Complete IDE Series
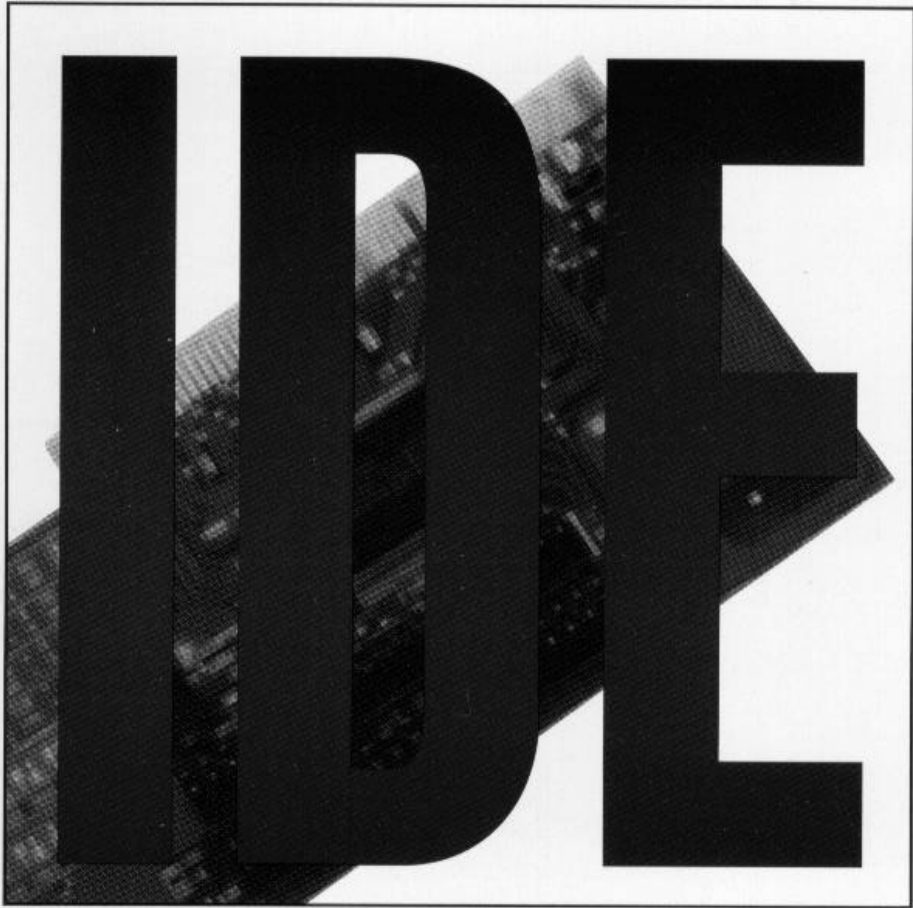
IDE Controller with One Parallel and Two 16C550 Serial Ports

Before You Begin your Installation

The product you have purchased is designed to be easily installed into most IBM PC or compatible systems. Many products have large, easy-to-read legends to allow for the easy configuring of the product. This installation manual contains detailed instructions. Most included software has automatic installation programs to place the software correctly onto your computer. However, as all computers are configured differently, you may be required to perform some basic DOS or Windows tasks. If you are not familiar with basic DOS commands such as DIR, CD, or EDIT, you should check your DOS manual, or seek assistance from you local computer dealer to install the product.

How to get Technical Assistance

The dealer that you purchased this product or your computer from is the first place you should go for technical assistance. The dealer is usually the most qualified source of help, and is most familiar with your system and how this product should be installed. Many dealers have customer service and technical support programs, with varying levels of support offered, depending on your needs and computer knowledge. ***Please contact the dealer first whenever a problem occurs.***

If your Dealer Can't Assist you

If you can't get assistance from your dealer, the manufacturer provides varying levels of technical assistance as summarized on the following page.

Boca BBS
407-241-1601

Automated Fax Retrieval System
407-995-9456

Standard Free Technical Support
407-241-8088

Priority Service
900-555-4900

On-Line Support!
CompuServe: **GO BOCA**
Internet:
  email: **support@boca.org**
  on the World-wide WEB:
  http://www.boca.org

The Standard Free Technical Support number is for quick answers to specific inquiries on product features and technical questions (call **407-241-8088**; M-F, 8 am to 6:30 pm EST). Direct access to technical support representatives is provided on a limited basis. If you require immediate attention or in-depth help with the installation of the product, please call our 900-priority support number for service. This number gives you immediate access to senior-level technicians. The number is **900-555-4900**. You will be charged $2.00 per minute. The charges will appear on your next phone bill.

Damaged or Missing Items

We use many world-class quality assurance programs to ensure the product you purchased is of the highest caliber. Sometimes, however, a component may be missing from the box, or is damaged or corrupt in some way. If this happens, immediately return the entire package to your place of purchase so you may exchange it for a new one. Your dealer should be able to provide you with an exchange far more quickly than by contacting us directly. If for some reason you are unable to return the product directly to its place of purchase, refer to the "Servicing Your Product" and "Warranty" sections in this manual for instructions.
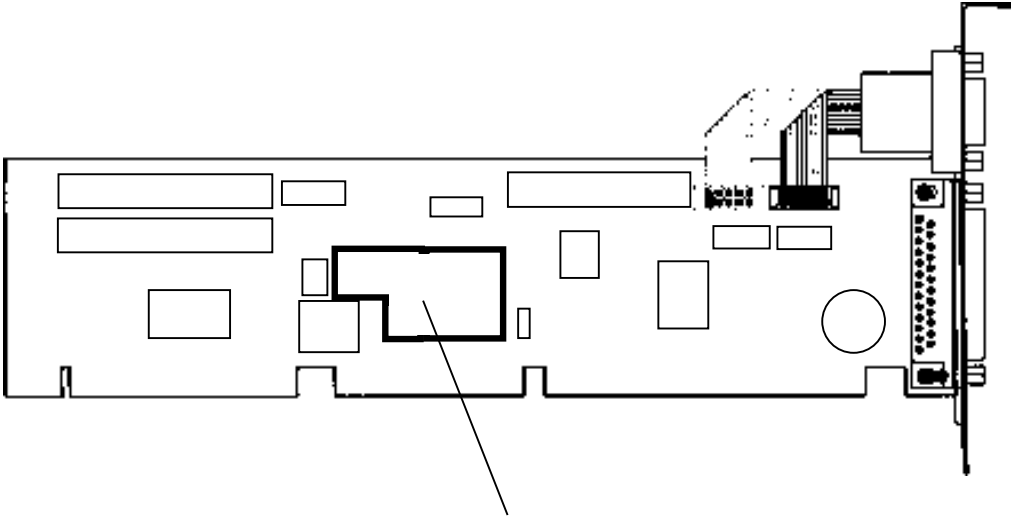
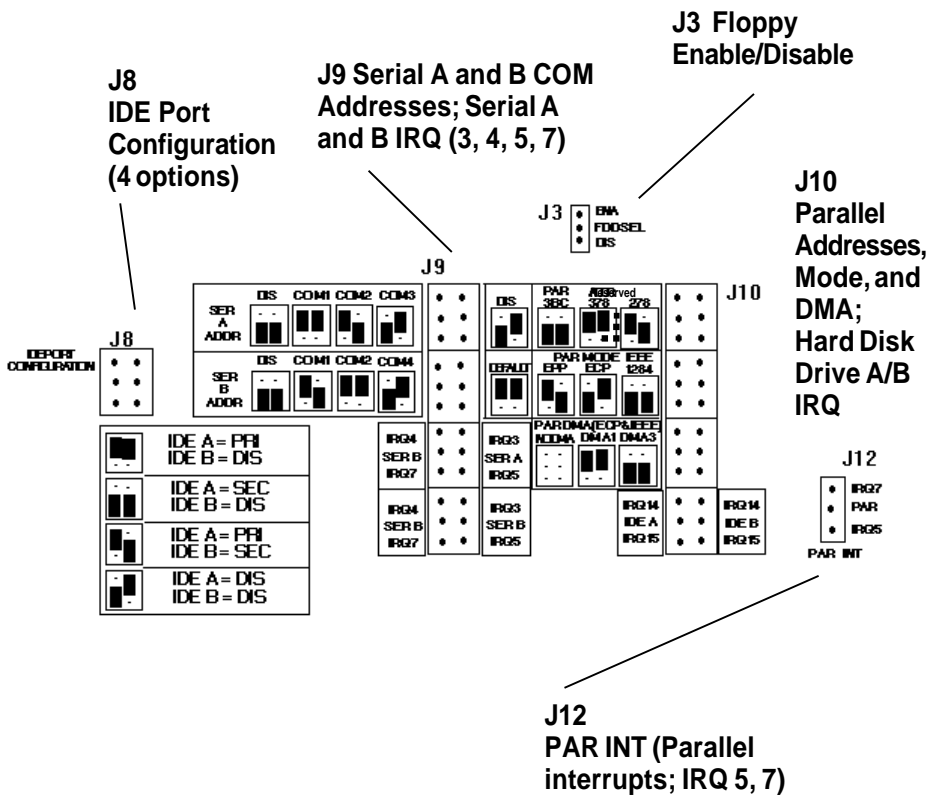# **Contents**

QuickStart

- Review package contents:
    - The IDE500 controller
    - 34-pin diskette drive cable
    - 40-pin hard drive cable
    - 25-pin serial connector and bracket assembly with cable
    - driver installation diskette

- Accept the default settings or configure jumpers (refer to printed instructions on IDE board; also see diagrams on pages 8-10). Section Four provides suggested alternate settings for illustrative purposes.

- Insert the IDE500 controller in a VL-bus (local bus) compatible connector.

- Connect one end of the 34-pin floppy cable to your floppy drive and the other end to the **J4** connector on the IDE500. Make sure the colored stripe (often red) goes to Pin 1.

- The IDE500 comes with two 40-pin hard drive interfaces referred to as IDE A and IDE B. IDE A (**J1**) should be used for attaching higher-speed drives. With the included 40-pin cable, you can connect one or two drives.

- IDE B (**J7**) is intended for use with slower-performing hard drives and other devices such as CD-ROM and tape drives which are compatible with the 40-pin IDE interface. Note that any devices attached to the IDE B interface require a special driver which should be supplied by the manufacturer of that device. When attaching drives to the IDE A and IDE B, note the jumper settings for **J8** as indicated on the board.

- The **J2** connector is for the hard drive activity LED.

- Attach your serial device to **J6** (serial port A) and your parallel printer to **J11**. Secure the serial connector and bracket assembly to a vacant rear slot. Attach the free end of the cable to **J5** (serial port B) on the IDE500. Then attach your serial device to the external connector on the bracket assembly.

- Attach your parallel device to the **J11** interface.

- Power up your system using a DOS boot diskette.

- If you connected the IDE500 to a new hard drive, run FDISK and FORMAT to prepare your IDE hard drive for use; otherwise, simply power up your system and the IDE500 will automatically recognize your existing drive.

- For your hard drive(s) to achieve optimum performance, insert the Complete IDE500 driver diskette into your floppy drive and type **INSTALL** at the DOS prompt. Follow all on-screen directions..

IDE500 Board Layout

See facing page for detailed representation of jumper layout.

**J8
IDE Port
Configuration
(4 options)**

**J9 Serial A and B COM
Addresses; Serial A
and B IRQ (3, 4, 5, 7)**

**J3 Floppy
Enable/Disable**

**J10
Parallel
Addresses,
Mode, and
DMA;
Hard Disk
Drive A/B
IRQ**

J3 ENA
FDDSEL
DIS

J9

J10

DIS COM1 COM2 COM3
SER A ADDR

DIS COM1 COM2 COM4
SER B ADDR

DIS PAR 3BC Reserved 378 278
DEFAULT PAR MODE EPP ECP IEEE 1264
PAR DMA (ECP & IEEE) NODMA DMA1 DMA3

DEPORT CONFIGURATION J8

IDE A = PRI
IDE B = DIS

IDE A = SEC
IDE B = DIS

IDE A = PRI
IDE B = SEC

IDE A = DIS
IDE B = DIS

IRQ4 SER B IRQ7

IRQ3 SER A IRQ5

IRQ4 SER B IRQ7

IRQ3 SER B IRQ5

IRQ14 IDE A IRQ15

IRQ14 IDE B IRQ15

J12

IRQ7
PAR
IRQ5

PAR INT

**J12
PAR INT (Parallel
interrupts; IRQ 5, 7)**

Cable Connectors

J1
IDE A
Interface

J2
Hard Drive
LED

J4
Floppy
Interface

J5
(Serial B)

J6
(Serial A)

J11
(Parallel
Interface)

J7 IDE B
Interface

Section One: Introduction

Congratulations on purchasing the Complete IDE IDE500 from Boca Research for VESA local bus (VL-bus) based systems. The important advantage of IDE technology is having the fixed disk controller logic incorporated onto the drive itself. This enables a faster access time when retrieving and recording data. The IDE500 offers:

• 360K, 720K, 1.2MB, 1.44MB, 2.88MB floppy support
• Two 16C550 UARTs for high throughput
• Parallel Interface with EPP (enhanced parallel port); IEEE 1284 support; and ECP (extended capabilities port).
• Ability to enable and disable hard and floppy drives, serial and parallel ports.
• Full Modem Control.
• Supports high-speed devices attached to the parallel port such as hard drives, tape backup systems, CD-ROM drives, and high-performance printers.
• Supports up to 4 IDE devices.
• Software for IDE drive speed selection.
• Software driver support for use with high-speed IDE devices.

You can select the address and IRQs used for each port via an array of jumpers located on the IDE500. Other features include:

• Diskette drive interface
• Two IDE interfaces
• 32-bit local-bus interface

- I/O addresses:
  Serial A (COM1, COM2, or COM3; IRQ3, IRQ4, IRQ5, or IRQ7),
  or Disabled.
  Serial B (COM1, COM2, or COM4; IRQ3, IRQ4, IRQ5, or IRQ7),
  or Disabled.
- Parallel Port 378, 278, or disabled (IRQ5 or 7)
- Parallel Port Modes: DEFAULT (standard), EPP, ECP, IEEE 1284
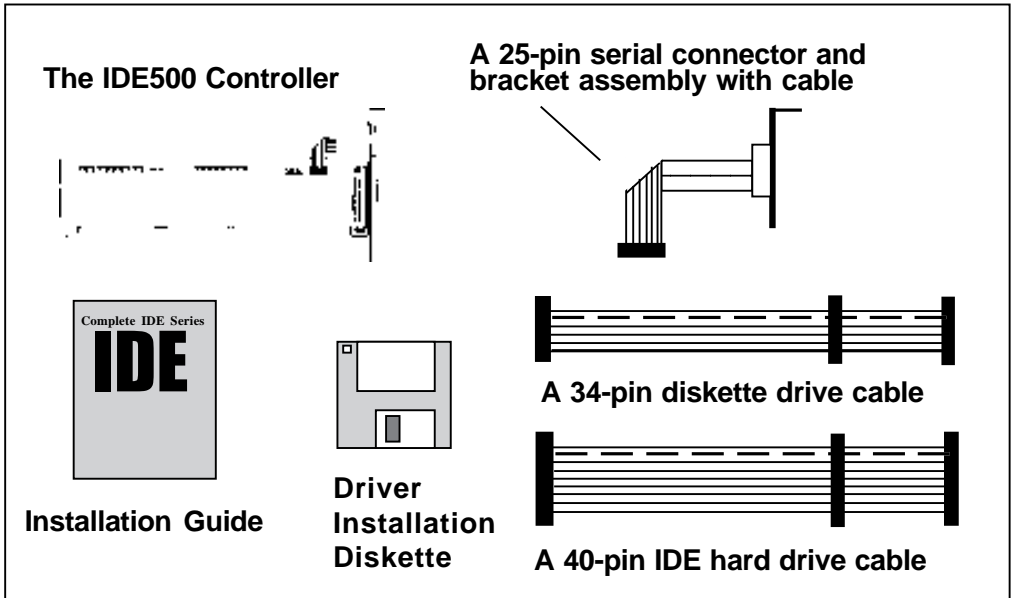
The IDE500 is specifically designed to work with VL-bus compatible systems.

See *Section Three* for additional details on features.

If you are an experienced computer user who wishes to take some installation shortcuts, refer to *Quickstart* (pages 6-10). Otherwise, please read the entire manual before attempting to install the IDE500.

Section Two: The Contents of Your Package

Before going any further, please be sure that the following items have been included in your IDE500 package:

The IDE500 Controller

A 25-pin serial connector and bracket assembly with cable

Complete IDE Series

IDE

Installation Guide

Driver Installation Diskette

A 34-pin diskette drive cable

A 40-pin IDE hard drive cable

Please examine the IDE500 for any visible damage which may have occurred during shipment. If damage exists or if any items are missing, please contact the retailer from whom the IDE500 was purchased.

Section Three: Features

3.1 Enhanced Parallel Printer Interface (J10)

The enhanced parallel printer interface has a 25-pin female D-shell connector, and is designed to connect to IBM and IBM compatible printers via an IBM printer cable. This port is IBM PC/AT compatible. The parallel port can be set via a jumper for the following options (refer to the silk-screen printing on the actual board adjacent to jumper block **J10**).
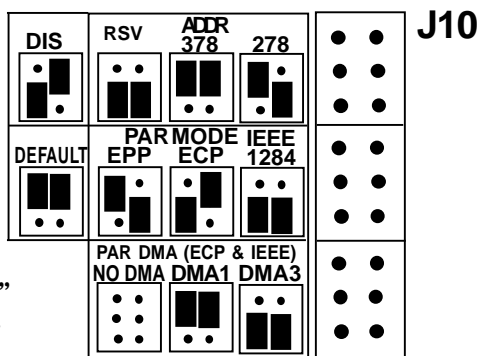
NOTE: The "RSV" setting is used for factory-test only.

IBM has defined 378 and 278 as the hexadecimal I/O port addresses for LPT1, LPT2, and LPT3.

The interrupt for the parallel port is IRQ7 or IRQ5. These interrupts are set using the appropriate jumper on **J12** (IRQ7/IRQ5).

In addition to selectable addresses and interrupt requests, the IDE500 also provides additional settings:

default (or standard) or
enhanced modes: EPP, ECP, IEEE 1284

You also have the option of specifying DMA Channel 1 or 3, or DMA Channel.

The Parallel Port settings are defined as follows:

> **DEFAULT (standard)**. This setting defines the parallel port as a standard uni-directional port for use with a printer.
>
> **EPP (enhanced parallel port)**. This setting defines the parallel port as an 8-bit bi-directional port for use with hard drives, tape backup systems, and other 8-bit bi-directional devices.
>
> **ECP (extended capabilities port)**. This settings defines the parallel port as a high-performance 8-bit bi-directional port for use with hard drives, tape backup systems, high-performance printers, and CD-ROM drives. This mode also uses DMA to increase performance and reduce system overhead.
>
> **IEEE 1284**. This settings allows the parallel port to operate in any of the modes described above (STANDARD, EPP, and ECP). **NOTE: A DMA channel is used in ECP and IEEE 1284 mode ONLY.**

EPP and IEEE 1284 modes allow up to 8 devices to be daisy-chain connected. See figure which follows:
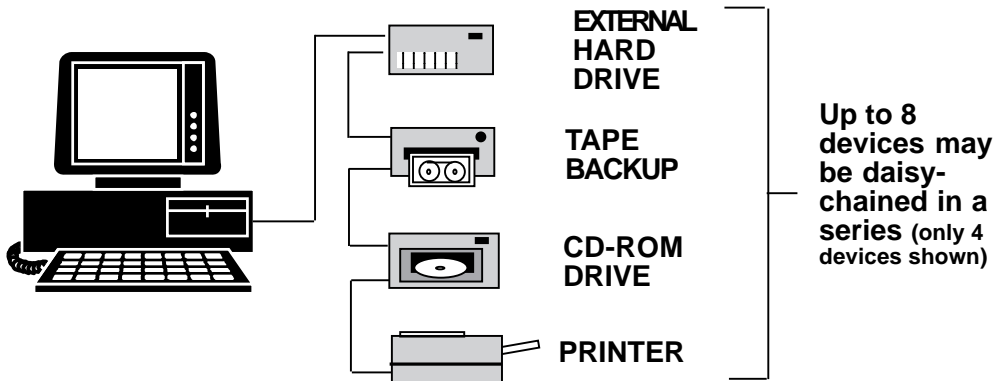
NOTE: The use of hard disk drives, tape backup systems, CD-ROM drives, etc. will require a device driver which is supplied by vendor of that peripheral device. Refer to the manual which came with that device for information pertaining to installation and use of a device driver.

3.2 Serial Device Interface (J6, J5)

NOTE: IBM has defined that IRQ4 is assigned to COM1 and IRQ3 is assigned to COM2; these are needed for an interrupt driven device such as a mouse. In general, serial ports cannot share a common interrupt, nor can they share the same physical port. COM3 and COM4 are not supported by IBM's (and most clones') system BIOS. IBM never intended COM3 or COM4 to be initialized during boot-up. Your application software may need to initialize these COM ports. Also note that the cables attached to Serial A (**J6**) and Serial B (**J5**) are interchangeable.

Serial Device Interface A (J6)

Located in the upper right-hand corner of the board, serial device interface "A" has a 9-pin male D-shell connector, and is used to connect to any asynchronous serial device using a standard EIA RS-232 interface. Examples of such devices are serial printers, plotters, and modems. Serial port "A" can be set via the **J9** jumper for the options shown below:
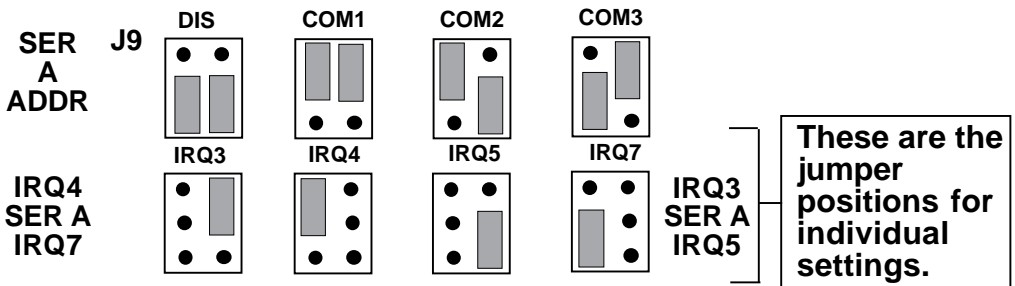
Serial Device Interface B (J5)

Located in the upper right-hand corner of the board, this serial device interface has a 25-pin male D-shell connector bracket assembly which attaches via ribbon cable to the pin connector marked **J5**. This connector can be used with the same types of devices as serial device interface "A" described earlier in this subsection. Serial port "B" can be set via the **J9** jumper for the options shown below. **NOTE: If you do not need serial port "B," keep the logical port DISABLED.**

These are the jumper positions for individual settings.
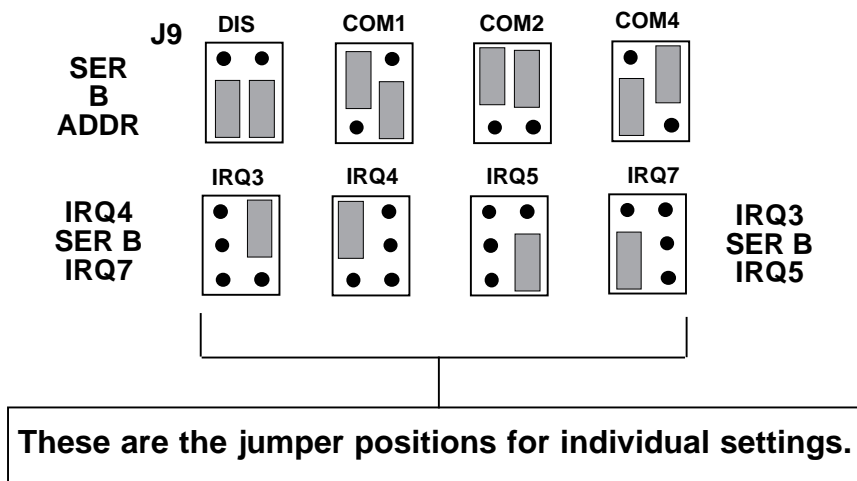
3.3 Drive Interfaces

The **J1** and **J7** connectors on the IDE500 interface provide two 40-pin connectors for IDE drive cables which can support one or two IDE hard drives each. The **J4** connector provides a 34-pin connector for a floppy drive cable which can support one or two floppy drives.
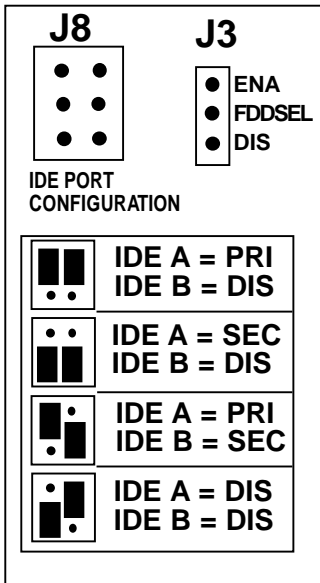
The IDE500 comes with two 40-pin hard drive interfaces referred to as IDE A and IDE B. IDE A (**J1**) should be used for attaching higher-speed drives. With the included 40-pin cable, you can connect one or two drives. IDE B (**J7**) is intended for use with slower-performing hard drives and other devices such as CD-ROM and tape drives which are compatible with the 40-pin IDE interface. Note that any devices attached to the IDE B interface require a special driver which should be supplied by the manufacturer of that device. When attaching drives to the IDE A and IDE B, note the jumper settings for **J8** as indicated on the board.

Cabling is keyed with a colored stripe (often red) for pin 1. Pin 1 is also indicated on the board itself. **J8** is used to enable/disable as well as specify primary or secondary hard drive interfaces (IDE A or IDE B, i.e., primary and secondary). **J3** is used to enable/disable the floppy drive.

Section Four: Setting Jumpers

Before you install the IDE500, you may need to change the jumper settings for your configuration. Always turn the system off before attempting the reconfiguration, removal, or installation of the IDE500. You can change configurations on the IDE500 simply by moving a jumper or combination of jumpers from one pair of pins to another.

Place the board in front of you, component side up, with the bracket on your right. The settings shown below are default settings for an IDE500 being installed in an IBM AT or compatible. In this sample installation, the IDE500 is the first I/O support board being added to the system and is configured as shown on the following pages.

Serial port A is configured for COM1/IRQ4. Serial B is configured for COM2/IRQ3. The Parallel port is configured for address 378 in standard mode with no DMA selected set to IRQ7.

J9

J8

IDE PORT CONFIGURATION

DIS COM1 COM2 COM3

SER A ADDR

DIS COM1 COM2 COM4

SER B ADDR

IDE A = PRI
IDE B = DIS

IDE A = SEC
IDE B = DIS

IDE A = PRI
IDE B = SEC

IDE A = DIS
IDE B = DIS

IRQ4 SER A IRQ7

IRQ3 SER A IRQ5

IRQ4 SER B IRQ7

IRQ3 SER B IRQ5

Default Configuration
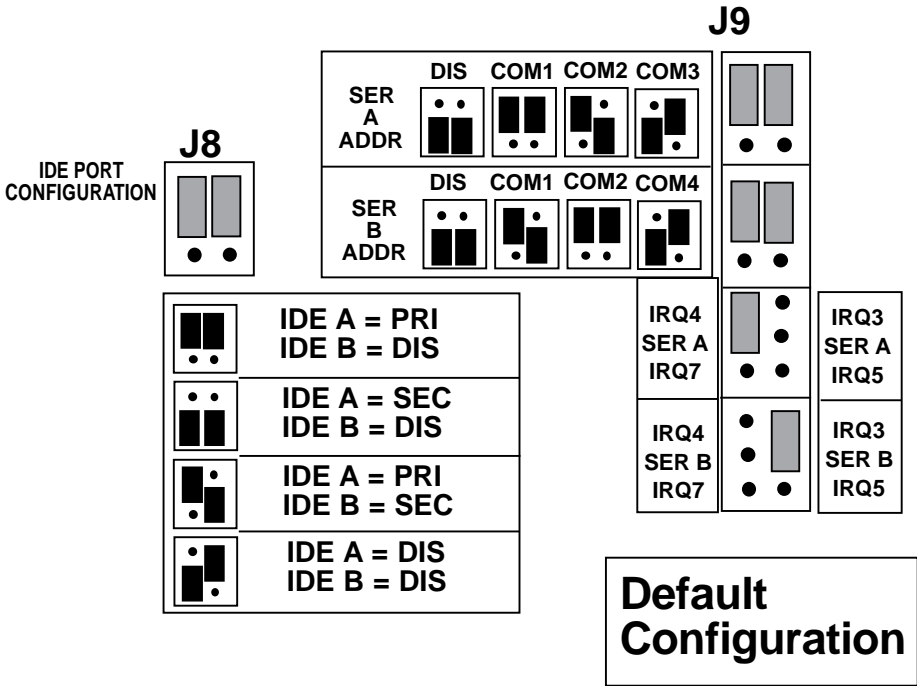
Note on Printer Selection

Printer ports can be described in either of two ways: logical and physical. Logical printer ports are what we would understand as a first, second, or third printer port, i.e., LPT1, LPT2, or LPT3. A physical port is defined as the actual hexadecimal address of the printer port, i.e., 378h or 278h. The system BIOS first searches for a printer port at 378h. If one is not found, 278h is checked. If a port is found at 378h, it is initialized as LPT1. If two ports are found, 378h is initialized as LPT1, and 278h is then initialized as LPT2.

Default Configuration

NOTE: The "RSV" setting is used for factory-test only.

4.1 Changing the Default Jumper Configurations

Configuring the LPT Ports

The **J10** jumper block controls the LPT addresses, mode, and DMA selection. **J12**, in the lower center of the board, controls the parallel port's IRQ setting. If you have an existing LPT1, set the PAR ADDR block for 278 for an LPT2.

If the parallel port is to be DISABLED, set the PAR ADDR block for DIS. Set the IRQ for this port by jumpering the upper pair of pins in **J12** for IRQ7, or lower pair of pins for IRQ5. If the PAR MODE is jumpered for ECP or IEEE 1284, the DMA jumper should be set for DMA1 or DMA3.

Configuring the COM Ports

The pair of pins in the upper blocks must be jumpered as explained previously in Section Three. The COM port jumpers for **Serial A** are labelled COM1, COM2, COM3, or DISABLED. For **Serial B**, they are labelled COM1, COM2, COM4, or DISABLED. To set the COM ports, simply move the jumper to the pins beside the appropriate COM designation. If serial port A and/or B is to be DISABLED, jumper the appropriate pair of pins.
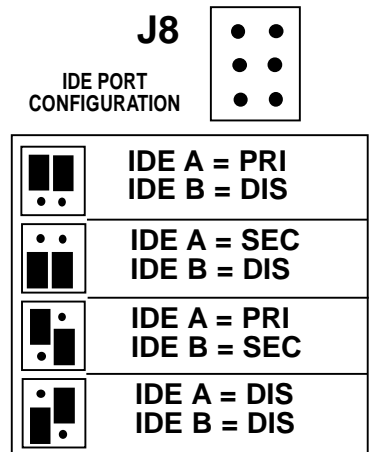
4.2 Enabling/Disabling Floppy Drives

Set jumpers as shown to enable or disable the floppy disk drive. This may be necessary with computers which feature hard disk drive and floppy disk drive connectors directly on the system board.

J3
ENA
FDDSEL
DIS

**FLOPPY
ENABLED**

J3
ENA
FDDSEL
DIS

**FLOPPY
DISABLED**
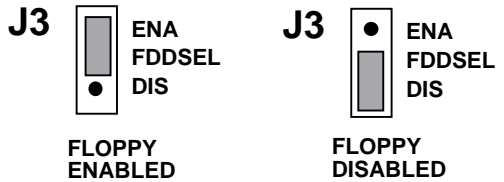
4.3 Hard Drive Options

Use the **J8** jumper block as shown here to enable/disable as well as specify primary and secondary hard drives A or B (first and second drive).

NOTE: The IDE B interface can only be SECONDARY or DISABLED. If using IDE B, you will need a driver supplied by the manufacturer of the device you are attaching to that interface.

J8
IDE PORT
CONFIGURATION

	IDE A = PRI IDE B = DIS
	IDE A = SEC IDE B = DIS
	IDE A = PRI IDE B = SEC
	IDE A = DIS IDE B = DIS

4.4 Configuring IRQs for the Hard Drive

The default setting is IRQ14 on jumper block **J10**. Having the flexibility to change to IRQ15 is beneficial in networking environments such as Novell. For example: disk duplexing, i.e., two drives running off of two controllers (controller A=IDE A PRIMARY/IRQ14; B=IDE A SECONDARY/IRQ15). Also note that whenever the hard drive attached to the IDE500 is designated as the secondary drive, then the corresponding interrupt must be set to IRQ15.

IRQ14 IDE A IRQ15			IRQ14 IDE B IRQ15

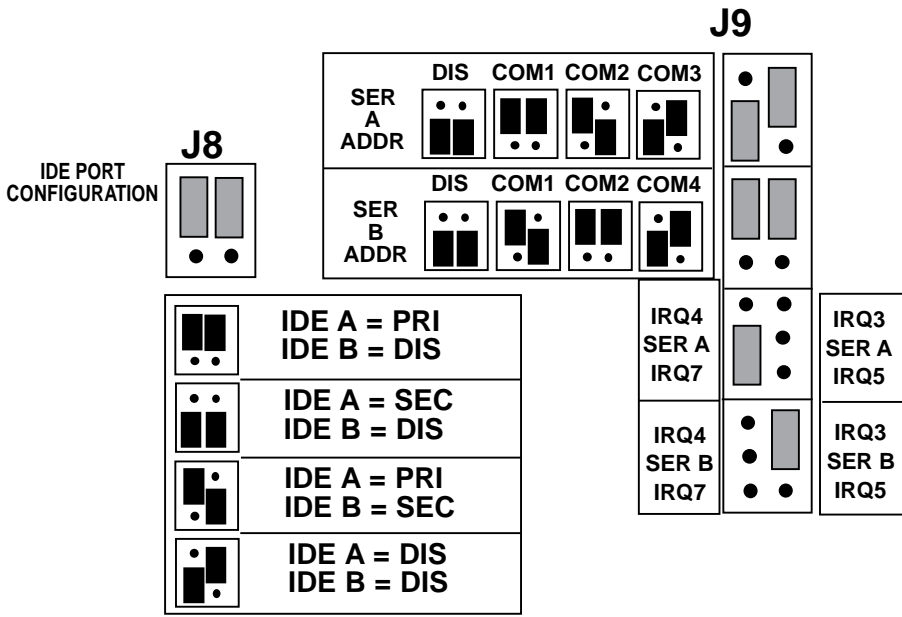**These are the jumper positions for individual settings.**
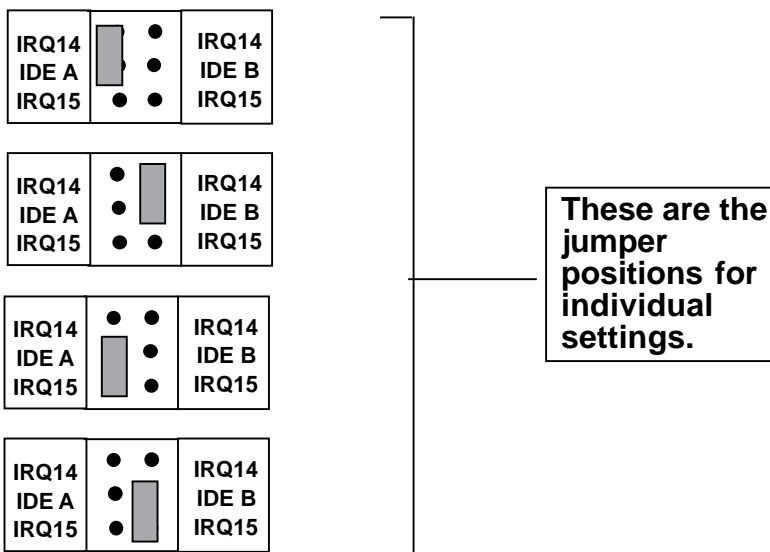
4.5 Sample Jumper Configuration

Following (pages 26-27) is an example of the jumper settings when installing the IDE500 in a system already containing a serial and parallel port. Configuration would be as follows: This example assumes you have your system serial port configured as COM1 (3F8h/IRQ4) and the parallel port as LPT1 (378h/IRQ7). When the parallel ports are installed, the system parallel port is initialized first and is seen as LPT1. The IDE parallel port will then be initialized as LPT2. See Note on Printer Selection on page 21 for further information on how parallel ports are initialized.

In the configuration shown on the next two pages, Serial A is addressed as COM3/IRQ7; Serial B is addressed as COM2/IRQ3; the parallel port is addressed as 278/IRQ5/default mode/no DMA; hard drive is primary with IRQ14; floppy is enabled.

Sample Configuration

J9

IDE PORT CONFIGURATION

J8

	DIS	COM1	COM2	COM3
SER A ADDR				

	DIS	COM1	COM2	COM4
SER B ADDR				

IDE A = PRI
IDE B = DIS

IDE A = SEC
IDE B = DIS

IDE A = PRI
IDE B = SEC

IDE A = DIS
IDE B = DIS

IRQ4
SER A
IRQ7

IRQ3
SER A
IRQ5

IRQ4
SER B
IRQ7

IRQ3
SER B
IRQ5

Sample Configuration

J3 ENA
FDDSEL
DIS

DIS   RSV   ADDR   278
           378

J10

DEFAULT   PAR   MODE   IEEE
          EPP   ECP   1284

PAR DMA (ECP&
IEEE DMA   DMA1   DMA3

IRQ14   IRQ14
IDE A   IDE B
IRQ15   IRQ15

**NOTE: The "RSV"
setting is used for
factory-test only.**

J12 IRQ7

IRQ5

PAR INT
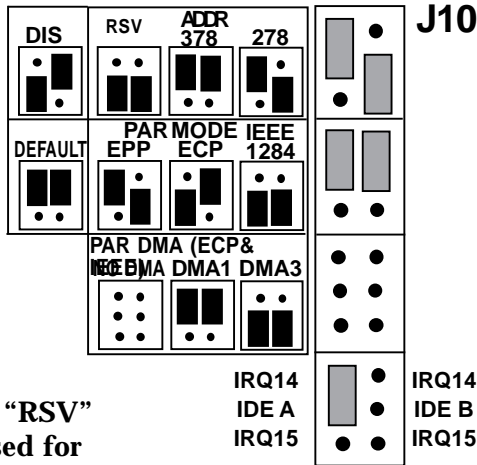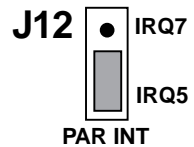
Section Five: Physical Installation

5.1 Removing the System Cover

1. Power down the system and remove the power cord from the back of the system.

2. Unplug the keyboard cable as well as all cables to monitors, printers and other devices from other boards and remember where they were attached. You will need to reattach them after the installation of the IDE500 is complete.

3. Using a small screwdriver, remove the screws that attach the system's cover to the rear panel. Carefully remove the cover, being careful not to let the cover catch on internal cables to the disk drive and power supply. Once the cover is off, you will be able to see the internal components and adapter boards inside.

5.2 Inserting the IDE500

1. Select an empty VL-bus slot (usually there are two) and remove the screw and the metal plate that covers the external access to the slot you have selected.

2. Insert the IDE500 in the slot you have selected so the edge connector on the bottom rear of the board mates with the connector on the motherboard (system board). Press down firmly on the board.

3. Use the removed screw to secure the board. NOTE: Depending on the physical layout of your system, it may be easier to attach drive and LED cables before inserting the IDE into the slot on the system board.
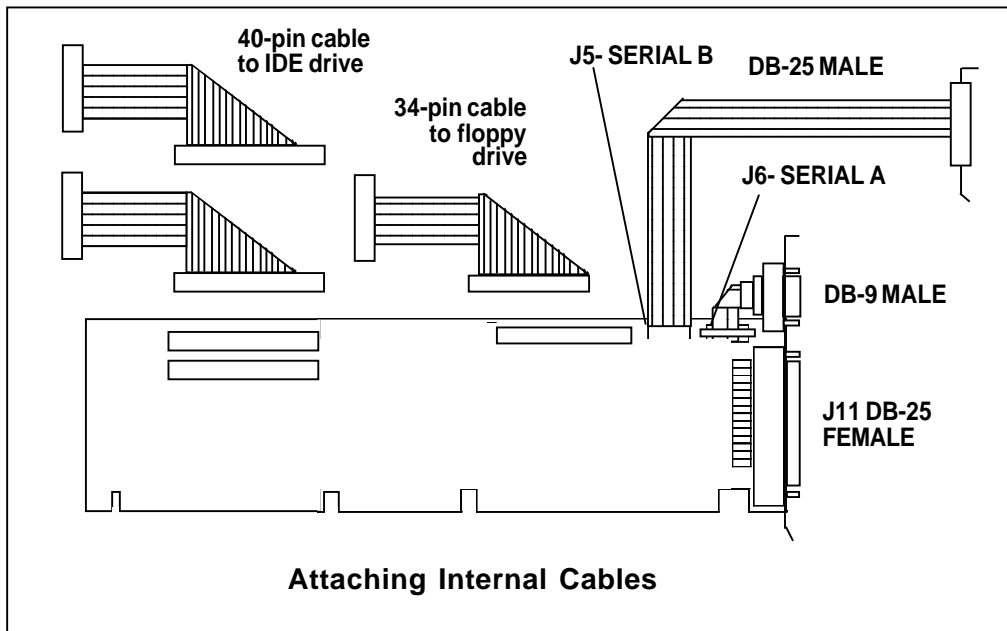
5.3 Attaching Internal Cables

1. Attach the appropriate cables and secure for the following connectors: Drive Activity LED: **J2;** Serial B Connector **J5** (if used)

2. You may attach one or two hard drives with one of the 40-pin cables to the **IDE A** interface. If you are attaching a hard drive, or other compatible devices to the **IDE B** interface, note that you will need a special driver supplied with the device to access that interface.

   Make sure Pin 1 on the cable is mated to Pin 1 on the IDE500 and on your hard drive. Don't forget to connect the hard drive to the system's power supply. If connecting and configuring a second hard drive, refer to your drive manufacturer's documentation for any necessary drive settings.

3. Attach one end of the 34-pin cable to the floppy drive in the system and the other end to the **J4** connector on the IDE controller.

NOTE: When connecting cables, be sure that Pin 1 on the cable, usually marked with a colored stripe (often red), matches up with pin 1 on the board connector. The Pin 1 position is also indicated on the board itself (printed numeral 1).

**40-pin cable
to IDE drive**

J5- SERIAL B

DB-25 MALE

**34-pin cable
to floppy
drive**

J6- SERIAL A

DB-9 MALE
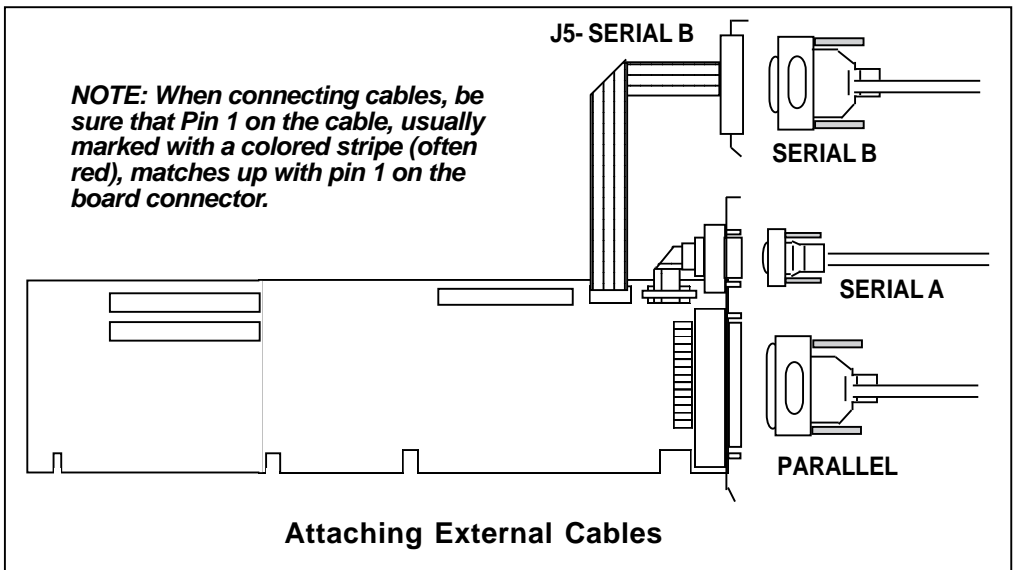
**J11 DB-25
FEMALE**

Attaching Internal Cables

5.4 Replacing the System Cover

Slide the cover back over the chassis taking care not to let it snag on the disk drive or power cables. Once the cover is in place, replace all screws that you removed earlier. Reconnect all previously removed cables.

5.5 Attaching External Cables

Attach the appropriate cables for the external parallel printer connector
(**J11**) and Serial Connector A (**J6**) as necessary and secure with the screws
provided at the end of the cable connector. Physical installation is
complete. If you connected the IDE500 to a NEW hard drive(s), power up
the system and run FDISK and FORMAT to prepare your hard disk
drive(s) for use. If you connected the IDE500 to an EXISTING hard drive,
simply power up the system and the controller will automatically
recognize the drive.

NOTE: When connecting cables, be sure that Pin 1 on the cable, usually marked with a colored stripe (often red), matches up with pin 1 on the board connector.

J5- SERIAL B

SERIAL B

SERIAL A

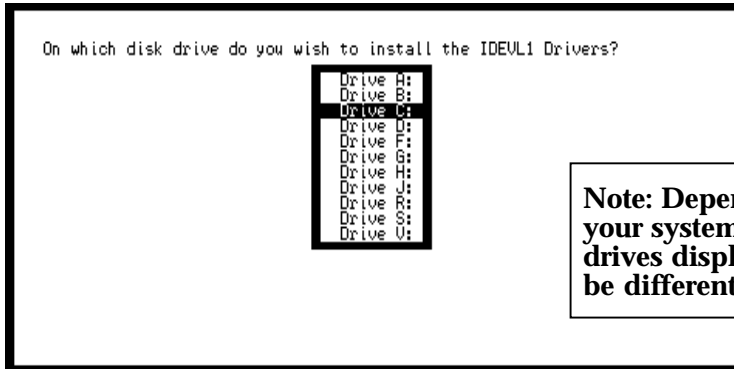**PARALLEL**

Attaching External Cables

Section Six: Driver Installation

The Boca Research driver diskette will install the IDE500 drivers on your computer system and verify the integrity of the distribution diskette. You may press the ESC key at any time to abort the installation. The installation program will ask you several questions about your computer hardware. It will then offer you the option of installing the drivers for both DOS and Windows.
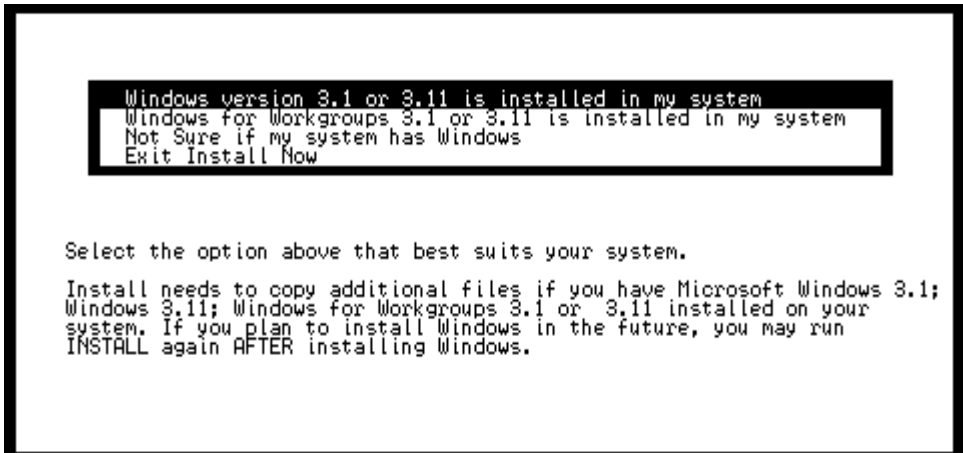
> **NOTE: The use of this driver is optional, but to maintain maximum performance from your hard disk, we recommend the use of the driver.**

Each question has a default answer. If the default is correct, press the [ENTER] key in response to the question. Otherwise type in the correct answer and press [ENTER]. To correct a mistake while typing, press the BACKSPACE key and then re-type the answer.

1. Insert the driver diskette in your floppy drive (A: or B: as appropriate) and type A:INSTALL (or B:INSTALL) at the DOS prompt. The introductory screen will display the information and directions discussed above. Press any key to continue and follow all on-screen directions.

2. First, you are asked to specify on which disk drive to install the IDE500 drivers.

```
On which disk drive do you wish to install the IDEVL1 Drivers?
                                     Drive A:
                                     Drive B:
                                     Drive C:
                                     Drive D:
                                     Drive F:
                                     Drive G:
                                     Drive H:
                                     Drive J:
                                     Drive R:
                                     Drive S:
                                     Drive V:
```

Note: Depending on your system, the drives displayed may be different.

3. The installation program will copy its driver files to a directory on the drive you select. The default subdirectory is \IDE500. Accept the default or specify another subdirectory. The following is displayed:

```
     Windows version 3.1 or 3.11 is installed in my system
     Windows for Workgroups 3.1 or 3.11 is installed in my system
     Not Sure if my system has Windows
     Exit Install Now


  Select the option above that best suits your system.

  Install needs to copy additional files if you have Microsoft Windows 3.1;
  Windows 3.11; Windows for Workgroups 3.1 or  3.11 installed on your
  system. If you plan to install Windows in the future, you may run
  INSTALL again AFTER installing Windows.
```

4. If you select "Yes, My System Has Windows 3.1", then you are prompted for the drive and directory where Windows is installed. The default directory is \WINDOWS. Change the default if necessary. Press [ENTER].

5. After answering all questions, the following message is displayed:

Installing Files - Please Wait ...

When the installation is complete, a message will instruct you to reboot your system for the new driver to become active.

Appendix A: Troubleshooting

Before contacting your dealer, review the following list of problems and solutions to see if any of them apply to your situation.

PROBLEM: Hard drive or diskette drive will not respond.

> **SOLUTION:** Verify that cable connection is pin 1 to pin 1. Make sure drive is attached to power supply. Check all cable connections.

PROBLEM: Do I need to low-level format my IDE hard drive?

> **SOLUTION:** NO. Low-level formatting is used to set up communications between the hard drive and the controller chips on the interface card. With Integrated Disk Electronics technology, the IDE hard drive has the controller logic integrated onto the hard drive itself. You need only run FDISK and FORMAT.

PROBLEM: No response from a peripheral device (i.e. printer, plotter, modem, etc.).

> **SOLUTION:** Verify that the peripheral device is powered on, ready, on-line, and/or securely connected at BOTH ends of the cable. Be sure the application software is configured to recognize the port that you are attempting to use and that the port in question is actually the port intended to be active. Check the IDE500 jumper settings to insure that the intended port is enabled and that there are no conflicting ports or shared interrupts.

PROBLEM: LPT2 will not perform a print screen (shift-PrtSc).

SOLUTION: The system is functioning normally. The print screen function defaults to LPT1. If you wish to test the port after installation copy an ASCII text file (NOTE: the example may not exist on your boot disk) to an active device, i.e., COPY AUTOEXEC.BAT LPT2 at the DOS prompt.

PROBLEM: COM3 and/or COM4 do not function (not initialized).

SOLUTION: The system is functioning normally. IBM never intended COM3 or COM4 to be initialized during boot-up. (The BIOS in some later systems may allow initializing of these ports; check the system manual). Your application software will have to initialize these COM ports. Consult the manual/publisher of your application software to see if the software can address a specific I/O port address such as 03E8h for COM3 or 02E8h for COM4. An IRQ may or may not be required; you will have to verify this.

PROBLEM: I am not sure how to set the COM ports.

SOLUTION: In general, IRQ4 belongs to COM1; IRQ3 belongs to COM2. It is best to put an interrupt driven device on COM1 or 2 (i.e., a mouse) and put a non-interrupt driven device on COM3 or 4 (i.e., a printer).

PROBLEM: I've attached a device to the IDE B interface and it is not responding.

SOLUTION: If attaching a device to the IDE B interface, you will need a driver supplied with that device to access that interface.

PROBLEM: EPP/ECP/IEEE 1284 hard drive/CD-ROM drive does not function.

> **SOLUTION**: Ensure the device is connected properly. Most EPP-compatible devices have two DB-25 connectors labelled "COMPUTER" and "PRINTER". The first device should be connected to the DB-25 labelled "COMPUTER". The next device(s) should be connected to the DB-25 connector labelled "PRINTER" on the first device.
>
> If a printer is required, it should be connected to the DB-25 connector labelled "PRINTER" on the last device.
>
> Ensure that the driver for each device is installed and configured correctly. Note: the driver for each device is supplied by the vendor of that device.

PROBLEM: The message "Cannot Find MS-Windows in a [certain drive and directory]" is displayed during driver installation.

> **SOLUTION:** Make sure that you have specified the correct drive and path name to your MS-Windows subdirectory.

PROBLEM: The message "Cannot properly update system.ini" is displayed during driver installation.

> **SOLUTION:** Consult the READ.ME file on the Boca Diskette for further information on modifying your MS-Windows system.ini file

Appendix B: Servicing the Boca Product

If your Boca product requires service, first contact the authorized dealer from whom you purchased the product. If the dealer is unable to assist you, and you must contact Boca Research, Inc., please follow the instructions below. Our electronic BBS is available 24 hours a day at (407) 241-1601 and will support data transmission speeds up to 28.8Kbps with settings of N, 8, 1. If you have a modem, the BBS may be helpful (especially during off hours) if you have a question about product settings or compatibility, or if you wish to download driver software or utilities.

If the Troubleshooting section did not resolve your problem, you may call our technical support staff for assistance. If you haven't referred to the Troubleshooting section, there's a good chance the solution to your problem is there.

NOTE: CALLING TECHNICAL SUPPORT WITHOUT COMPLETE AND ACCURATE INFORMATION CONCERNING YOUR PROBLEM MAY BE BOTH TIME-CONSUMING AND FRUSTRATING FOR YOU.

1. When calling Boca Research Technical Support, have the following information available:

   • Board Name and part number (located on the board)
   • Computer Manufacturer
   • Computer Model
   • Peripherals in system
   • Operating System and version

If you suspect a problem with a specific program or software package, make note of the name, version or release number, and manufacturer of the software.

2. Call Boca Research Technical Support Department between the hours of 8:00 a.m. and 6:30 p.m. EST Monday through Friday at (407) 241-8088. A technical support specialist will be available to discuss the problem(s) you are experiencing.

   If factory service is required, you will be given a Return Merchandise Authorization (RMA) number. Please place this number on the outside of the package when you return the item(s) for service and reference it on any correspondence included in the package. Boca Research, Inc. will return any product which is not accompanied by an RMA number.

3. Refer to the Warranty Statement if the product is covered under the five-year Boca Research, Inc. Limited Warranty.

4. Certain parts will not be covered under the Boca Research, Inc. Limited Warranty. Dealer installed parts are warranted by the dealer. Parts which you have installed yourself are covered only by the supplier's warranties. In these cases, Boca Research, Inc. can identify which parts are defective, but will not replace such parts until specific written authorization is received from you. The cost of parts and labor involved in making such repairs will be billed to you C.O.D.

5. When sending the product to Boca Research, Inc. for repairs, please be sure to include:

- **the Complete IDE500 (board only)**
- **a copy of the original invoice**
- **your return street address (for UPS purposes)**
- **phone number**
- **the RMA number mentioned above**

Package the product securely in a container equivalent to the original packaging, and insure the package to protect against loss or damage during transit. Shipping charges must be prepaid; C.O.D. shipments will not be accepted. Please use the address below for all correspondence:

Boca Research, Inc.
RMA Department - RMA # _____
1601 Clint Moore Road
Boca Raton, FL 33487-2841

6. If the repairs performed on your product were covered by the warranty, Boca Research, Inc. will return it prepaid via UPS.

Appendix C: Pin Assignments

This section provides the pin assignments for each port on the IDE500 board.

Parallel Port (J8)

Line Name	Pin #
-STROBE	1
DATA BIT 0	2
DATA BIT 1	3
DATA BIT 2	4
DATA BIT 3	5
DATA BIT 4	6
DATA BIT 5	7
DATA BIT 6	8
DATA BIT 7	9
-ACKnowledge	10
BUSY	11
Print End (out of paper)	12
SeLeCT	13
-AUTO FeeD	14
-ERROR	15
-INITialize printer	16
-SeLeCT INput	17
GROUND	18-25

Serial Port A (9-pin) (J4)

Line Name	Pin #
CARRIER DETECT	1
RECEIVE DATA	2
TRANSMIT DATA	3
DATA TERMINAL READY	4
SIGNAL GROUND	5
DATA SET READY	6
REQUEST TO SEND	7
CLEAR TO SEND	8
RING INDICATOR	9

Serial Port B 25-pin (J3)

Line Name	Pin #
No Connection	1
TRANSMITTED DATA	2
RECEIVED DATA	3
REQUEST TO SEND	4
CLEAR TO SEND	5
DATA SET READY	6
SIGNAL GROUND	7
RECEIVED LINE SIGNAL DETECTOR	8
No Connection	9
No Connection	10
No Connection	11
No Connection	12
No Connection	13
No Connection	14
No Connection	15
No Connection	16
No Connection	17
No Connection	18
No Connection	19
DATA TERMINAL READY	20
No Connection	21
RING INDICATOR	22
No Connection	23
No Connection	24
No Connection	25

FCC Compliance

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

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. The manufacturer is not responsible for any radio or television interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment. The peripherals used with the IDE500 board must comply with the limits for a class B computing device in accordance with the specifications in Subpart J, Part 15, of FCC rules. These rules are designed to provide reasonable protection against such interference in a residential installation. There is, however, no guarantee that interference will not occur in a particular installation.

This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to ensure compliance. If the 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:

• Reorient the receiving antenna
• Relocate the computer with respect to the receiver
• Move the computer away from the receiver
• Plug the computer into a different outlet so that the computer and receiver are on different branch circuits
• Use coaxial cable to connect your television or radio to your antenna

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. 004000003454.

Limited Warranty

Boca Research, Inc. (BRI) warrants to the original buyer of this BRI product that the hardware is free of defects in materials and workmanship for a period of five (5) years from the date of purchase from BRI or an authorized dealer ("the Warranty Period"). Should the product fail to be in working order at any time during the five-year period, BRI, will at its option, repair or replace this product as described below, provided that in BRI's sole determination the part or product has not been abused, misused, repaired, or modified.

All products will be serviced and returned via ground at no charge to customers DURING the first year of service.

All returns for limited warranty service require a Return Merchandise Authorization (RMA). All customers are required to demonstrate proof of purchase when requesting an RMA. The period of warranty commences on the date of purchase. A dated copy of the sales slip must be included with the returned merchandise.

Products which require Limited Warranty service during the warranty period should be delivered to BRI at the address in the Appendix (Servicing Your Boca Product) with proof of purchase, copy of canceled check (if any), and the Return Merchandise Authorization (RMA) number provided by BRI Technical Support. Refer to the Appendix in this manual. Replacement parts or complete products will be furnished on an exchange basis only. Replaced parts and/or products become the property of BRI.

If the returned product is sent by mail, the purchaser agrees to prepay shipping charges, insure the product or assume the risk of loss or damage which may occur in transit, and to use a shipping container equivalent to the original packaging. BRI does not make any warranties in respect to the product, either expressed or implied, including no implied warranties of merchantability or fitness for a particular purpose, except as expressly provided in this agreement. If any labor, repair, or parts replacement is required because of accident, negligence, misuse, theft, vandalism, fire, water or other peril; or because of conditions outside of specifications, including, but not limited to, electrical power, temperature, humidity or dust; or by moving, repair relocation, or alteration not performed by BRI, or by any other cause other than normal use, the warranty and maintenance obligations provided herein shall not apply.

BRI SHALL NOT BE LIABLE FOR ANY SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OR FOR LOSS, DAMAGE, OR EXPENSE DIRECTLY OR INDIRECTLY ARISING FROM CUSTOMER'S USE OF OR INABILITY TO USE THE EQUIPMENT EITHER SEPARATELY OR IN COMBINATION WITH OTHER EQUIPMENT, OR FOR PERSONAL INJURY OR LOSS OR DESTRUCTION OF OTHER PROPERTY, OR FROM ANY OTHER CAUSE.

This warranty shall not be applicable to the extent that any provision of this warranty is prohibited by any Federal, state, or municipal law which cannot be preempted. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

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