Magic Card 16™

multifunction card for AT

OWNER'S MANUAL AND REFERENCE GUIDE
(VERSION 3.0)

EVER for EXcellence

MAN-00018-30

Magic Card 16™

multifunction card for AT

OWNER'S MANUAL AND REFERENCE GUIDE
EV-125
(VERSION 3.0)

EVEREX SYSTEMS, INC.
48431 MILMONT DRIVE
FREMONT, CA 94538

Notice

Everex Systems, Inc reserves the right to make improvements in the product described in this manual at any time and without notice.

The IBM PC, XT, AT and Portable are trademarks of International Business Machines Corporation.

MS DOS is a trademark of Microsoft Corporation.

DISCLAIMER: While we do our best to avoid such a situation, Everex Systems will not be responsible for any loss of information resulting from the use of the product.

Warning

This equipment generates and uses radio frequency energy and if not installed and used in strict accordance with the manufacturer's instructions, it may cause interference to radio and television reception. It has been certified and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1) Reorient the receiving antenna.

2) Reorient the computer with respect to the receiver.

3) Move the computer away from the receiver.

4) Plug the computer into a different outlet so that computer and receiver are on different branch circuits.

5) Ensure that card mounting screws, attachment connector screws, and ground wires are tightly secured.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio TV Interference Problems." This booklet is available from the US Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4 (FCC, Part 15.838 b).

Notes

Table of Contents

Check List

Your Magic Card 16 carton should contain the following items:

- The Everex Magic Card 16 multifunction expansion board.
- Two utility diskettes.
- This Owner's Manual and Reference Guide.
- A quality control card.
- An owner's registration and warranty card.
- A package of two screws, two nuts, and two washers.
- A 25 pin bracket (for the 25 pin serial port).
- A printer cable.

If any of the above items are missing, please, consult the dealer from whom you purchased your new Magic Card 16.

Note: The warranty may be void if the products are returned to the manufacturer without the original packaging and proof of purchase.

Introduction

The Magic Card 16 is a multifunction card which has been designed specifically for IBM AT's and compatibles. As a multifunction card, the Magic Card AT provides you with a parallel port, two serial ports (a 25 pin standard serial port and a 9 pin optional serial port), a game port, and space to add up to 2 MB of extended memory. You may use the memory expansion area solely for extended memory or to fill the base memory. Because the memory is jumper selectable, the Magic Card 16 is able to operate with other memory cards in your system.

Several software programs are included with the Magic Card 16. Perhaps, the most important is a utility program (*Magic*) which will guide you through the configuration of your board and will test the board once it is installed.

The other four programs will aid you in the daily use of your system. Two of these will save you time: the *Everdisk* and the *Everspooler*. The *Everdisk* program creates a RAM disk, which allows you to access information at a much greater speed than if you were working from a hard disk or floppy

diskette. The *Everspooler* program creates a printer spooler, which allows you to continue working while your printer is in use. The other two are editing programs. *PC-Write* is a word processor; *Form Manager* is a form generation and filing system. The *Software* chapter contains more information on these four programs.

USING THIS MANUAL

This manual will provide you with an explanation on how to setup and install your new Magic Card 16, how the software programs can improve your computer's capabilities, and provide some technical information.

First time users should read the chapter entitled *Installation;* this chapter will lead you through the installation process with explanations on what to do and why. Those users who have already had experience installing boards in an AT and who are familiar with *memory* concepts need only read the *Getting Started* chapter which provides an outline of the installation procedures. Each step of this procedure is described in detail in a section of the *Installation* chapter. For more details on any step, please refer to the appropriate section in the *Installation* chapter.

A chapter on the different software programs that accompany your Magic Card 16 follows the *Installation* chapter. These programs will increase the productivity of your computer. Even if you are unfamiliar with such utility programs, you should briefly scan this chapter to see which of these programs will be beneficial.

There are three appendices. The first two contain supplementary information for the less experienced user. The third contains technical information for the more experienced user.

Below is a brief description on how to install the Magic Card 16. If multifunction cards are new to you, jump to the *Installation* chapter.

1. First,

   a. find out how much memory already resides in your system;

   b. decide how much memory you want to add to your system;

   c. decide how you are going to configure each port.

2. Set the switches and jumpers on the Magic Card 16 to correspond with these choices, and add the memory chips. (This may be done with the help of the utility program that accompanies the Magic Card 16 or following the tables in the *Configuring Without The Software* section of the *Installation* chapter. We highly recommend using the software.)

   To access the installation program, insert the Magic Card 16's utility diskette into the floppy drive, type **Magic** <Enter>, and choose the *Installation* option. Once in the program, use whichever sections will be affecting you.

Note: The board comes from the factory with the Parallel port enabled and set as LPT2 at IRQ 5; the 25 pin serial port enabled and set as port A, COM1, IRQ4, and a DTE device; the game port enabled. The optional 9 pin serial port is set as port B, COM2, IRQ3, and a DCE device.

3. Install the board into your system.

   Note: Leave the cover OFF until you have completed all of the testing procedures. If any jumpers/switches have been set wrong, or if you have any bad chips, it will be much easier to make adjustments with the cover OFF.

4. Check to be sure that the memory switch on your mother board is set to properly reflect the amount of memory on the mother board.

   If you have an IBM AT, this switch is J18. (For more information, refer to the section on *Setting The System's Mother Board.*)

If your system is not an IBM AT, check its manual. You may or may not need to make adjustments to your system's mother board when you add memory.

5. Run the AT Advanced Diagnostics *Setup* program.

6. Run the test program which accompanies the Magic Card 16. To access this program, insert the Magic Card 16 utility diskette into the floppy drive, type **Magic** <Enter>, and choose the *Test Chip* option. Once in the program, you may use whichever sections will be affecting you.

6. Replace the system's cover.

7. Congratulations. You have completed the installation procedures, and your system is ready for use.

SETTING UP YOUR BOARD

Before it can be put into your system, the Magic Card 16 must be configured to suit your individual usage. Below are a few questions that will help you decide how to configure the board. Following the questions is a section on how to set the switches and jumpers.

Adding Memory

If you are a new user, please read the appendix on *Memory* before continuing. This appendix will explain what memory is and how it is measured. These are two concepts which are fundamental and are a must for anyone who is adding memory to his or her system.

Base vs. extended memory

On an AT, primary memory is **linear**. That means that it proceeds (theoretically, not physically) in a straight line from bit 1 through the highest bit that you have. Figure 1 illustrates the memory line of an AT.

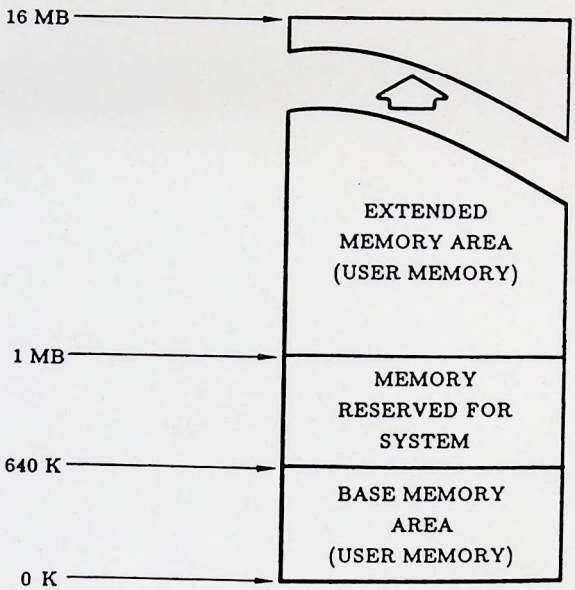


Figure 1: Memory Line Of An AT

The memory up to the 640K point is called **base** memory. DOS can use this memory for any purpose.

Memory from the 640K point up to the one megabyte point is **reserved** for the system. Most of this is used for **ROM** (Read Only Memory) which the system needs to operate, but which you can not change. Users are not able to access or change this memory in the area between 640K and 1MB.

Above the one megabyte mark, **extended** memory begins. DOS doesn't recognize extended memory, but certain specially-written applications programs do use it. Extended memory goes all the way from one megabyte up to sixteen megabytes. The Magic Card 16, when used exclusively for extended memory, will allow you to add 2MB more of extended memory to your computer. (You may choose to use a portion of the Magic Card 16 to fill the base memory.)

Note: Some AT clones have a system where more than 640K can be installed.

For example, if you were installing a total of one megabyte's worth of RAM in your system, the first 640K would go for base memory, and the remaining 384K would "jump" above the reserved area to become the first 384K of extended memory. (Even if you did want to install 1MB on the system board, not all AT systems would allow you to do so.)

How much memory does your system have?

Before you can add memory to your Magic Card 16, you must decide how much memory you want to have in your system. In order to do this, you must first know how much memory currently resides in your system. If you do not know this, you can get an accurate count by running the IBM AT Advanced Diagnostics Setup program.

Note: Do not forget that you are interested in how much base memory you have and how much extended memory you currently have.

How much memory are you adding?

Next, you will need to decide how much memory you are adding to your system. There are three basic questions that need to be answered:

1. Is the base memory full or do you need to use part of the Magic Card 16 to fill the base memory gap?

   The base memory of an IBM AT will hold up to 640K. Does your system currently have this 640K of base memory? If not, you will probably want to use the Magic Card 16 until it does.

2. If you will be adding base memory, what capacity chips are you going to use?

   You can use either 64K or 256K chips when adding **base memory** to the Magic Card 16. Once you know how much memory you will be adding, decide which capacity chips you will need to use.

   Note: You must use 256K chips for the extended memory.

3. How much extended memory do you want to have?

   Using solely the Magic Card 16, you can add up to 2MB of RAM memory to your system. If you already have a memory board, you will be able to have a greater amount of memory. Decide how much you currently have, how much you wish to have, and (using this information) how much you will be adding to the Magic Card 16.

   Remember: If you are using the Magic Card 16 to fill some of the base memory, you will not be able to use it for a full 2 MB of extended memory.

   Note: There should be no gaps in extended memory; so your extended memory must either start at 1MB or immediately after the existing extended memory (if you already have some extended memory in your system).

Some hints on installing the chips

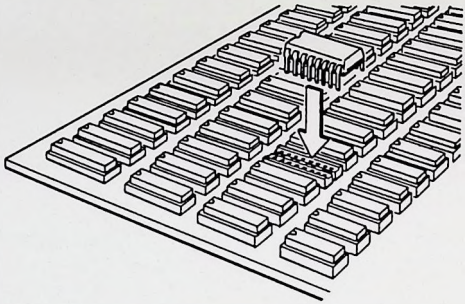


Figure 2: Installing The Chips

1. Each chip has a little notch. Be sure that this notch is facing up as you face the board.

2. Be sure that all of the chips in each row are of the same capacity.

Note: RAM chips are extremely sensitive to static electricity! Your body can pick up static, without your even noticing it, especially in carpeted rooms or in dry weather. If you touch a chip with static in your hands, the chip will be destroyed. However, it won't look any different, and you won't even know that it's broken until you try to use it. To avoid inadvertent damage to a RAM chip, make it a habit to always touch your system chassis every time before you pick up a RAM chip.

The Ports

The board comes from the factory with the parallel port enabled and set as LPT2 at IRQ 5; the 25 pin serial port enabled and set as port A, COM1, IRQ4, and a DTE device; the game port enabled.

Note: The optional 9 pin serial port is set as port B, COM2, IRQ3, and as a DCE device.

If you will be using this setup, skip to the section on *Using The Software To Configure Your Magic Card 16*. If not, you will need to change some switch and/or jumper settings on the board. The information below will explain what you will need to do.

The Serial Port

The Magic Card 16 comes with two asynchronous serial ports: one with a 9-pin connector and one with a 25-pin connector.

Note: The board is shipped from the factory with one communications chip which will allow you to use the 25 pin serial port. If you wish to use both ports, you will need to purchase another chip from your dealer and install it in the empty socket.

To set your serial port switches and jumpers, you will need to answer the following questions:

1. Which port will be designated **Port A** and which will be designated **Port B**?

   Either port can be designated A or B. When deciding which is A and which is B, you will need to consider what COM and Interrupt they will be using. Your choices are:

	COM	INTERRUPT
PORT A	1	4
	3	2 or 4
	4	3 or 5
PORT B	2	3
	3	2 or 4
	4	3 or 5

2. Do you want to set the port as DTE or DCE?

   A communication device can either be **D**ata **T**erminal **E**quipment or **D**ata **C**ommunication **E**quipment. In order for two communication devices to communicate, an exchange of control signals must occur. These signals will be carried through the interface (or connection) of the DTE connector and the DCE connector. Each pin of the

connector will carry a different signal. The arrangement of these signals is predetermined and will vary depending on whether the device is DTE or DCE. The exchanging of these signals between the DTE device and the DCE device is called *handshaking*.

Check your serial device's manual to see if it requires a **DTE** (Data Terminal Equipment) or a **DCE** (Data Communication Equipment) connection.

If you have an external modem or a mouse, you will probably need to configure the Magic Card 16's serial port as a DTE connection.

If you have a serial printer, you will probably need to configure the Magic Card 16's serial port as a DCE connection.

The Parallel Port

To set the parallel port, you will need to answer the following questions:

1. Do you want a printer port or a general purpose I/O port?

2. For a printer port, do you want it to be set as LPT1, LPT2, or as a printer adapter?

3. For a general purpose I/O port, what will the port address be?

Note: Sometimes the term LPT1 is used to refer to what we have called *printer adapter*, LPT2 to refer to what we have called *LPT1*, and LPT3 to refer to what we have called *LPT2*. We have followed IBM's appellation.

SETTING THE SWITCHES AND JUMPERS

Next, you will need to relay this information to the Magic Card 16. You communicate with the board through its jumpers and switches. Each time that a jumper or switch is changed, a different bit of information is conveyed to the board. Below is a diagram of the Magic Card 16. All of the switches which tell the board about the memory and the ports are pointed out.

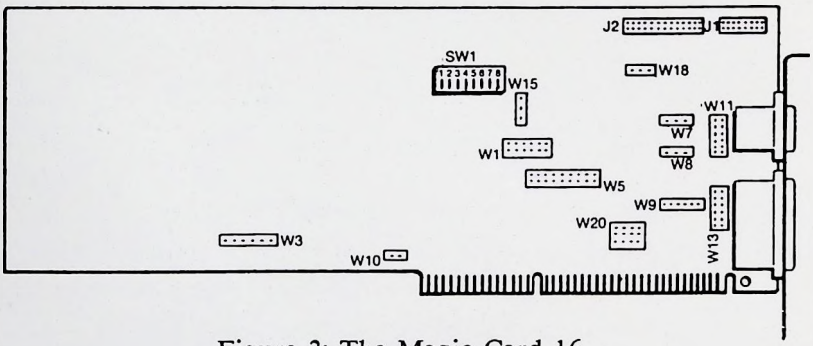


Figure 3: The Magic Card 16

If you have not already done so, remove the Magic Card 16 from its box. Locate all of the key areas which are pointed out in the preceding figure.

Note: There are different types of switches. Please check your board to be sure that you know how to set your switch ON and how to set it OFF.

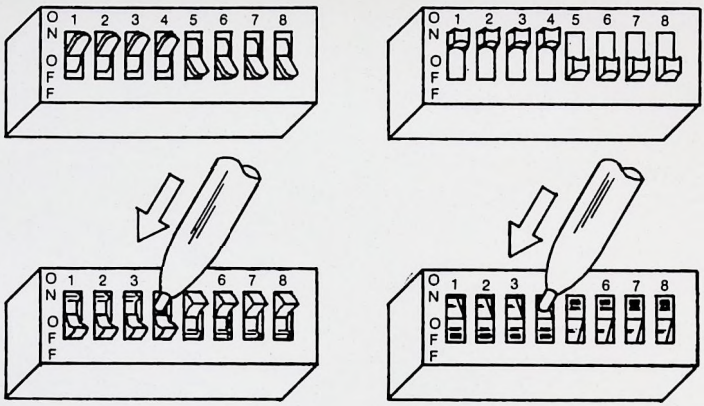


Figure 4: The Different Types Of Switches

An Installation program is included on the Magic Card 16 Utility diskette which will simplify the configuration procedures. For those of you who choose not to use this program, all of the necessary information for setting up your Magic Card 16 is provided in this manual. (We strongly advise using the software program.) Please read on to see what you need to consider when setting up your board.

If you will not be using this program, please skip to the section on *Configuring The Magic Card 16 Without The Software.*

Using The Software To Configure The Magic Card 16

This section will describe how to access and use the Installation program to set up your Magic Card 16.

1. Boot up your computer with DOS, and insert the Magic Card 16 Utility diskette into drive A:.

2. Type:

   A:MAGIC

   Note: To choose an option, use the arrow keys to move the highlighted area to the option you desire, then hit <Enter> to activate your choice.

   The utility main menu will appear on the screen. Since you are concerned with installing your Magic Card 16, choose the *installation* option.

3. Next, you will be asked to choose which adjustments you wish to make. Choose *Memory*.

   After the software has asked you all pertinent questions, the screen will display a picture of the Magic Card 16 and will show you what you need to set and where you should put any chips that you will be adding. Set the

switches/jumpers on your board to correspond with those "set" on the screen. Insert the RAM chips into the banks indicated on the screen.

4. If you will not be using any of the ports as they come set from the factory, return to the test main menu and select the option for whichever port(s) you will be changing.

You can now skip to the section on *Physically Installing Your Magic Card 16*.

Configuring The Magic Card 16 Without The Software

If you will not be using the software to arrive at the jumper and switch settings, please read this section.

Base memory configuration

For the base memory, you will be concerned with pins 1-6 of jumper W3, pin 6 of jumper W1 (which inform the card how much memory currently resides on the system's board), position 8 of SW1 switch (which, when ON, informs the board that you are adding base memory), and Bank 3 (where you will add the RAM chips).

To set these, you should already know how much base memory resides in your system, if you will be adding to this base memory, and what capacity chips you are using.

Once you have determined how much base memory currently resides on the system's mother board (which is referred to as system board in the following table), use Table 1 to set the jumpers that will inform the Magic Card 16 of this information.

TABLE 1

BASE MEMORY CURRENTLY IN SYSTEM

MEMORY ON SYSTEM BOARD	W3 1	2	3	4	5	6	W1 6
256K	ON	ON	OFF	ON	ON	OFF	ON
512K	OFF	ON	ON	ON	ON	OFF	OFF
640K	OFF	ON	ON	OFF	ON	ON	OFF

After you have set the board to reflect how much base memory currently resides in your system, set position 8 of SW1 **ON** if you **will** be adding base memory and **OFF** if you **will not** be adding base memory.

Extended memory configuration

When you use the Magic Card 16 for extended memory, you will need to set positions 1-7 of SW1 (the starting address), pins 1-5 of W1 (the ending address), and fill what ever banks are applicable with chips.

Setting the starting address allows the Magic Card 16 to cooperate with other AT memory expansion boards to upgrade the extended memory in your system. This provides a great flexibility for you.

Note: Even if you are not using the Magic Card 16 for base memory, be sure to refer to the section on base memory as you will need to inform the Magic Card 16 of such.

To set SW1 you will need to know how much extended memory you have in your system. This switch will inform the Magic Card 16 where you will be starting to add extended memory. Use table 2 to determine how to set this switch.

TABLE 2

EXTENDED MEMORY STARTING ADDRESS

EXISTING EXTENDED MEMORY	SW1						
	1	2	3	4	5	6	7
0K	ON	ON	ON	OFF	ON	ON	ON
128K	ON	ON	ON	OFF	ON	ON	OFF
256K	ON	ON	ON	OFF	ON	OFF	ON
384K	ON	ON	ON	OFF	ON	OFF	OFF
512K	ON	ON	ON	OFF	OFF	ON	ON
640K	ON	ON	ON	OFF	OFF	ON	OFF
768K	ON	ON	ON	OFF	OFF	OFF	ON
996K	ON	ON	ON	OFF	OFF	OFF	OFF
1024K	ON	ON	ON	ON	ON	ON	ON

By setting pins 1-5 of W1 (which are shown in Table 3), you tell the system how much extended memory you are putting on the Magic Card 16.

In the following table, column 1 describes the amount of memory that you will be using on the Magic Card 16. Find the appropriate amount, and set W1 accordingly.

Note: You can only use 256K chips for extended memory.

TABLE 3

EXTENDED MEMORY ENDING ADDRESS

Extended Memory To Be Added	W 1				
	1	2	3	4	5
512K	ON	ON	OFF	ON	ON
1.0MB	ON	OFF	ON	ON	ON
1.5MB	ON	OFF	ON	ON	ON
2.0MB	OFF	ON	ON	ON	ON

For more selections, please refer to the *Technical Information* appendix.

Serial Port

Follow table 4 to assign the appropriate port to each connector.

TABLE 4
SERIAL PORT SETTINGS

25 Pin Connector					9 Pin Connector			
Port	COM	W5 8	W5 9	W5 1 2	Port	COM	W5 6	W5 7
A	disabled	OFF	OFF		B	disabled	OFF	OFF
A	1	ON	ON		B	2	ON	ON
A	3	OFF	ON		B	4	OFF	ON
A	4	ON	OFF		B	3	ON	OFF
B	disabled	OFF	OFF		A	disabled	OFF	OFF
B	2	ON	ON		A	1	ON	ON
B	4	OFF	ON		A	3	OFF	ON
B	3	ON	OFF		A	4	ON	OFF

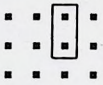
To choose the interrupt:

For the 25 pin connector:

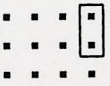
To be set as **IRQ2**,
set W20 as:

To be set as **IRQ3**,
set W20 as:

To be set as **IRQ4**,
set W20 as:

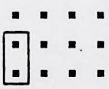


To be set as **IRQ5**,
set W20 as:

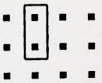


For the 9 pin connector:

To be set as **IRQ2**,
set W20 as:

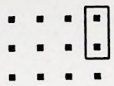


To be set as **IRQ3**,
set W20 as:



To be set as **IRQ4**,
set W20 as:

To be set as **IRQ5**,
set W20 as:



To choose either DTE or DCE:

For the 25 pin connector:

To be enabled as **DTE**, set W13 as:

To be enabled as **DCE**, set W13 as:

For the 9 pin connector:

To be enabled as **DTE**, set W11 as:

To be enabled as **DCE**, set W11 as:

For more information, please refer to the appendix on *DTE and DCE*.

Parallel Port

Please follow which ever two tables (of the three below) that apply to you when setting the parallel port.

TABLE 5
SETTING THE PARALLEL PORT (W-18)

	W18		
SET AS	1	2	3
Printer Port	ON	ON	OFF
General Purpose I/O Port	OFF	ON	ON

Once you have set the parallel port as a printer port or a general purpose I/O port, you should follow the appropriate table 6 to finish configuring the parallel port.

TABLE 6A
PRINTER PORT SETTINGS (W5;W15)

	W5		PORT	W15		
FUNCTION	4	5	ADDRESS	1	2	3
Printer Adapter	ON	OFF	(3BC-3BF)	OFF	ON	ON (IRQ 7)
LPT1 Enabled	ON	ON	(378-37F)	OFF	ON	ON (IRQ 7)
LPT2 Enabled	OFF	ON	(278-27F)	ON	ON	OFF (IRQ 5)
Disabled	OFF	OFF	(N/A)	OFF	OFF	OFF

If you will be using the parallel port as a general I/O port, you will need to set the port address. (Table 6B shows these ports addresses.)

TABLE 6B

PORT ADDRESS SETTINGS (W5)
FOR THE GENERAL PURPOSE I/O PORT

	W5	
PORT ADDRESS	4	5
378-37A	ON	OFF
278-27A	ON	ON
3BC-3BE	OFF	ON
Disabled	OFF	OFF

Game Port

Follow the table below to enable or disable the game port.

TABLE 7

GAME PORT (W5 pin 3)

	W5 PIN 3
ENABLE	ON
DISABLE	OFF

PHYSICALLY INSTALLING THE MAGIC CARD 16

Once the jumpers and switches have been set and the chips have been inserted, you can install the board into your computer. To do this:

1. Remove the cover of your system. If you are not sure how to do this, refer to the appendix on *Removing The System's Cover.*

2. Choose any 16 bit expansion slot on the mother board. These are the slots which have holders for two sets of gold fingers.

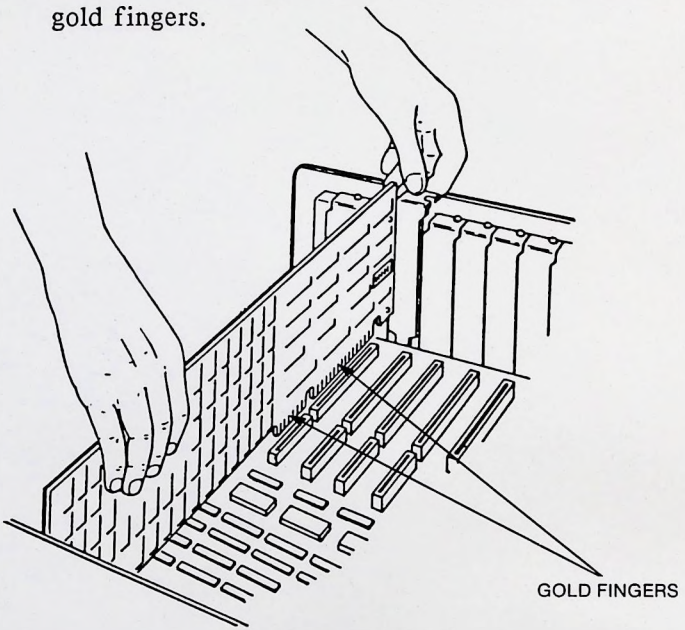


Figure 5: The Expansion Slots

3. Remove the **expansion slot cover** from the back of the chosen expansion slot. To do this, you will need to unscrew the screw which holds the metal cover in place. You should save the screw, as you can use it to secure the Magic Card 16 into place.

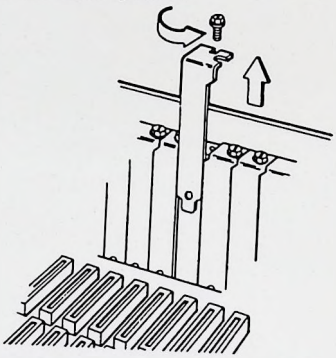


Figure 6: Removing The Slot Cover

4. Gently, but firmly, insert the Magic Card 16 card all the way into the expansion slot.

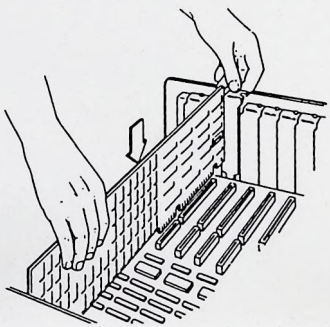


Figure 7: Inserting The Magic Card 16

5. Use the screw which you removed from expansion slot cover to secure the Magic Card 16 in place.

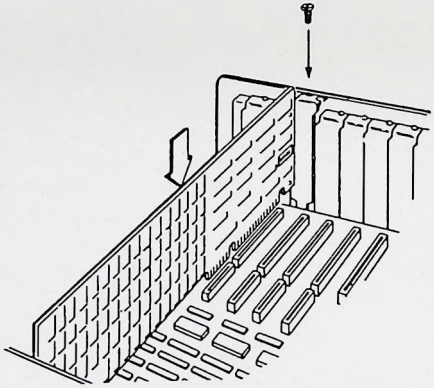


Figure 8: Securing The Magic Card 16

6. If you will be using the parallel port, either serial port or the game port, you should plug the appropriate device into the appropriate port (connector). The figure below is an example of the devices that might be plugged into the Magic Card 16.

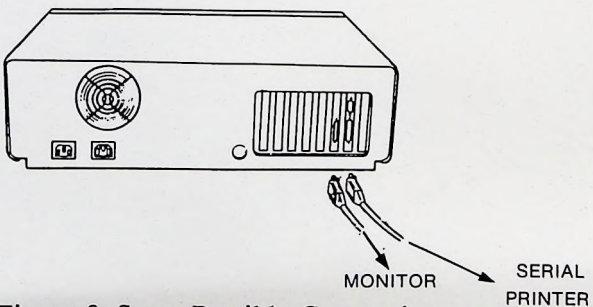


Figure 9: Some Possible Connections

SETTING THE SYSTEM'S MOTHER BOARD

Your system's mother board may or may not have a switch/jumper which determines the maximum amount of memory that the mother board will accept. The IBM AT does have such a jumper, J18. If you are using an AT clone, please check your system's manual to see if any such jumper exists.

The mother board lies on the floor of the system and contains the **central processing unit** of your computer. To set the switch, you will need to remove the cover of your computer. If you are unsure of how to do this, refer to the appendix entitled *Removing The System Unit's Cover*; otherwise, remove the cover.

If you have an IBM AT, please set J18 in the 256K position, if you have 256K on your mother board, or in the 512K position, if you have 512K on your mother board. (Refer to the following figure.)

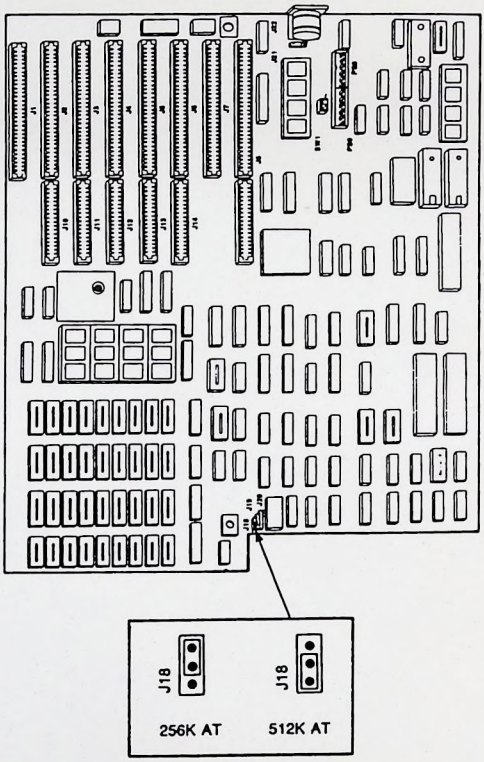


Figure 10: The IBM AT Mother Board

TESTING THE MAGIC CARD 16

Included in your Magic Card 16 Utility diskette is a program which will test the chips on your multifunction card and will check to see if the jumpers and switches have been set properly. This program will only take a few minutes to run and will assure you that the installation has been performed properly and that all of the chips on your Magic Card 16 are good. You will need to run the DOS diagnostics utility Setup before you can run the test program. The Setup program will inform the computer of the new memory. Once the SETUP program has been run, you should perform the Magic Card 16 utility test.

To run the Magic Card 16 test:

1. Boot your system with DOS, insert the Magic Card 16 utility diskette into drive A, and type:

   A:MAGIC

2. The Magic Card 16 main menu will appear on the screen. This time, chose the *Test Chip Functions* option.

   The chips will be tested sequentially. The chips under evaluation will blink, in the diagram on your screen, until they have been tested and their status is displayed on the screen.

Congratulations! You have completed your installation. Reinsert the cover of your computer, and it will be ready for use.

Software Programs

Two utility programs and two application programs are included with your Magic Card 16. These are:

EVERSPOOLER - printer spooler program that lets you continue to use your computer while your printer is printing.

EVERDISK - electronic disk drive software that turns the Magic Card 16's memory into a fast access disk drive.

PC WRITE - word processor that gives you versatile, easy to use options for simple, fast writing; also includes handy document printing capabilities.

FORM MANAGER - form creating and electronic filing system.

THE EVERSPOOLER PROGRAM

Definition Of A Printer Spooler

A printer spooler program allows you to continue using your computer (i.e. entering data, writing letters, working with spreadsheets, etc.) while your printer is printing.

The EVERSPOOLER program puts the data to be printed into a portion of the memory. This data is sent to the printer from the memory at the printer's own printing speed.

This spooling feature will save you much time that would be wasted waiting for your printer to finish printing before you could continue to use the computer.

Note: The printer may still be used even if this program is not activated.

Using The EVERSPOOLER Printer Spooler

The EVERSPOOLER program needs to know how much memory you want to use for storage of the data. You can select printer spooler memory from 512 bytes to 64K bytes.

Once you have set the amount of memory you want for the spooler, you must rerun the SPOOLPRT command to reset the spooler's memory size.

To select the amount of memory for the EVERSPOOLER:

1. Insert your Magic Card 16 diskette into drive A.
2. Type:

   A:SPOOLPRT

3. Choose the desired memory size from the list which will appear on the screen.
4. Press <Enter> to process the selection.

The EVERSPOOLER printer spooler is now ready to use.

If you are resetting the memory size in the printer spooler, a menu will appear giving you the option of either checking the memory size previously installed or disconnecting the previous SPOOLPRT command. If you choose to change the memory size, you will need to select the **SPOOLPRT DISCONNECT** command and then retype **SPOOLPRT** in order to make your new selection.

Note: You will notice that if you run the CHKDSK command to determine how much system memory is available, the total amount of memory will be reduced by the set up of a printer spooler.

THE EVERDISK ELECTRONIC DISK DRIVE

Definition Of The EVERDISK Electronic Disk Drive

The EVERDISK program enables DOS to use part of the RAM to store files as if the RAM were a disk. Since the RAM does not need to go through the mechanical operations that are necessary when working from a floppy disk, working off of this "RAM DISK" is much faster than working off of a hard disk or diskette.

How Does The EVERDISK work?

Every time you boot up your system, DOS searches the system disk for a file named CONFIG.SYS. This file contains configuration information about your system. EVERDISK is implemented as a device driver which emulates a diskette drive. When you add the EDISK.COM program to your CONFIG.SYS file, you create the electronic disk drive. The size of your electronic disk is then set by running the SETDISK program which can be found on your Form Manager Utility diskette.

The EVERDISK lets you set up an electronic disk drive of memory capacity between 10K and 512K in increments of 1K. You can use all standard DOS commands and functions except FORMAT and DISKCOPY commands. Files and data contained in the EVERDISK can be accessed and manipulated the same way as with disk drives using DOS commands.

To determine the memory size of the electronic disk drive, subtract the amount of memory required to run your programs from the total amount of memory contained in your computer system, or the DOS CHKDSK utility to confirm how much total memory available.

The Form Manager utility diskette contains three programs that are used to set up the EVERDISK. These programs are:

EDISK.COM	This program is to be installed into the CONFIG.SYS program and creates the electronic disk drive.
SETDISK.COM MAGIC.INS	These two programs select the amount of memory for the electronic disk drive and update the EDISK.COM file.

How To Install Your EVERDISK

To install the EVERDISK and to select its memory size, follow these instructions:

1. Insert the Form Manager Utility diskette into drive A.

   Note: This example presumes that C: is your boot up disk and that A: is your floppy drive; if this is not true, replace C: and/or A: (in each step) with the appropriate drive name(s).

2. Type:

   A:SETDISK <Enter>

3. You will be asked **how many** RAM disks you wish to create. You can create up to three. Enter the desired number, and press <Enter>.

4. You will now be asked **what size** RAM disk you wish to create. Choose any size between 10K and 512K (in increments of 1K), and press the <Enter> key.

For example, to select 320K bytes of memory:

Type:

320 <Enter>

NOTE: DO NOT enter the "K" or "1000".

5. Type:

   COPY A:EDISK.COM C: <Enter>

   This will copy the EDISK.COM file to your C: drive.

6. Next, you will create a file CONFIG.SYS in the root directory on your boot up diskette or hard disk drive.

   Type:

   C:COPY CON: CONFIG.SYS <Enter>

   Note: If you already have a CONFIG.SYS file on your system, simply add the line below to your existing file.

7. Type:

   DEVICE=EDISK.COM <Enter>

8. Press the **F6** function key. <Enter>

9. The following five files will now be included in the root directory of your boot up disk:

   COMMAND.COM
   CONFIG.SYS
   EDISK.COM
   MAGIC.INS
   SETDISK.COM

10. Re-boot your computer by pressing the **CTRL**, **ALT** and **DEL** keys at the same time.

You should now run the CHKDSK command. This will allow you to confirm that the EVERDISK drive contains the desired amount of memory.

Note: You must back up your valuable data contained in the EVERDISK to a diskette frequently. Data stored in the EVERDISK is stored in RAM (Random Access Memory). RAM memory holds data as long as the power of your computer is ON. If you turn OFF your computer or a power failure occurs, you will lose all of your data that is stored in the EVERDISK.

PC WRITE AND FORM MANAGER

The manuals for FORM MANAGER and PC WRITE are on your Magic Card 16 utility diskette. If you wish to use either of these utilities, you should print out the manuals using the following instructions.

To print the FORM MANAGER manual:

Use the DOS "PRINT" command or type:

COPY File Name **LPT1:**

(where "file name" corresponds to a particular chapter in the manual).

FILE NAME	MANUAL CHAPTER
One	Chapt. 1 of Form Manager
Two	Chapt. 2 of Form Manager
Three	Chapt. 3 of Form Manager
Four	Chapt. 4 of Form Manager
Five	Chapt. 5 of Form Manager
Six	Chapt. 6 of Form Manager
Seven	Chapt. 7 of Form Manager
Eight	Chapt. 8 of Form Manager
Append	Appendix of Form Manager

To print the PC WRITE manual:

Type:

PRINTMAN

To see summarized instructions for PC WRITE, type:

TYPE READ.ME

Appendix I: Removing the System Units Cover

It is easy to remove the cover of your system. Before you begin, clear the area around the system so that you have plenty of room to work.

1. Turn OFF the system's power if it is ON.

2. Unlock the cover of your AT.

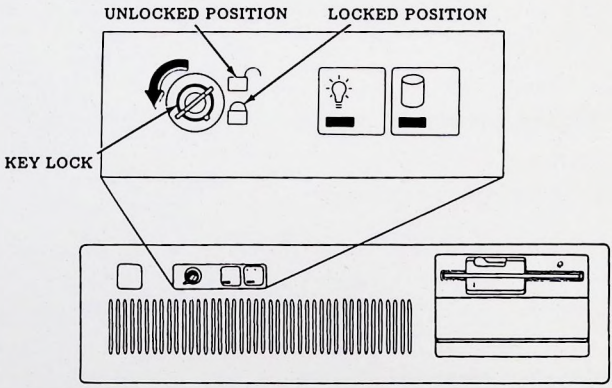


Figure 11: Unlocking The AT

3. Unscrew the holding screws from the back of the unit.

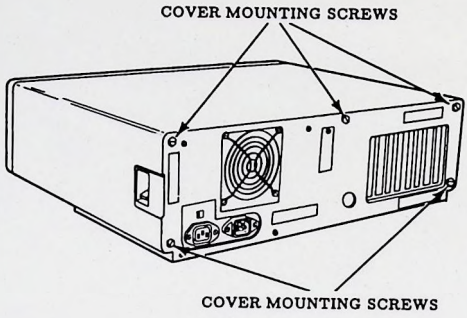


Figure 12: Unscrew The Holding Screws

4. Remove the cover of the system unit by sliding it forward.

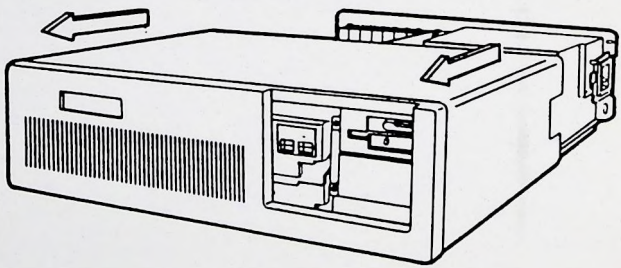


Figure 13: Remove The Cover

Appendix II: Memory

Below are explanations of the basics behind a memory expansion card. This information will prove invaluable in the installation of your Magic Card 16. Please, read any section which contains information with which you are not familiar. Each explanation is concise and easy to read.

WHAT IS MEMORY?

Memory is any hardware which your computer uses to store data. There are two types of memory: primary memory and secondary memory (sometimes referred to as storage).

Primary memory resides in your AT's circuitry and is used whenever you use your AT. What ever program and data you are currently working with resides in the primary memory.

Secondary memory consists of the long term memory devices in which the computer stores data that is not being used. A hard disk is one example of secondary memory. This manual does not deal with secondary memory in detail as a memory expansion card only influences your primary memory.

Primary memory comes in two forms: **RAM** and **ROM**. Both of these reside in little electronic chips that resemble bugs.

RAM (Random Access Memory) is used to hold a computer program while it is being run and to hold the data on which the program operates. RAM is the capacity of the computer to remember information. Data in RAM is the easiest and the fastest for the computer to access, since it is effectively "unpackaged" already. If you think of your computer as a desk, the RAM is the desktop. The bigger your desktop, the more things you can work on at once without having to put something away.

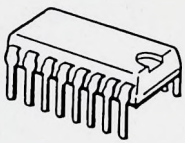


Figure 14: A RAM Chip

The RAM portion of primary memory requires an uninterrupted flow of electricity, or it ceases to exist, and there is no way to get it back. If you re-boot your computer, accidently unplug it, or experience even a momentary flicker in electricity, the data in the RAM will vanish.

Therefore, it is a good habit to store your work regularly during long sessions with your computer. Then you can only lose the changes that you have made since the last time you stored your work.

ROM (Read Only Memory) can be thought of as a built-in permanent software that the system needs to perform its most basic functions. Data is stored in ROM when the ROM chips are manufactured. This could be thought of as the inherent knowledge of the computer. (You cannot add ROM to your computer.) The computer can read the data in the ROM but can not change it. The ROM is used to hold certain constant information that your computer needs in order to operate.

ROM comes only on specialized ROM chips, which are already present on the system board.

The Magic Card 16 board is a RAM expansion card. It allows you to add more RAM to your system, thereby expanding the capacity of your system and increasing the speed at which it can access data.

HOW DO YOU MEASURE MEMORY?

Bits and bytes are units of measure for data in computer form, just like "cups" are units of measure for food in huckleberry form. You can't look at a huckleberry bush and expect to see "cups," but you know that if you harvested the whole bush you would be able to measure the number of cups of huckleberries.

The word "bit" is a contraction of "binary digit." There are two digits in the binary numbering system: 0 and 1 (known to the computer as OFF and ON). So, a bit is the smallest unit of information that a computer can work with.

Eight bits together equal one byte, or about enough information to define one letter of the alphabet. Memory is often measured in units of 1024 bytes which has a memory capacity of one kilobyte (1K). If a memory device can hold 1024 K bytes, it has a capacity of one megabyte, or 1MB.

A K is a capacity to store or remember information, not a physical object. Therefore there is no correlation between how many K a floppy diskette can hold and how big it is. The same is true for K of memory: you can not set an open 256K computer next to an open 64K computer and expect to see 192 extra K inside the first one.

The same is true of RAM chips. They are all the same size yet they may vary in capacity. Similarly, different kinds of soda contain different amounts of calories per ounce. Therefore, you can not tell how many calories are in a soda just by looking at the size of its container. A six-pack of diet Pepsi will have fewer calories than one can of 7UP, even though the six-pack has a much greater volume.

Because RAM chips come in different capacities, you cannot tell by counting the chips how much RAM a system has. The most common capacities for RAM chips are 64K-bits and 256K-bits.

RAM chips must be installed in certain patterns in order to work. You can't just add a chip here and a chip there; you have to add them in complete sets and add the sets in a particular order.

The capacity of individual RAM chips is measured in bits and thousands of bits, not bytes or thousands of bytes. A 256K RAM chip can hold 256 thousand bits. Remember that there are 8 bits in a byte. Therefore, if you want to add 64K *bytes* of RAM, you would install eight 64K *bit* RAM chips. You will also need to add a ninth chip, called a parity chip, which will organize the first eight. Therefore, you generally buy RAM chips in sets of nine chips.

Appendix III: Technical Information

Below are tables with additional technical information.

TABLE 8
SWITCH AND JUMPER DESCRIPTIONS

SWITCH/JUMPER	DESCRIPTION
W3	Memory on mother board.
W1 (Position 6)	If base memory = 256K.
SW1 (Position 8)	Fill base memory to 640K.
SW1 (Position 1-7)	Extended memory starting address.
W1 (Position 1-5)	Extended memory ending address.
W20	Serial port interrupt selector.
W7	9-pin serial port DCD enabler.
W8	9-pin serial port RI enabler.
W11	9-pin serial port DTE or DCE selector.
W13	25-pin serial port DTE or DCE selector.
W9	25-pin serial port DCD and RI enabler.
W10	Parity check enabler.
W5 (Position 4-5)	Parallel port address selector.
W18	Printer mode enabler.
W15	Parallel port IRQ channel selector.
W5 (position 6-9)	Assigner of Port A and B for serial communication.
J2	Parallel port connector.
W5 (position 3)	Game port enabler.
J1	Game port connector.

MEMORY

The starting address of your extended memory is represented by two sets of jumpers: pin 1-4 and pin 5-7 on SW1. Positions 1-4 represent the starting address for increments of 1MB; positions 5-7 represent the starting address for increments of 128K (smaller than 1MB). Therefore, to determine your starting address, you will need to consider how many full MB's of extended memory you have (to set positions 1-4) and how many partial MB's of extended memory you have (to set positions 5-7). For example, if you currently have 1664K of extended memory in your system, then you have 1MB + 640K of extended memory and will need to set SW1 like:

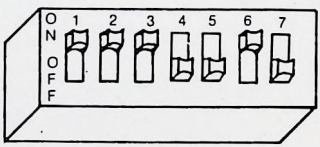


TABLE 9A

EXTENDED MEMORY STARTING ADDRESS

MEMORY REPRESENTED	SW1 5	6	7
0K	ON	ON	ON
128K	ON	ON	OFF
256K	ON	OFF	ON
384K	ON	OFF	OFF
512K	OFF	ON	ON
640K	OFF	ON	OFF
768K	OFF	OFF	ON
996K	OFF	OFF	OFF

TABLE 9B

EXTENDED MEMORY STARTING ADDRESS

MEMORY REPRESENTED	SW1 1	2	3	4
1MB	ON	ON	ON	OFF
2MB	ON	ON	OFF	ON
3MB	ON	ON	OFF	OFF
4MB	ON	OFF	ON	ON
5MB	ON	OFF	ON	OFF
6MB	ON	OFF	OFF	ON
7MB	ON	OFF	OFF	OFF
8MB	OFF	ON	ON	ON
9MB	OFF	ON	ON	OFF
10MB	OFF	ON	OFF	ON
11MB	OFF	ON	OFF	OFF
12MB	OFF	OFF	ON	OFF
13MB	OFF	OFF	ON	OFF
14MB	OFF	OFF	OFF	ON
15MB	OFF	OFF	OFF	OFF

TABLE 10

EXTENDED MEMORY ENDING ADDRESS

Extended Memory To Be Added	W 1 1	2	3	4	5
128K	ON	ON	ON	ON	OFF
256K	ON	ON	ON	OFF	ON
384K	ON	ON	ON	OFF	OFF
512K	ON	ON	OFF	ON	ON
640K	ON	ON	OFF	ON	OFF
768K	ON	ON	OFF	OFF	ON
1.0MB	ON	OFF	ON	ON	ON
1.5MB	ON	OFF	ON	ON	ON
2.0MB	OFF	ON	ON	ON	ON

TABLE 11
CONNECTOR SIGNALS FOR THE
25-PIN SERIAL PORT (DTE)

PIN	SYMBOL	SIGNAL
1	GND	Protective ground
2	TXD	Transmit data
3	RXD	Receive data
4	RTS	Request to send
5	CTS	Clear to send
6	DSR	Data set ready
7	SGND	Signal ground
8	CD	Carrier detect
20	DTR	Data terminal ready
22	RI	Ring indicator

TABLE 12
CONNECTOR SIGNALS FOR THE
9-PIN SERIAL PORT (DTE)

PIN	SYMBOL	SIGNAL
1	DCD	Carrier Detect
2	RXD	Receive Data
3	TXD	Transmit Data
4	DTR	Data Terminal Ready
5	GND	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicator

TABLE 13

STANDARD DTE & DCE DATA SIGNALS

TERMINAL (DCE)			MODEM (DTE)	
SIGNAL	PIN	DIRECTION	SIGNAL	PIN
GND	1	----	GND	1
TXD	2	>>>>	RXD	2
RXD	3	<<<<	TXD	3
RTS	4	>>>>	CTS	4
CTS	5	<<<<	RTS	5
DSR	6	<<<<	DTR	6
SGND	7	----	SGND	7
DCD	8	<<<<	DCD	8
DTR	20	>>>>	DSR	20
RI	22	<<<<	RI	22

TABLE 14

DATA TERMINAL CONNECTIONS

TERMINAL			TERMINAL	
SIGNAL	PIN	DIRECTION	SIGNAL	PIN
GND	1	----	GND	1
TXD	2	>>>>	RXD	3
RXD	3	<<<<	TXD	2
RTS	4	>>>>	CTS	5
CTS	5	<<<<	RTS	4
DSR	6	<<<<	DTR	20
SGND	7	----	SGND	7
DCD	8	<<<<	DCD	8
DTR	20	>>>>	DSR	6
RI	22	<<<<	RI	22

TABLE 15

SETTING THE DCD AND RI
FOR THE 25 PIN SERIAL PORT (W9)

	W9					
FUNCTION	1	2	3	4	5	6
Enable/disable the DCD through the software	ON	ON	OFF	OFF	OFF	OFF
DCD always enabled	OFF	ON	OFF	OFF	OFF	OFF
Enable/disable the RI through the software	OFF	OFF	OFF	ON	ON	OFF
RI always enabled	OFF	OFF	OFF	OFF	ON	ON

TABLE 16

SETTING THE DCD FOR THE 9 PIN SERIAL PORT

	W7		
FUNCTION	3	2	1
Enable/disable the DCD through the software	OFF	ON	ON
DCD always enabled	ON	ON	OFF

TABLE 17

SETTING THE RI FOR THE 9 PIN SERIAL PORT

	W8		
FUNCTION	1	2	3
Enable/disable the RI through the software	OFF	ON	ON
RI always enabled	ON	ON	OFF

PARALLEL COMMUNICATION

TABLE 18
PRINTER CONNECTOR PIN DESCRIPTIONS

CABLE PIN	PARALLEL HEADER	SIGNAL FUNCTION	DIRECTION
1	1	-Strobe	Input/Output
2	2	Data Bit 0	Input/Output
3	3	Data Bit 1	Input/Output
4	4	Data Bit 2	Input/Output
5	5	Data Bit 3	Input/Output
6	6	Data Bit 4	Input/Output
7	7	Data Bit 5	Input/Output
8	8	Data Bit 6	Input/Output
9	9	Data Bit 7	Input/Output
10	10	-Acknowledge	Input
11	11	Busy	Input
12	12	Out Of Paper	Input
13	13	Select	Input
14	14	-Auto Line Feed	Output
15	15	-Error	Input
16	16	-Init	Input/Output
17	17	-Select Input	Input/Output
18 - 25	18 - 25	Ground	

GAME PORT

TABLE 19

GAME PORT CONNECTOR PIN DESCRIPTIONS

PIN	DESCRIPTION
1	+5 VOLTS
2	BUTTON 4
3	POSITION 0
4	GND
5	GND
6	POSITION 1
7	BUTTON 5
8	+5 VOLTS
9	+5 VOLTS
10	BUTTON 6
11	POSITION 2
12	GND
13	POSITION 3
14	BUTTON 7
15	+5 VOLTS

EVEREX SYSTEMS, INC.
48431 MILMONT DRIVE
FREMONT, CA 94538

(415) 498-1111
FAX: (415) 651-0728
TELEX: 5101000590

EVEREX SYSTEMS, INC.
48431 MILMONT DRIVE
FREMONT, CA 94538

(415) 498-1111
FAX: (415) 651-0728
TELEX: 5101000590

MAN-00018-30