTERS**

The switch settings for the Hewlett-Packard 2225C ThinkJet printer are as follows:

2, 5, 6 up (on)

1, 3, 4, 7, 8 down (off)

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## APPENDIX C: GRIDCASE 1535 EXP SPECIFICATIONS

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### Microprocessors

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Main microprocessor	80386 CPU, operating at 12.5 MHz
Numeric coprocessor (Option 341)	80387 numeric coprocessor (optional)

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### Displays

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Backlit LCD (standard)	10" diagonal, backlit LCD; 640 x 400-pixel PC-compatible display, with an aspect ratio of 1:1 and a contrast ratio of 11:1
Gas Plasma (Option 282)	10" diagonal, 640 x 400-pixel PC-compatible display, with an aspect ratio of 1:1 and a contrast ratio of 20:1

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### Memory

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RAM	1 MB standard; 2, 4, or 8 MB optional
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**Modems**

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2400 Baud  
(Option 331)

2400 bits-per-second Hayes  
Smartmodem 1200 compatible;  
auto dial, auto answer

MNP 2400 Baud  
(Option 332)

2400 bits-per-second Hayes Smart-  
modem 2400 compatible; auto dial,  
auto answer; Microcom Networking  
Protocol (MNP) level 5 error detec-  
tion, correction, and data compression

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**Mass Storage**

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Internal Diskette Drive  
(standard)

3½-inch high-density (1.4 MB)  
diskette drive included in base configu-  
ration; can read, write, and format  
both 1.4 MB and 720 KB diskettes

3½-inch External Diskette Drive  
(Model 3401)

3½-inch high-density (1.4 MB) diskette  
drive connected by cable to computer's  
external peripheral connector; can read,  
write, and format both 1.4 MB and  
720 KB diskettes

5¼-inch External Diskette Drive  
(Model 3402)

5¼-inch 360 KB diskette drive connec-  
ted to external peripheral connector

Tape Backup System  
(Model 3403)

40 MB capacity; backs up  
internal hard disk

5¼-inch High-Density  
External Diskette Drive  
(Model 3404)

5¼-inch 1.2 MB diskette drive  
connected to external peripheral  
connector.

Read Only Memory  
(ROM)

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Two 32-pin ROM sockets provided  
in base configuration

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**Mass Storage (continued)**


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40 MB Hard Disk (Option 354)	Hard disk replaces internal diskette drive
100 MB Hard Disk (Option 355)	Hard disk replaces internal diskette drive

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**Interfaces**


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Serial	RS-232C 9-pin, 9600 baud, PC-compatible
Parallel	Centronics 25-pin, PC-compatible
External peripheral connector	Access to external diskette and tape drives
Video output	RGB output, 9-pin, CGA compatible
Keyboard	5-pin DIN plug for IBM PC/AT-compatible keyboard or GRiD 10-key keypad
Phone jacks (optional)	Two modular telephone jacks for internal modem and telephone

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**Other Features**


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Expansion Tray (Model 32300)	Includes 2 mounting slots for IBM PC/AT- and IBM PC/XT-compatible expansion cards
Audio	Built-in transducer
Keyboard	72 keys (alphanumeric), IBM PC/AT-compatible, tactile feedback. Standard typewriter keyboard spacing.
Clock/calendar	Powered by internal lithium battery

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**Power Sources**

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Internal/external AC power pack (Model 34170)	110 - 240 VAC, autosensing
Internal battery pack (Model 32111)	Removable NiCad rechargeable battery pack
External attachable battery pack (Model 32161)	Attachable NiCad rechargeable battery pack provides 2-3 times life of internal battery

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**Physical Characteristics**

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Case	Magnesium (Expansion Tray is aluminum)
Weight	12.1 lbs (5.5 Kg) 15.9 lbs (7.2 Kg) with Expansion Tray
Height	2.5 inches (6.3 cm) With Expansion Tray attached: 3.7 inches (9.4 cm) not including legs 4.3 inches (11 cm) including legs
Width	11.5 inches (29.2 cm) w/o projections 11.9 inches (30.2 cm) with projections
Length	15.1 inches (38.4 cm)
Operating temperature	41° F to 95° F (5° C to 35° C)
Storage temperature	-4° F to 149° F (-20° C to 65° C)
Operating humidity	20% to 80% relative humidity
Storage humidity	5% to 95% relative humidity

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**Physical Characteristics (continued)**

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Shock tolerance, operating	5 Gs
Shock tolerance, nonoperating	80 Gs
Vibration tolerance, operating	3-200 Hz @ 1.0 G
Vibration tolerance, nonoperating	3-200 Hz @ 1.5 G

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