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megamate

User's Guide

Megamate

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1.0 Introduction

Congratulations on your decision to purchase **mega*mate***, the easy-to-install 3.5 inch drive for PCs, XTs, ATs, and compatibles. This manual provides information regarding the installation and use of both **mega*mate*** and **mega*mate 2.8*** . Follow the appropriate instructions for the model you have. Both **mega*mate*s** give you diskette compatibility with IBM PS/2 and laptop computers using 3.5 inch diskettes.

As personal computers have evolved there have been many changes in the type of diskettes used for storage. The introduction of laptop computers and the IBM PS/2 series has ushered in the use of 3.5 inch diskettes. While they do have their advantages, 3.5 inch diskettes pose a problem for the existing base of computers using 5.25 inch drives. **Mega*mate*** solves this problem by providing a 3.5 inch disk drive for your computer. Both **mega*mate*s** let you use 1.4MB PS/2 and 720KB laptop formats in your PC, XT, or AT. **Mega*mate 2.8*** lets you use 2.8MB 3.5 inch diskettes too.

Before you start the installation of **mega*mate***, take just a moment to read about the conventions used in this manual.

1.1 Conventions Used in This Manual

To make reading this guide a little easier, we have clarified certain conventions and phrases:

- "↵" means that you should press the RETURN or ENTER key.
- When a command to the computer is shown, your inputs will appear in **boldface**.
- PCDOS and MSDOS are functionally the same operating system. If the system comes with an IBM computer, it's called PCDOS; if it comes with a compatible model, it's called MSDOS. We will refer to them both as DOS.
- Your computer needs to have a special type of disk to load the DOS operating system after the power is turned on. We will refer to this type of disk as a "DOS system disk." It must contain at least the DOS operating system, and it probably has one or two more utility programs on it. If your computer loads DOS from a hard disk, the hard disk is considered your "DOS system disk."

1.2 System Requirements

Check the system requirements listed here to make sure that you have everything needed for proper operation of **mega*mate***:

- IBM PC, XT, AT, or 100% compatible computer with:
  - 128K memory
  - DOS version 2 or above
  - One half-size expansion slot

2.0 Installation

The **mega*mate*** card and software must be installed in your computer before you can use the **mega*mate*** drive. The step-by-step instructions in Sections 2.1 and 2.2 will help you perform the installation. If you are experienced at installing cards and software, you may wish to follow the quick start instructions listed in Appendix A.

2.1 Card Installation

Installing the **mega*mate*** card is a straightforward process. It consists of plugging the card into one of your computer's existing expansion slots and making sure that some jumper blocks on the **mega*mate*** card are positioned properly. The instructions in this section will guide you step by step through the installation procedure. Perform the following steps to install the **mega*mate*** card:

1) With the power off and the computer unplugged, remove any screws necessary to allow you to get access to the expansion slots in your computer.

2) Make sure the interface card is set according to the following table:

mega*mate*	**mega*mate* 2.8**
J1 = A	J1 = C
J2 = B	J2 = INT 6 and both DMA 2 jumpers
	J3 = A
	J4 = A
	J5 = B
	J6 = B
	SW1 switches 2 & 5 ON, all others OFF
	SW2 switches 5 & 6 ON, all others OFF

3) Find an available expansion slot. If there is a blank metal face plate on the back of the computer immediately behind the slot, remove it and save the screw. Seat the **mega*mate*** card squarely and firmly into the slot in such a way that its mounting bracket lines up with the mounting hole in the cabinet. Screw the **mega*mate*** mounting bracket down securely. (Don't use the slot next to the power supply on IBM XTs.)

4) Put the cabinet back together and replace any screws that were removed. Connect the power cable and anything else you might have disconnected.

5) Plug the **mega*mate*** drive into the **mega*mate*** card. Screw the retaining screws in finger tight. Be sure the power is off whenever you connect or remove the **mega*mate*** drive.

Once you have completed the installation successfully, your computer should work exactly as it did before. If it doesn't, review the installation procedure and check for mistakes. If the problem persists, refer to Appendix B (Troubleshooting) to try to isolate the cause.

2.2 Software Installation

The MEGAPREP program will install the **mega*mate*** software for you automatically. Use the following procedure to run MEGAPREP:

1) Turn on your computer and insert your DOS system diskette. Wait for your computer load DOS.
2) Place your **mega*mate*** master diskette into drive A. Make sure that you have your DOS system prompt "A" before you proceed to the next step.
3) Run the MEGAPREP program with the following command:

   A>**megaprep**↵

   Follow the instructions given by the MEGAPREP program.
4) The **mega*mate*** diskette contains a file called PRINT.ME, which has been copied to your DOS diskette. PRINT.ME contains information gathered since this guide was printed. Use the following command to print this file on your printer:

   A>**copy print.me prn:**↵

The **mega*mate*** software should now be installed on your DOS system diskette. Remove the **mega*mate*** master diskette and put it in a safe place. You must re-start the computer to activate the **mega*mate*** software. Either power the computer off and then back on or hold down CTL–ALT and press DEL on the keyboard.

3.0 Using Megamate

Mega*mate* is used just like your other floppy disk drives. It has its own drive letter. You can access it from your programs by referring to the drive letter. The DOS utilities DIR, COPY, CHKDSK, CD, MD, RD, etc. can be used with **mega*mate***. The DOS commands FORMAT, DISKCOMP, and DISKCOPY will work with **mega*mate*** if you are running DOS version 3.2 or above. The MMFORMAT command provided with **mega*mate*** can be used with DOS versions 2.0 or above.

3.1 Megamate's Drive Letter

Just as your primary floppy drive is referred to by the letter A, **mega*mate*** also has a drive letter associated with it. The actual letter to be used is assigned by DOS and is determined by which letters are already in use on your system. **Mega*mate*** will get the next available letter in alphabetical order. For example, if you have two floppy drives, using letters A and B, **mega*mate*** will be drive C. In a typical hard disk system where the floppy drives are A and B and the hard disk is C, **mega*mate*** will be drive D.

When your computer is powered up, a message will appear on the screen to tell you the **mega*mate*** drive letter. The message will look like the following:

```
The following Megamate drive is available:
  Drive D: - 3.5 inch High Capacity
```

In this case, you would refer to **mega*mate*** as drive D when accessing it via any software packages.

You can check the **mega*mate*** drive letter at any time by entering the MMDRIVES command. Invoking MMDRIVES will cause the drive letter message to be printed on the screen. (Be sure the MMDRIVES.COM program is on your disk before you invoke MMDRIVES.)

3.2 720KB, 1.4MB, and 2.8MB Disks

There are now three 3.5 inch disk formats for IBM and compatible computers. One is the 720KB format which is used by the IBM laptop computer and several other laptops. Another popular disk format is the 1.4MB high-density format introduced on the PS/2 model 50 and higher-level models. The PS/2 models that support the 1.4MB format are also capable of using the 720KB disks. The 2.8MB format is new and at the time of this writing has not been available from IBM. 2.8MB drive upgrades (like **mega*mate 2.8***) are also capable of using the 1.4MB diskettes and the 720KB diskettes.

Mega*mate* will automatically sense the format of the disk being used, whether it is 720KB, 1.4MB, or 2.8MB and adjust itself accordingly. The only time you have to select a format is when initializing a new blank disk to one of the three formats.

High-density diskettes can be easily distinguished from double density diskettes because they have an extra hole molded into the case. Holding a 3.5 inch diskette in your hand with the spindle hole facing down and the access door facing away from you, the write protect hole will be in the left hand corner nearest you. If the disk has a similar hole in the right hand corner nearest you, it is a high-density disk.

Extended Density diskettes, used for the 2.8MB format, have two holes molded into them, just like high-density diskettes. They will also have an "ED" printed on them to signify that they are extended density.

3.3 Initializing Disks

Brand new diskettes are blank and must be initialized to the 720KB, 1.4MB, or 2.8MB format before they can be used. Diskettes that have already been used can be re-initialized as a way of completely erasing them.

High-density 3.5 inch diskettes are actually a different type of diskette than the double-density variety. Diskettes should only be initialized to the format for which they were intended. Initializing double-density diskettes to 1.4MB format will result in unreliable operation, as will initializing high-density diskettes to 720KB format. The same holds true for extended density diskettes.

Two programs are included for initializing diskettes with **mega*mate***: MMFORMAT and BACKFMT. MMFORMAT is a command line driven disk initialization utility, similar in usage to the DOS FORMAT command. BACKFMT is a "pop-up" disk initializer that can be used in the background while you continue working on another application.

3.3.1 MMFORMAT

Syntax

MMFORMAT drive letter *options*

Purpose

MMFORMAT is a diskette initialization utility for use only with your **mega*mate*** drive. Similar in use to the DOS FORMAT utility, MMFORMAT allows you to initialize blank diskettes into all DOS 3.5 inch formats.

Options

/720 creates a 720KB diskette

/1.4 creates a 1.4MB diskette

/2.8 creates a 2.8MB diskette (**mega*mate 2.8*** only)

/V prompts for a volume label after the diskette is initialized

/S copies the operating system files to the diskette after initialization

Description

The drive letter, followed by a colon(:), should be your **mega*mate*** drive. The format option determines which format will be used. It consists of a forward slash (/) followed by three characters. If you enter the MMFORMAT command without specifying a format option, the highest capacity format supported will be used. This conforms to the precedent set with the DOS FORMAT command.

Make sure you have high capacity diskettes if you are trying to use a high capacity format, or else initialization errors and data loss will probably occur. You may initialize a blank diskette or reinitialize an existing diskette, but remember that initialization will erase any existing data on the diskette.

For this example, assume that drive D is a **mega*mate*** 1.4MB drive:

```
A>mmformat d:/720↵
```

would initialize the diskette in drive D to the 720KB format.

```
A>mmformat d:/1.4 /s↵
```

would initialize the diskette in drive D to the 1.4MB high capacity format used by the IBM PS/2 computers and place a copy of DOS on the disk, making it a DOS system disk.

```
A>mmformat d:↵
```

would also initialize the diskette in drive D to the 1.4MB high capacity format used by the IBM PS/2 computers. Since no capacity is specified, the highest capacity supported for the type of drive is used.

3.3.2 BACKFMT

Initializes diskettes while other programs are running.

Syntax

BACKFMT *options*

Purpose

BACKFMT is a background diskette formatting program that allows you to initialize diskettes while you continue running other programs.

Options

/C reconfigures some BACKFMT options after the initial installation

/D disables BACKFMT and removes it from memory

Description

Background formatting is initiated when you press a user-definable "access key," which displays a menu from which you can select the drive and capacity of the diskette to initialize. After you select the drive and capacity, BACKFMT will start initializing the diskette while returning you to your original program. You can continue working while BACKFMT performs the initialization.

To make the background formatter available, you have to run the BACKFMT program. Enter the following command at the DOS prompt:

```
A>backfmt↵
```

Configuration

The first time the BACKFMT program is run, it will display a message indicating that it has not been configured yet. Configuration consists of answering a few simple questions. Each question has a default answer (in square brackets) that can be used for the first-time installation. Listed here are some points you will be asked about:

- Would you like to change the background formatter access key? This allows you to change the access key to a different combination of keys. The access key is initially set to Ctrl-Alt-F.
- What would you like BACKFMT to do when it completes the initialization of a diskette? You can select how to be informed when BACKFMT finishes initializing a diskette.
- Would you like the diskette to be verified after formatting? You should always have the diskette verified for normal operation. If you tell BACKFMT not to verify, it will always verify the first cylinder, where the directory is placed. If that area is good, it will continue without verifying the rest of the diskette. Turning verification off allows diskettes to be initialized about 20-30% faster.
- Are you using a color monitor? You should answer Yes to this question only if you are really using a color monitor. If you have a monochrome (white, green, or amber) monitor, answer No. Menu readability will be improved by a correct response.

Once you answer the configuration questions, the BACKFMT.COM file will be updated with the new information. From that point on, when BACKFMT is run, it will not ask for configuration information. If you want to change the configuration, you should specify the /C option when you are running the BACKFMT program, as follows:

```
A>backfmt /c↵
```

If BACKFMT is reconfigured with the /C option, all the changes will be made to the BACKFMT.COM file. The changes will take effect immediately.

The currently defined access key will be displayed near the end of the BACKFMT signon message. It will look similar to this:

```
While holding Ctrl & Alt, press F
```

When the DOS prompt returns, BACKFMT is ready for use. If you need to remove BACKFMT from memory, use the following command from the DOS prompt:

```
A>backfmt /d↵
```

Using BACKFMT

To initialize a diskette with BACKFMT, use the following procedure:

1) Press the BACKFMT key sequence. The default is Ctrl-Alt-F unless you changed it during configuration. A window displaying the available drives and formats should appear near the top of your screen.

2) Using the cursor keys, select the format capacity that you would like to use.

3) When you have selected the desired format capacity, press ENTER to get the program to accept your choices.

4) Another window will appear, displaying your selection and giving you one last chance before the initialization starts. Pressing ENTER will start the diskette initialization, and you will be returned to the program you were originally running.

If you press the BACKFMT access key while a diskette is being initialized, a status window will appear. The current cylinder and head being initialized will be displayed in this window. Press any key to remove the status window.

Depending on how you configured BACKFMT, a window may appear when the initialization is finished or if an error exists. This display will be self-explanatory. If you configured BACKFMT so it won't display a window, the result will be displayed when you press the access key again.

Notes

BACKFMT will work only with your **mega*mate*** drive.

If you attempt to access a diskette that is currently being background formatted, you will get a "Drive not ready" error message. The drive will be accessible as soon as the initialization is complete.

You may notice the drive light going off on a drive being background formatted when you access another diskette drive. This is normal because only one diskette drive can be used at a time. BACKFMT will give priority to another program if it is accessing a diskette drive. When the program seems to be done with the diskette drive, BACKFMT will continue.

The BACKFMT menu is not available while your screen is displaying graphic images. If you try to access the BACKFMT menu while your display is in a graphic mode, you will hear a beep.

Don't remove BACKFMT from memory with any memory management program. While in memory, BACKFMT is closely linked to MEGAMATE.SYS; and if it is improperly removed, it will cause system failure. Remove BACKFMT from memory only with the /D option.

Appendix A Quick Start

This section is only for experienced installers who don't want detailed instructions. To install **mega*mate*** or **mega*mate 2.8*** perform the following steps:

1) Make sure the interface card is set according to the following table:

mega*mate*	**mega*mate 2.8***
J1 = A	J1 = C
J2 = B	J2 = INT 6 and both DMA 2 jumpers
	J3 = A
	J4 = A
	J5 = B
	J6 = B
	SW1 switches 2 & 5 ON, all others OFF
	SW2 switches 5 & 6 ON, all others OFF

2) Install the card in the PC and connect the drive.

3) Put the **mega*mate*** software disk in an available drive and run MEGAPREP. Follow the MEGAPREP installation instructions. Restart the computer after MEGAPREP finishes.

4) Access the drive using the drive letter indicated at boot-up time. Appendix C gives I/O usage information in case of a conflict.

5) Use MMFORMAT if you need to initialize a disk.

Appendix B Troubleshooting

Mega*mate* should not affect the operation of your existing computer software and hardware. If there seems to be a problem using the computer or **mega*mate*** after installation, read the following problem descriptions to see if they match those you are experiencing. If you can't resolve the problem, call Micro Solutions and ask for **mega*mate*** technical assistance.

B.1 Symptoms

When trying to access megamate, an "Invalid drive specification" message appears on the screen.

This can occur if you are not using the correct drive letter to access **mega*mate***. Be sure the letter you use is the one indicated on the screen when the computer loads DOS. Review section 3.1 for information on drive letters.

This can also occur if you have not run MEGAPREP to install the **mega*mate*** software, or if you have not restarted the computer after running MEGAPREP. Review section 2.2 for information on software installation.

The activity light on megamate never illuminates. When you are trying to access megamate, nothing happens. Eventually a "drive not ready" or other failure message appears.

mega*mate* (1.4MB version only)

This can occur if the setting of jumpers J1 and J2 on the **mega*mate*** card does not match the software configuration. Make sure that you have run MEGAPREP to install the software. J1 should be in position A and J2 should be in position B for a standard installation. Read Appendix C for more information on jumper settings and software configuration.

The activity light on megamate illuminates. However, when you are trying to access megamate, nothing happens. Eventually a "drive not ready" or other failure message appears.

This problem may occur if another card in your computer uses the same I/O addresses that **mega*mate*** is trying to use. You may need to try jumpering the **mega*mate*** card for a different address range. Read Appendix C for more information on jumper settings and the associated software configuration.

mega*mate 2.8*

This problem can also occur because of a DMA channel conflict. Try selecting an alternate DMA channel for the **mega*mate*** card. Review Appendix C for information about DMA channels.

The activity light on megamate illuminates at the same time as the activity light on one of the other floppy disk drives. When trying to access megamate, nothing happens. Eventually a "drive not ready" or other failure message appears.

This problem indicates that another card in your computer is using the same I/O addresses that **mega*mate*** is trying to use. It will be necessary to jumper the **mega*mate*** card for a different address range. Read Appendix C for more information on jumper settings and the associated software configuration.

The activity light on megamate illuminates. When trying to access megamate, the disk rotates. Eventually a failure message appears.

This problem can occur if another card in your computer is using the same I/O addresses that **mega*mate*** is trying to use. It may be necessary to jumper the **mega*mate*** card for a different address range. Read Appendix C for more information on jumper settings and the associated software configuration.

This problem could also occur if you have a disk drive alignment problem. Either the drive that created the diskette or **mega*mate*** may be out of alignment. Try initializing a new 3.5 inch diskette on **mega*mate*** using MMFORMAT and accessing it. If it works, one of the drives is probably misaligned. Try reading your diskettes on a different PC to pinpoint the problem. Your local service center should be able to perform a drive alignment for you.

mega*mate 2.8*

This problem can also occur because of a DMA channel conflict. Try selecting an alternate DMA channel for the **mega*mate*** card. Review Appendix C for information about DMA channels.

After megamate is installed, one of your existing cards, devices, or programs doesn't work properly.

This problem may occur if another card in your computer uses the I/O addresses that **mega*mate*** is using. Remove the **mega*mate*** card and the MEGAMATE.SYS software to see if the problem goes away. If it does, there appears to be an I/O address conflict. If it doesn't, **mega*mate*** is not the

source of the problem. Read Appendix C and try another jumper option if necessary.

With megamate installed on an AT&T PC 6300, the activity light illuminates when you are trying to access the drive, but megamate doesn't function properly. Errors in reading or writing occur.

Replace the AMD 9517 DMA controller with an equivalent DMA controller of another brand. The NEC 8237-5 is known to be a good substitute. The 9517 is located on the mainboard of the computer and will require a computer service technician to replace it.

Alternately, you can try the following solution:

mega*mate* (1.4MB version only)

Use the NODMA option. After you have completed the hardware and software installation of **mega*mate***, use your text editor or word processor to edit the CONFIG.SYS file on the disk drive that MEGAMATE.SYS was installed to. Locate the line that contains the statement "DEVICE=MEGAMATE.SYS". Add a blank space to the end of the line and then add NODMA. Your edited line in CONFIG.SYS should look something like:

```
device=megamate.sys  /08,7,3  NODMA
```

mega*mate 2.8*

Try selecting an alternate DMA channel for the **mega*mate*** card. Review Appendix C for information about DMA channels.

The MMFORMAT and MMDRIVES commands don't work. Invoking them results in a "Bad command or file name" message.

The MMFORMAT.COM and MMDRIVES.COM files are not located on the disk you are trying to access them from. For either command to be used, the files must be located on the disk you are invoking them from. After you run MEGAPREP, the files will be located on your DOS system floppy diskette or in the root directory of your DOS system hard disk. You may copy them to another floppy diskette or to the utilities subdirectory of your hard disk by using the DOS COPY command. You may wish to experiment with the DOS PATH command to make your computer find them automatically.

The MMFORMAT and MMDRIVES commands don't work. Invoking them results in the following message: "The megamate device driver 'MEGAMATE.SYS' is not installed."

The **mega*mate*** controlling software was not installed on your DOS system disk. The CONFIG.SYS file on your DOS system disk may have been modified or deleted, eliminating the reference to **mega*mate***. The MEGAMATE.SYS file on your DOS system disk may have been deleted. If either of the above is true, you must perform the software installation procedure again. Refer to section 2.2 of this manual for instructions.

The message will also occur if you loaded DOS from a DOS system disk other than the one **mega*mate*** was installed on. (For example, you might have loaded DOS from a floppy diskette after installing **mega*mate*** on your hard disk, or you might have used a DOS floppy diskette other than the one **mega*mate*** was installed on.) In this case, restart your computer using the proper DOS system disk.

The activity light on the drive goes on. You are able to initialize a diskette with MMFORMAT, but when you try to use the diskette you get a "Non DOS disk" error.

This can occur if there is a DMA channel conflict between the **mega*mate*** card and something else in your computer.

mega*mate* (1.4MB version only)

Use the NODMA option. After you have completed the hardware and software installation of **mega*mate***, use your text editor or word processor to edit the CONFIG.SYS file on the disk drive that MEGAMATE.SYS was installed to. Locate the line that contains the statement "DEVICE=MEGAMATE.SYS". Add a blank space to the end of the line and then add NODMA. Your edited line in CONFIG.SYS should look something like:

```
device=megamate.sys  /08,7,3  NODMA
```

mega*mate 2.8*

Try selecting an alternate DMA channel for the **mega*mate*** card. Review Appendix C for information about DMA channels.

The "CompatiCard IV BIOS Version X.XX" message does not appear before your computer boots, even though you have enabled the BIOS ROM. The computer boots normally.

mega*mate 2.8* (only)

This will occur if another BIOS ROM in the computer is trying to use the same address as the one on the **mega*mate*** card. Try using another BIOS address for the **mega*mate*** card. Refer to section C.2.3 for more information on BIOS address selection.

The computer locks up before booting. It doesn't try to access any hard drives or floppy drives.

mega*mate 2.8* (only)

This can occur if another BIOS ROM in the computer is trying to use the same address as the one on the **mega*mate*** card. Try using another BIOS address for the **mega*mate*** card. Refer to section C.2.3 for more information on BIOS address selection.

B.2 Warning Message Summary

Following are the warning messages that may be produced by the **mega*mate 2.8*** controller card and suggestions for dealing with them. This section is only applicable for **mega*mate 2.8*** installations.

CC4: I/O address conflict.

During its self-test, the **mega*mate 2.8*** card has determined that some of the input/output ports used to communicate with the processor are being interfered with. Try using a different card address.

CC4: Interrupt conflict or not jumpered.

The **mega*mate 2.8*** card cannot use the interrupt that has been selected on J2. Something else in the computer is interfering with it. Move the J2 interrupt jumper to another setting (2 through 7) and try again. This problem could also occur if no interrupt was jumpered. You must select one and only one interrupt. Refer to section C.2.5 for further information.

CC4: You have a bad or upside-down cable.

During its self-test, the **mega*mate 2.8*** card determined that a drive cable is either shorted or plugged in backwards. Check your cables carefully.

The same message will occur if a drive that is properly connected to the **mega*mate 2.8*** card does not have DC power connected to it. Check your DC power connections.

This error could also occur if an I/O conflict exists with another card in your system. If you still get this error with no cables connected to the **mega*mate 2.8*** card, try using a different card address.

Appendix C Card Options

Your computer communicates with the **mega*mate*** card through some electronic Input/Output locations called "I/O ports." The I/O ports on the **mega*mate*** card can be electronically located at one of three different "addresses."

Your existing disk controller uses I/O ports also, as do most other cards in your computer. If two or more cards try to use the same I/O port address they will conflict, which will prevent proper operation. By allowing you to select one of three different addresses for the **mega*mate*** card we can prevent conflicts with cards already in your computer.

Mega*mate* is shipped to you with the address selected the way that works with most computers. If you experience problems using **mega*mate*** which seem to be related to an I/O port conflict, you will need to try one of the other two configurations. Please note that while there are actually four possible configurations, one of them is reserved because it would conflict with your existing disk controller.

The following sections provide further details on the configuration options available on the interface card.

C.1 Jumper Settings (1.4MB version)

The **mega*mate*** software needs to know what I/O port addresses the card will be using. MEGAPREP sets up your software assuming that the jumpers are in the factory-set position. If you select a different address position you will need to run MEGAPREP again and tell it so.

Set jumpers J1 and J2 on the **mega*mate*** card to correspond to one of the optional positions in the table below. Next, run the MEGAPREP program again using the following syntax:

MEGAPREP↵

MEGAPREP will ask you for the position of jumpers J1 and J2. MEGAPREP will make the necessary changes to the CONFIG.SYS file on your DOS system disk to reflect the jumper changes.

Jumper Positions		I/O Ports	Notes
J1	J2		
B	A	3F0h-3F7h	Reserved, do not use
B	B	370h-377h	Optional use
A	B	360h-367h	Factory setting
A	A	3E0h-3E7h	Optional use

Table C–1 Address Jumper Settings

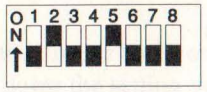
C.2 Card Options (2.8MB version)

The **mega*mate 2.8*** card has several options that you may wish to take advantage of. In addition to being able to change the card address to avoid address conflicts, you may also change the DMA channel and interrupt number to avoid conflicts of those types. You may also allow your computer to boot from the **mega*mate*** drive. It is even possible to add up to three more drives to the card.

The **mega*mate 2.8*** card is also sold separately as the **Compati**Card IV floppy controller. This section contains a condensed version of the **Compati**Card IV documentation that should be sufficient to allow the use of the additional features of **Compati**Card IV. The complete **Compati**Card IV documentation and a software diskette can be purchased from Micro Solutions for a nominal fee. Read the following sections to learn how to make the most of your **mega*mate 2.8*** card.

C.2.1 Summary of Switch Settings

This section is meant to be a quick reference for the switch settings of **Compati**Card IV. For further information on any of the settings, refer to the sections indicated in the table.



Auto Boot Enable—Section C.2.7
- ↓ Disabled
- ↑ Enabled

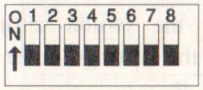
1.2MB Spindle Speed—Section C.2.6
- ↓ Single Speed
- ↑ Dual Speed

DMA Channel—Section C.2.4
- ↓↓ DMA 2, IRQ 6 Fixed
- ↓↑ DMA 1
- ↑↓ DMA 2
- ↑↑ DMA 3

Reserved

ROM BIOS Address—Section C.2.3
- ↓↓↓ ROM BIOS Disabled
- ↓↓↑ CC00:0000h
- ↓↑↓ CE00:0000h
- ↓↑↑ D000:0000h
- ↑↓↓ D800:0000h
- ↑↓↑ DE00:0000h
- ↑↑↓ E800:0000h
- ↑↑↑ EE00:0000h

Table C–2 SW1 Switch Settings



Drive Types—Section C.2.9
Drive Position 3
↓↑ 360KB or 1.2MB
↑↓ 1.4MB
↑↑ 2.8MB
↓↓ No drive or other type installed
Drive Position 2
↓↑ 360KB or 1.2MB
↑↓ 1.4MB
↑↑ 2.8MB
↓↓ No drive or other type installed
Drive Position 1
↓↑ 360KB or 1.2MB
↑↓ 1.4MB
↑↑ 2.8MB
↓↓ No drive or other type installed
Drive Position 0
↓↑ 360KB or 1.2MB
↑↓ 1.4MB
↑↑ 2.8MB
↓↓ No drive or other type installed

Table C–3 SW2 Switch Settings

C.2.2 Card Address (J1)

You must set jumper J1 to one of three positions (B through D) that sets the electronic "address" that the computer uses to communicate with **Compati**Card IV.

Positions B, C, and D select Secondary Controller addresses. Use any one of these settings. Three choices are provided to avoid interference with other add-on cards. You may use any of the three that works in your computer. Position C is known to work in most brands of computers. Table C–4 lists the I/O port addresses used for each J1 setting.

Jumper J1	I/O Ports
A	3F0h-3F7h
B	370h-377h
C	360h-367h
D	3E0h-3E7h

Table C–4 I/O Ports Used

Place the jumper block on the pins corresponding to the address you wish to use. Write down the setting you choose. You may need to refer to it during software installation.

> Suppose you have installed **Compati**Card IV as a Secondary Controller but it does not work. After reading the section on troubleshooting, you conclude that the problem may be from another card in the computer trying to use the same electronic "address". Set J1 to a different secondary address (B, C, or D) and try again.

C.2.3 BIOS Address (SW1-1, 2, 3)

You must set the address the computer will use to read the BIOS ROM. This is done by setting switches 1, 2, and 3 on switch bank SW1 to correspond to the desired address.

Choose an address location from the following table and set the switches accordingly. The factory setting has been found to work well in many computers. Depending on what other cards are installed in your computer, you may have to select another option. The symptoms of a BIOS address conflict will be that **Compati**Card IV does not access the floppy drives properly, the computer does not load DOS, or one of your other cards will not function when this BIOS address is selected. In any of these cases, try another switch setting. Always turn the power off before you make a switch change, otherwise the computer will lock up.

If you are unable to find a BIOS address that works for you, you will have to use the NOROM option. Set the switches according to the table and use the NOROM option (see section C.2.11) when installing the device driver software. When the NOROM option is used, the auto boot feature will no longer work, You will also lose the ability to boot from certain types of drives.

BIOS Address	SW1-1	SW1-2	SW1-3	Notes
NOROM	OFF	OFF	OFF	Turns off ROM BIOS
CC00:0000h	OFF	OFF	ON	
CE00:0000h	OFF	ON	OFF	Factory Setting
D000:0000h	OFF	ON	ON	
D800:0000h	ON	OFF	OFF	
DE00:0000h	ON	OFF	ON	
E800:0000h	ON	ON	OFF	
EE00:0000h	ON	ON	ON	

Table C–5 BIOS Address Switch Settings

To perform a normal first-time installation of **Compati**Card IV you would use the factory setting of the BIOS address. Make sure that SW1 positions 1, 2, and 3 are set to OFF, ON, OFF respectively.

> Suppose you have already performed the installation and your computer exhibits the symptoms of a BIOS address conflict (won't boot or locks up). Try another BIOS address setting. Turn off the power to your computer and set SW1 switches 1, 2, and 3 to one of the other six address choices.

> You may have tried all of the BIOS address options with no success. Either the problem is not with the BIOS address or else your computer has no BIOS space available. Try using the NOROM option. Set switches SW1 1, 2, and 3 to the OFF position. Install the NOROM software option as explained in section C.2.11 of this manual. If NOROM doesn't solve your problem, it is not a BIOS address problem.

C.2.4 DMA Channel Selection (J2)

You must select the DMA channel to be used. This is accomplished by positioning both jumper blocks to the corresponding DMA channel position on header connector J2 on the card and by appropriately setting switches 5 and 6 on switch bank SW1.

Choose the appropriate DMA channel number (1, 2, or 3) from table C–6 and move both DMA jumper blocks to the correct numbered position on header J2. Set switches SW1-5 and SW1-6 to the position corresponding to the selected DMA channel. This indicates to the BIOS software which channel is in use. For most applications the correct DMA channel will be 2.

DMA Channel	J2 DMA Setting	SW1-5	SW1-6	Notes
1	1	OFF	ON	Optional in PC, XT, or AT
2	2	ON	OFF	Factory setting
3	3	ON	ON	Optional in PC, AT only—not XT
2	2	OFF	OFF	Must also jumper for Interrupt 6

Table C–6 DMA Channel Switch and Jumper Settings

SW1-5 off and SW1-6 off is a special case that should be used only as a last resort. When both switches are off, the DMA channel must be jumpered for channel 2 and the interrupt must be jumpered for 6 on header J2 of the card. This option defeats the automatic sensing of which interrupt is being used. It has been provided for use when interrupt sensing does not work. It should not be necessary in most cases.

DMA channel 2 will not work on a few types of computers. If it doesn't work, the computer will appear to function normally but operations involving disk access using **Compati**Card IV will fail. If your computer shows this symptom, try one of the optional DMA channels.

> Suppose you have installed **Compati**Card IV using DMA channel 2 and your computer will not access the drives properly. After reading the section on troubleshooting you decide it may be a problem with the DMA channel. **You have an IBM AT.** From Table C–6 you see that you may select either DMA channel 1 or DMA channel 3. Do so and try again. Set the J2 DMA jumpers to the new channel setting and set SW1-5 and SW1-6 accordingly.

> Suppose you have installed **Compati**Card IV using DMA channel 2 and your computer will not access the drives properly. After reading the section on troubleshooting you decide it may be a problem with the DMA channel. **You have an IBM XT.** From the DMA Channel Selection table you see that you may select DMA channel 1 as an alternate. Set the J2 DMA jumpers to the channel 1 setting and set SW1-5 OFF and SW1-6 ON.

> Suppose you have installed **Compati**Card IV using DMA channel 2 and your computer will not access the drives properly. After reading the section on troubleshooting you decide it may be a problem with the DMA channel. **You have a PC compatible.** You may select either DMA channel 1 or DMA channel 3 and try again. Set the J2 DMA jumpers to the new channel setting and set SW1-5 and SW1-6 accordingly.

C.2.5 Interrupts (J2)

You must select the interrupt number to be used when the floppy controller communicates with the computer. This is done by placing a jumper block on the position corresponding to the desired interrupt on header connector J2 of the card.

For almost all computers, the correct setting will be 6. If interrupt 6 does not work in your PC, move the jumper to one of the other five optional positions until you find one that does.

If the selected interrupt does not function with **Compati**Card IV in your computer, a message will print on the screen telling you that there is an interrupt conflict.

The interrupt number in use is automatically sensed by the BIOS software when the power is turned on. If you are unable to make any combination of DMA channel and interrupt work in your computer, try using DMA 2 and interrupt 6 with SW1-5 off and SW1- 6 off. This unique setting defeats the automatic sensing of interrupts.

J2 Interrupt Setting	Notes
2	Optional in PC, XT only—not AT
3	Optional in PC, XT, or AT
4	Optional in PC, XT, or AT
5	Optional in PC, AT only—not XT
6	Factory Setting
7	Optional in PC, XT, or AT

Table C–7 Interrupt Level Jumper Settings

For a normal first-time installation of **Compati**Card IV, set the J2 interrupt jumper to position 6.

After you install **Compati**Card IV, if a message appears on your screen indicating an interrupt conflict, you must change J2 to another interrupt position. Move J2 to a different interrupt position and try again.

If you have tried all of the interrupt positions but still get the message about an interrupt conflict, it is possible that the automatic sensing of interrupts doesn't work on your computer. Try using interrupt 6 and DMA channel 2 with SW1-5 OFF and SW1-6 OFF. This special setting defeats the automatic sensing of interrupts.

C.2.6 Dual Speed Drives (SW1-7)

You must set switch SW1-7 to correspond to the type of 1.2MB drive you are using. There are two popular types of 1.2MB drives available. The original type used in the AT has only one spindle speed of 360 RPM; 360KB density and 1.2MB density are achieved by using data transfer rates of 300Kbps and 500Kbps respectively. Almost all aftermarket drives have two spindle speeds available, 300 RPM and 360 RPM. With a dual speed drive the data transfer rates to achieve 360KB and 1.2MB densities would be 250Kbps and 500Kbps. **Compati**Card IV can handle both types of drives properly but needs to be told which type has been installed. Set switch SW1-7 according to the following table.

1.2MB Drive Type	SW1-7	Notes
Single speed	OFF	Factory Setting
Dual speed	ON	Optional

Table C–8 1.2MB Drive Spindle Speed Switch Settings

Most 1.2MB drives being sold today can operate in either single speed or dual speed mode. The mode of operation is controlled by a jumper block or switch on the drive electronics board. It is common for these boards to be shipped jumpered for single speed operation. This is a good guess to start with if you don't know which kind you have.

The symptoms of having SW1-7 set improperly will be that you can read 1.2MB disks but not 360KB disks. You must restart your computer after changing switch SW1-7.

If you have a choice, use your 1.2MB drives in single speed mode. You will acheive faster data transfer on 360KB disks.

Let's assume you are installing **Compati**Card IV and one of the drives attached to it will be a single speed 1.2MB drive. In this case you will set switch SW1-7 to the OFF position.

Perhaps you are installing **Compati**Card IV in a computer with a dual speed 1.2MB drive, a 360KB drive, and a 720KB 3.5 inch drive. In this case, because the 1.2MB drive is a dual speed drive, you will set switch SW1-7 to the ON position. It does not matter which other types of drives are connected.

As another example, assume you have installed **Compati**Card IV in a computer with what you believe is a dual speed 1.2MB drive and you have set switch SW1-7 to the ON position. You find that you are able to read 1.2MB diskettes but cannot access 360KB diskettes. This will occur if the drive itself has been jumpered for single speed operation. Try setting switch SW1-7 to the OFF position.

C.2.7 Auto Boot (SW1-8)

You must decide if you want **Compati**Card IV to load DOS from any drive attached to it that has a disk in it. Switch SW1-8 must be set appropriately.

CompatiCard IV has the unique ability to be able to boot from more than one floppy drive. In fact, it will try to boot from the first drive it checks that contains a diskette. This feature is useful for people who usually boot from one type of disk but wish to boot from another type on occasion (e.g. who normally boot from 360KB 5.25 inch diskettes but sometimes boot from 720KB 3.5 inch diskettes). Use the following switch settings to control the Auto Boot feature.

Auto Boot	SW1-8
YES	ON
NO	OFF

Table C–9 Auto Boot Feature Switch Settings

When Auto Boot is enabled, **Compati**Card IV will check each drive for about 1 second, looking for a DOS system disk. If none is found, your computer will proceed to boot in its normal fashion. If a DOS system disk is found, **Compati**Card IV will boot from that drive. The drive that **Compati**Card IV boots from will become drive A for the duration of that computing session. This is desirable since most diskettes that contain DOS have been configured to run as drive A. The drive that is normally drive A will be assigned drive 16 and unavailable for the duration of the session. For this drive to be accessed, the DOS DRIVER.SYS file (DOS Version 3.2 and above) must be invoked at boot time to assign drive 16 a letter.

If your application is such that you need to access what is normally the A drive after using the Auto Boot feature, perform the following steps:

1) Copy the DOS DRIVER.SYS file to the diskette you will boot from. Make sure it is the same version as the DOS you will be booting.

2) Add a line to the CONFIG.SYS file on the diskette you will boot from to include a reference to DRIVER.SYS. (Create the CONFIG.SYS file if it doesn't already exist.) Select the appropriate line from table 6–4, depending on which type of drive is normally your A drive:

Drive Type	Add to CONFIG.SYS
5.25 inch 360KB	device=driver.sys /d:16 /f:0 /t:40 /s:9 /h:2
5.25 inch 1.2MB	device=driver.sys /d:16 /f:1 /t:80 /s:15 /h:2
3.5 inch 720KB	device=driver.sys /d:16 /f:2 /t:80 /s:9 /h:2
3.5 inch 1.4MB	device=driver.sys /d:16 /f:7 /t:80 /s:18 /h:2

Table 6–4 DRIVER.SYS Commands to Retain Drive A after Auto Boot

Assume your computer has one 360KB drive and you use **Compati**Card IV to add a 2.8MB 3.5 inch drive. At some point you wish to boot from a 3.5 inch diskette but you want to retain the use of the 360KB drive. To do so, you will need to copy DRIVER.SYS to the 3.5 inch diskette. Then you will need to add the following to the CONFIG.SYS file on the 3.5 inch diskette:

device=driver.sys /d:16 /f:0 /t:40 /s:9 /h:2

When you boot from the 3.5 inch diskette, your 360KB drive will be accessible as drive C (or the next available letter on your system).

Let's assume that your computer has a 360KB 5.25 inch drive as drive A. You want the 360KB drive to be drive A except when you occasionally boot from a 3.5 inch system disk. You have installed a 2.8MB 3.5 inch drive connected to **Compati**Card IV. In this case you should set switch SW1-8 to the ON position. **Compati**Card IV will check the 3.5 inch drive for the presence of a diskette each time you boot your computer. If a DOS system disk is present, your computer will boot from the 3.5 inch diskette and the 3.5 inch drive will become drive A until the next time DOS is loaded.

Let's assume that you have installed **Compati**Card IV with several drives attached. You don't want **Compati**Card IV to boot from drives other than your normal drive A. Set switch SW1-8 to the OFF position. This will disable the Auto Boot feature.

C.2.8 External Power Jumpers (J3, J4, J5, J6)

You must set the jumper blocks J3, J4, J5, and J6 to the appropriate positions in order to enable DC power on the external DB-37 connector P4. Set J3 and J4 to position A, J5 and J6 to position B.

	DC Power Pins (P4)			Jumper Settings				
Power Convention	+5v	+12v	Gnd	J3	J4	J5	J6	Notes
No Power	None	None		A	A	A	A	
megamate	2	1	20-37	A	A	B	B	Factory Setting
Alternate–do not use	4	1	2-3	B	B	A	B	

Table C–10 External Drive Power Jumper Settings

C.2.9 Drive Types (SW2)

You must set the switches on switch bank SW2 that correspond to each of the drives attached to **Compati**Card IV. For each of the four possible drives there are two switches to set.

CompatiCard IV follows IBM's conventions for disk drive cable wiring and addressing. All drives attached should have their drive select jumper set to the second drive position (e.g., DS1 if the sequence is DS0, DS1, DS2, DS3; and DS2 if the sequence is DS1, DS2, DS3, DS4). Each drive connector is capable of handling two floppy drives. The low-order/high-order addressing of the drives is determined by the type of cable used for the connection. A cable connector that has wires 10 through 16 twisted over connects to the low-order drive; a cable connector in which wires 10 through 16 run straight through connects to the high order drive. Many internal drive cables have both the low- order and high-order connector on them.

The **mega*mate 2.8*** drive is connected to P4 using a twisted cable wiring. Be sure SW2-5 and SW2-6 are both ON.

CompatiCard IV supports up to four drives. Use table C–11 to determine the drive position number for each of the drives you will be connecting. Write down the drive position number; you'll need it later for software setup.

Drive cable connected to	Cable type used	Drive position #	Switches used to set drive type	
P2	Twisted	0	SW2-1	SW2-2
	Straight	1	SW2-3	SW2-4
P3 or P4	Twisted	2	SW2-5	SW2-6
	Straight	3	SW2-7	SW2-8

Type of drive attached	Switch settings	
360KB or 1.2MB	OFF	ON
1.4MB	ON	OFF
2.8MB	ON	ON
No drive or other type installed	OFF	OFF

Table C–11 Drive Position Numbers and Drive Type Switch Settings

The setting for both 360KB and 1.2MB 5.25 inch drives is the same. **Compati**Card IV will automatically determine which type of 5.25 inch drive you are using. If you are using a 3.5 inch 1.4MB or 2.8MB drive, set the switches accordingly. For all other drive types (e.g., 720KB and 8 inch) or when no drive is in use, set both switches OFF.

> If you connect a 1.2MB 5.25 inch drive to connector P2 of **Compati**Card IV using a twisted cable, you will use the preceding tables to find that the drive position number is 0. Using this information you find that you should set switches 1 and 2 on SW2. Since you have a 5.25 inch drive, set SW2-1 OFF and SW2-2 ON.

> Perhaps you have connected a 360KB 5.25 inch drive to connector P2 of **Compati**Card IV using a straight cable and you have connected a 1.4MB 3.5 inch drive to connector P2 using a twisted cable. Using the preceding table you find that the drive position number for the 5.25 inch drive is 1. The drive position number for the 3.5 inch drive is 0. You then find that you should set SW2-1 ON, SW2-2 OFF, SW2-3 OFF, and SW2-4 ON.

C.2.10 Drive Cable Connections (P2, P3, P4)

CompatiCard IV has three disk drive connectors to accommodate a variety of cable configurations. Two of the connectors are for internally mounted drives. The third is for externally mounted drives. Each connector has a name associated with it (P2 to P4). The name is printed on the card near its associated connector. Table C–12 describes each connector and the drive positions associated with it.

Connector Designation	Drive Positions	Drive Location	Connector Type
P2	0 & 1	Internal	34 Pin Header
P3	2 & 3	Internal	34 Pin Header
P4	2 & 3	External	DB-37 (female)

Table C–12 Connector Designations

When you are installing cables for internally mounted drives, make sure the pin 1 side of the cable (usually marked with a colored stripe) is connected to the side of the connector that is marked "1." On all **Compati**Card IV internal disk drive connectors (P2 and P3), pin 1 is toward the top of the card.

Connector P2 may be used for drives in drive position 0 or 1. Connectors P3 and P4 may be used interchangeably for drives in drive position 2 or 3.

Be careful not to connect a drive with a twisted cable to P3 while the **mega*mate* 2.8** drive is connected to P4. Since the **mega*mate* 2.8** drive is always given position 2, this would assign drive position 2 to both drives. You may not have two drives with the same position number.

C.2.11 The NOROM Option

Your computer uses the MEGAMATE.SYS device driver to access the **Compati**Card IV drives. The MEGAMATE.SYS device driver uses the ROM BIOS software on **Compati**Card IV to do its work. Some computers have so many ROMS in them already that there is no address space for the BIOS on **Compati**Card IV. The NOROM software option solves this problem. When you use NOROM, a temporary copy of the BIOS software is written to your program memory each time you turn on the power to your computer. MEGAMATE.SYS uses the memory resident copy of the BIOS to do its work. The ROM BIOS on the card must be turned off (SW1-1,2,3 all OFF).

The NOROM option is utilized when you add a line to your CONFIG.SYS file causing the MM28BIOS.SYS device driver to be executed each time the computer boots up. Perform the following steps to install the MM28BIOS.SYS device driver.

1) Using a suitable text editor or word processor, bring up the CONFIG.SYS file from your DOS system disk for editing.
2) Substitute the J1 card address setting (B-D) for the "*x*" in the line below. Add the following line to the CONFIG.SYS file, making sure that it precedes the line referencing MEGAMATE.SYS:

   device=mm28bios.sys /*x*

3) Save the modified CONFIG.SYS file on your DOS system disk. Make sure the CONFIG.SYS, MEGAMATE.SYS, and MM28BIOS.SYS files are all in the root directory so that DOS can find them when the computer starts up.

   At this point your CONFIG.SYS file should contain at least the following two lines in the order shown:

   device=mm28bios.sys /*x*
   device=megamate.sys

4) Restart the computer by pressing CTL-ALT-DEL.

Appendix D Update Policy

Since the **mega*mate*** software may be updated with new features, registered users can send in their master diskettes for updating to the latest version. Please note the following policy for updating **mega*mate*** master diskettes:

- There is a nominal charge for updating **mega*mate*** master diskettes. Contact Micro Solutions for the current update charge before sending in your master diskette. Payment for the update must be included with the diskette.
- In order to obtain an update, you must send in your original master **mega*mate*** diskette. Copies will not be accepted.
- A registration card for your **mega*mate*** must be on file with us before your diskette will be updated. If you did not receive one with your package or if you lost it, contact us and we'll send one to you. You can then return the completed card along with your diskette for updating.

Appendix E Technical Support

Most questions about **mega*mate*** and its operation are answered in this guide. If you still need help, contact Micro Solutions and ask for **mega*mate*** technical assistance. Please have the following information handy before calling:

- The serial number of your **mega*mate***
- The make and model of the computer you are using.

Our technical assistance staff will be happy to answer your questions Monday through Friday during normal business hours at (815) 756-3411.