EIDE **PRO**™

For 16-bit ISA

Enhanced IDE & Fast I/O

C O N T R O L L E R

YES! Windows® 95

- ***Supports up to Four EIDE/IDE Devices Including IDE CD-ROMs & Tape Drives***
- ***On-Board LBA BIOS Supports 4 High-Capacity EIDE Drives Without Software Drivers or Updating the Motherboard BIOS***
- ***Boosts ISA IDE Performance up to 80%***
- ***Two High-Speed Serial Ports for High-Speed Data/Fax Modems & DSVD Modems***
- ***Enhanced Parallel Port for Latest Enhanced Printers & High-Speed Parallel Port Devices***
- ***High-Speed Floppy Tape and Floppy Support***

FREE
CD-ROM Caching Software
$40 Value

PROMISE
TECHNOLOGY, INC.

Delivering the Promise of Performance

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Trademarks

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Each EIDEPRO EIDE Disk Controller for ISA bus is equipped with an FCC compliance label and shows an FCC identification number. The full text of the associated label is:

RADIO FREQUENCY INTERFERENCE STATEMENT

CAUTION: Changes or modifications to the EIDEPRO not expressly approved by PROMISE TECHNOLOGY, INC. could void the user's authority to operate this equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and, if not installed and used in accordance with the instruction may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful 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 or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- Consult Promise Technology, Inc. or an experienced radio/TV technician for help.

This device complies with Part 5 of the FCC Rules. Operation is subject to the following 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.

NOTE: Only digital device equipment CERTIFIED CLASS B should be attached to this equipment and that must have shielded cables.

Table of Contents

APPENDIX

Introduction

Thank you for choosing the PROMISE Technology **EIDE*PRO*** Enhanced IDE ISA controller. This PROMISE Technology multi-function controller supports Enhanced IDE high performance hard disk drives, EIDE ATAPI CD-ROM devices, and high speed I/O ports for your IBM PC compatible systems.

Those experienced in installation procedures may wish to utilize the Quick Install section, beginning in Chapter 2 on page 2-4.

Key Features and Benefits of the EIDE*PRO*

IDE Device Support	
Features	***Benefits***
Onboard BIOS supports LBA drive translation mode for up to 4 EIDE drives with capacities of up to 8.4GB per drive.	Provides most compatible solution for high capacity drive support. EIDE*PRO* handles higher capacity drives without external software drivers that could cause incompatibility problems. Allows standard FDISK partition program to identify and partition large capacity drives.
Supports combinations of four EIDE and IDE devices. Onboard BIOS auto-configures and attaches up to four EIDE hard drives.	Maximum storage and maximum device add-on options.
ATAPI-ready IDE channels supports newer devices such as ATAPI IDE CD-ROM and TAPE drives.	Separate IDE device channel offers maximum IDE device options and performance.
IDE Block Mode (multi-sector read/ writes).	Increase IDE data transfer rates up to 80% to reduce system overhead and boost overall system performance.

Advanced Hardware Design	
Features	***Benefits***
Two 16550 UART serial ports with 16 byte FIFO buffer.	Saves CPU overhead during high speed data communication and increases data throughput.
One IEEE 1284 compliant Enhanced bi-directional Parallel Port (ECP/ EPP) for up to 2MB/s transfer rate.	Supports fast data transfers for higher printing speeds; allows attachment of high performance parallel port peripherals.
Supports two floppy drives of up to 2.88MB* density; 1 Mbit/sec floppy data transfer. *with motherboard BIOS support	Does not require separate floppy drive/tape controller while supporting higher capacity floppy disk drives and increased data transfer rates for newer QIC-80 / QIC-Wide / Travan floppy tape drives.

Compatibility	
Features	***Benefits***
ISA Bus compliant.	Installs in standard PCs.
Compatible with major operating systems.	Easy installation of DOS, Windows 3.1x, Windows 95, Windows NT, OS/ 2 2.1x / 3.0 Warp, NetWare 3.1x / 4.x, and UNIX.
Driver support for Windows and Windows for Workgroups 3.1x.	Included drivers to maintain use of Windows 32-bit disk access (Fast-disk) and 32-bit File access modes.

Getting Started

This section is designed to help you prepare the EIDE*PRO* for installation in your personal computer. For most users, resetting your EIDE*PRO* factory default jumper settings will **not** be necessary. The factory settings are already designed to handle the majority of Enhanced IDE devices, conventional IDE drives and controller combinations.

Please read through this chapter closely **before** attempting to install your EIDE*PRO*. Users should record their current Standard CMOS Setup Drive Types parameters.

Unpacking your EIDE*PRO*

When you receive the EIDE*PRO*, the package should contain the items listed below:

EIDE*PRO* Controller
EIDE*PRO* User's Manual
Registration Card
EIDE*PRO* Utility and Driver Diskette
One Floppy Drive Cable
One Internal IDE Hard Drive Cable
One External Port Extender

If ANY of the contents are missing or appear to be damaged, please contact your dealer or distributor immediately.

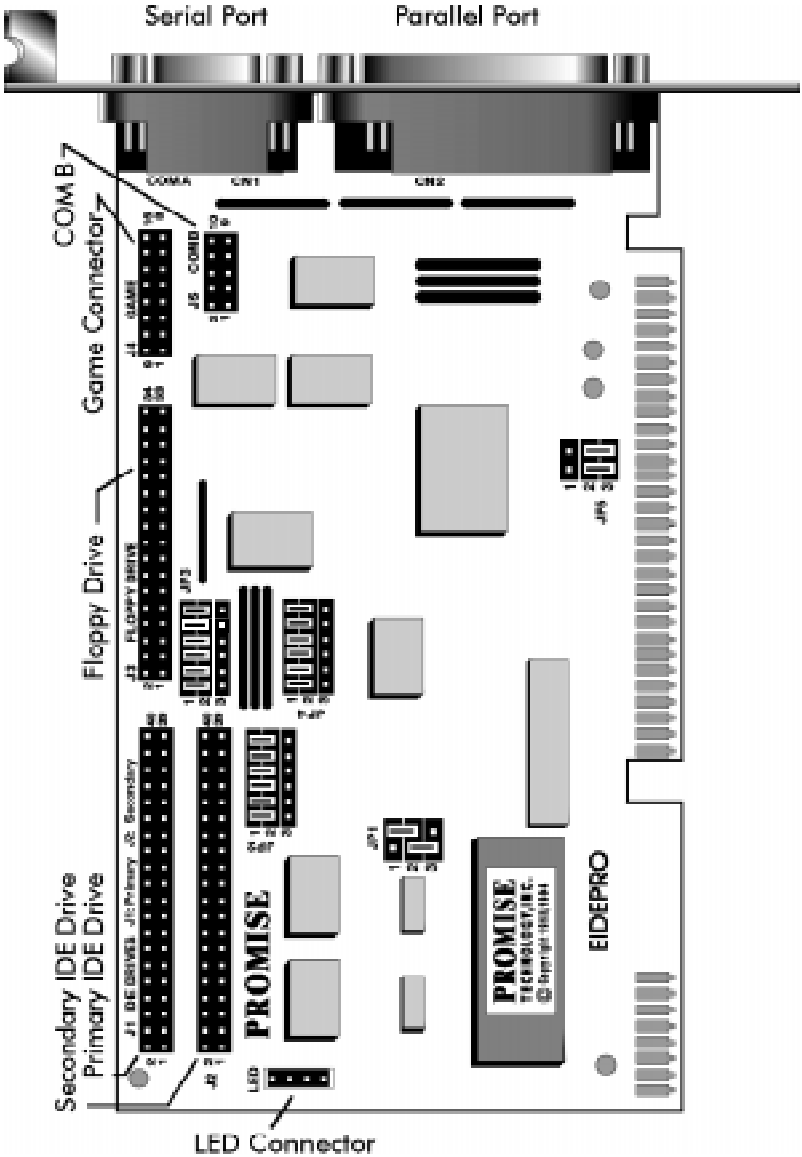
CAUTION IN HANDLING AND INSTALLING!

We want you to be completely comfortable in installing your EIDE*PRO*, so be careful when installing it in your system. Before installing the controller into an existing system, backup any necessary data. Failure to follow this accepted PC practice could result in data loss.

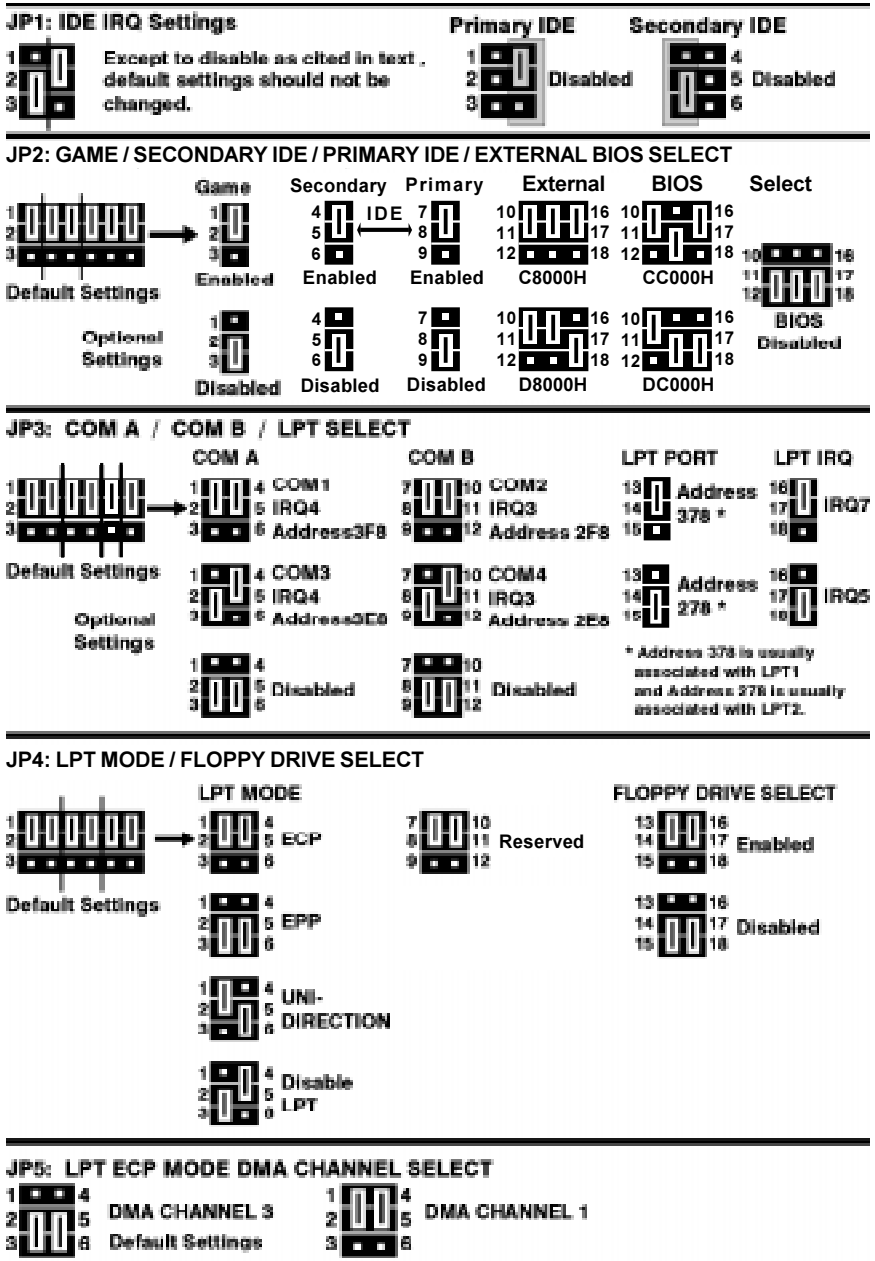
The EIDE*PRO*, like any valuable part of your computer system, is susceptible to static electricity.

EIDE*PRO* Board Layout

Use the illustration below to familiarize yourself with the layout of your EIDE*PRO.* The components on the layout are referred to several times throughout this User's Manual.



Configuring your EIDE*PRO* Jumpers Settings



Quick Installation Guide

Follow the installation instructions below to install the **EIDE*PRO*** controller into a new system.

1 Use Default Jumper Settings

The EIDE*PRO* default settings need no changes for most installations. Refer to Chapter 3 - Check your EIDE*PRO* Factory Default Jumper Settings for additional information.

EIDE*PRO Feature*	*Factory Default Setting*
EIDE*PRO* BIOS	Enabled at C8000H
Primary IDE Controller	Enabled
Secondary IDE Controller	Enabled
Floppy Controller	Enabled
COM_A Port	Enabled for COM 1
COM_B Port	Enabled for COM 2
LPT Port	Enabled for LPT 1 (378H)
Game Port	Enabled

2 Install EIDE*PRO* and connect cables

Power off the system and be sure you are well grounded. Remove or disable existing IDE controller. Insert the EIDE*PRO* into an open ISA slot.

Jumper and install the IDE drives with EIDE*PRO* per master/slave jumper settings recommended by the drive manufacturer. Connect cables to the EIDE*PRO* and devices. Note that the colored stripe indicates Pin 1 of the cable.

Cable Connections	Connector
Connect first two EIDE/IDE drives to this Primary IDE controller	J1
Connect second two EIDE/IDE drives to this Secondary IDE controller	J2
Connect floppy drives to controller	J3

At this time you may choose to attach a serial device (e.g. mouse) to the EIDE*PRO* (CN1) COM_A port and a the parallel device (e.g. printer) to the (CN2) 25-pin parallel connector. If there are additional serial or game devices to attach to the EIDE*PRO*, first install the supplied External Port Extender. Refer to Chapter 3 - Install the EIDE*PRO* Into Your System for details.

3 Configure Mainboard BIOS CMOS settings

Mainboard BIOS Standard CMOS Setup - Set Type 1

Under C: and D: Drive types, set "Type 1" for installed drives. Save and reboot the system.

> **NOTE:** It is normal for the Mainboard BIOS to report drive capacities of 10MB when drives are set to Type 1. When Type 1 is detected, the EIDE*PRO* BIOS autodetects drive parameters and enables LBA drive translation support which overrides the Mainboard BIOS parameters.

Advanced CMOS Setup - Turn off BIOS shadowing

Do not enable BIOS shadowing setting for the EIDE*PRO* BIOS address (Default-C8000H). Since the EIDE*PRO* BIOS already provides this feature it would interfere with the EIDE*PRO* operation.

4 Reading EIDE*PRO* BIOS Screen

The EIDE*PRO* BIOS automatically configures the IDE drives and supplies boot time status messages.

The EIDE*PRO* BIOS enables LBA drive translation if it reads that the Mainboard BIOS is set for Drive Type 1. It then autosenses for IDE hard disks on the Secondary (J2) IDE controller and automatically enables LBA mode parameters.

5 Starting Operating System

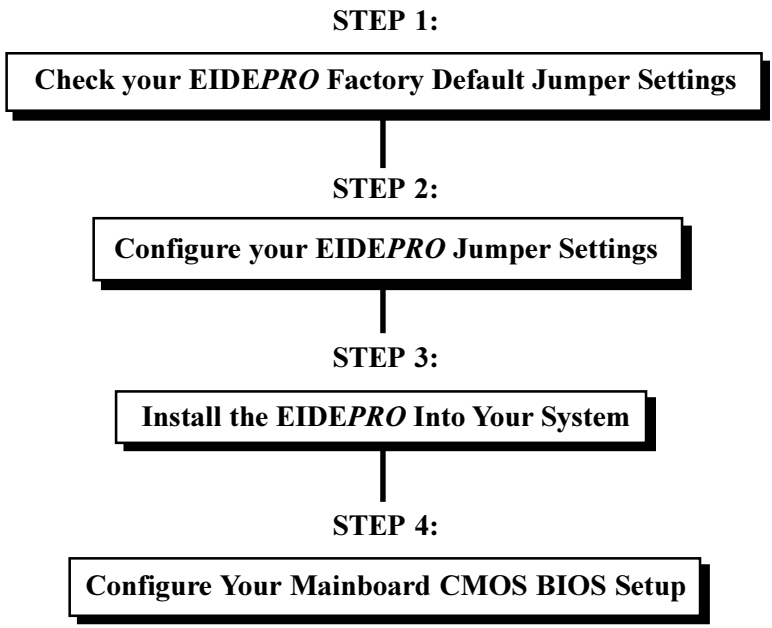
With a new DOS installation, partition and format new drives with standard DOS FDISK and FORMAT utilities or boot to Disk 1 of the DOS installation diskettes. Follow instructions from the manual of the specific operating system.

If DOS has already been installed on the large capacity drives before installing the EIDE*PRO*, remove any software disk translation such as Ontrack Disk Manager. Re-partition and reformat the drives with DOS FDISK and FORMAT using the EIDE*PRO* BIOS LBA drive translation large capacity drive support instead. Refer to Chapter 6 In Case of Trouble Removing Disk Manager.

Configuration and Installation

Overview of EIDE*PRO* Installation Steps

These are the steps for installing your EIDE*PRO*:



STEP 1: Check your EIDE*PRO* Factory Default Jumper Settings

Prior to starting installation, examine your system to see whether you have an existing device setting that conflicts with the EIDE*PRO* default settings. Conflicts occur when more than one device uses the same IRQ or address. The EIDE*PRO* should be left at its default jumper settings for the majority of installations. Since the EIDE*PRO* is pre-set to conform with standard IDE I/O card settings, it is a simple installation or upgrade replacement.

It is required to remove or disable any IDE controller in your system to avoid conflicts. The table below shows EIDE*PRO* settings and comments on possible system conflicts.

After STEP 1, proceed to STEP 2: Configure your EIDE*PRO* Jumper Settings which will guide you through steps for jumper configuration. If there are no jumper changes to be made, skip to STEP 3: Install the EIDE*PRO* Into Your System.

EIDEPRO BIOS and IDE Default Settings

	IRQ	*PORT ADDR*	*Memory Address*	*DESCRIPTION*
EIDEPRO BIOS	—	—	C8000H	**Possible Conflicts:** ***SCSI card BIOS, Software Drive Translation.*** Avoid BIOS conflict w/ SCSI and network cards.Remove drive translation software (e.g. Ontrack DM **- see Ch. 6)**.
PRI IDE (J1)	14	1F0H	—	**Possible Conflicts:** ***Other IDE controllers.*** Disable/remove other IDE controllers.
SEC IDE (J2)	15	170H	—	**Possible Conflicts:** ***Other IDE controllers and Sound Cards with IRQ 15, port 170H.***

EIDEPRO Floppy and Multi-I/O Default Settings

	IRQ	*PORT ADDR*	*DMA CH.*	*DESCRIPTION*
FLOPPY	6	3F0H	2	**Possible Conflicts:*****Another FD controller.*** Supports 2 Floppy disk drives up to 2.88MB (w/Mainboard BIOS support);Tape data transfer rates up to 1Mbit/s tape rate.
COM A *(COM 1)*	4	3F8H	—	**Possible Conflicts:** ***Network cards, Int. Modem, I/O cards.*** Change Network and Internal Modem card COM/IRQ/Port to avoid conflict.
COM B *(COM 2)*	3	2F8H	—	Same as above.
LPT	7	378H	3 *ECP* Mode	**Possible Conflicts:** ***Sound & I/O cards.*** ECP Default Mode. Check for DMA channel conflict w/ Sound Cards.
GAME	—	201H	—	**Possible Conflicts:** ***Another Game port.*** Disable if Sound card has Game port.

NOTE: Users should remove or disable their existing IDE disk controller before installing EIDE*PRO*. You may optionally disable either the Primary or Secondary IDE channels on EIDE*PRO*.

STEP 2: Configure your EIDE*PRO* Jumper Settings

Using Factory Default Jumper Settings

The EIDE*PRO* should be left at its default jumper settings for the majority of installations. Since the EIDE*PRO* is pre-set to conform with standard IDE I/O card settings, it is a simple installation or upgrade replacement.

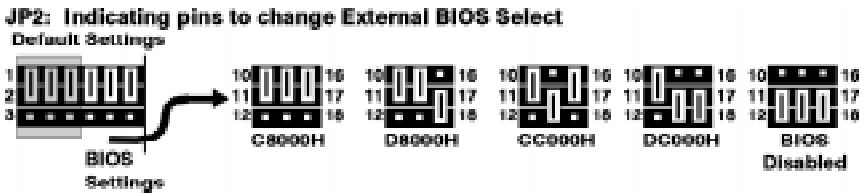
If in STEP 1 you discovered no potential conflicts, skip to STEP 3: Installing the EIDE*PRO* Into Your System.

Setting EIDE*PRO* BIOS ROM Address

The EIDE*PRO* has an onboard BIOS ROM at the default address of C8000H which occupies 16K of host memory. This EIDE*PRO* BIOS is essential for LBA drive translation to support >504MB DOS capacity IDE drives. Also the EIDE*PRO* BIOS supports hard drives on the J2 Secondary IDE connector.

Normally, the EIDE*PRO* BIOS ROM address should not be changed. However, other adapter cards may already use this particular ROM address. In this case, you may change the address of the existing adapter card (refer to adapter manufacturer's manual), or select one of the four ROM addresses for the EIDE*PRO*.

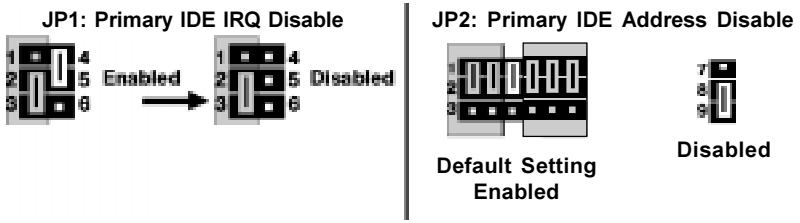
On Jumper Block JP2, columns 4&5&6 (pins 10 through 18), configure the BIOS to a different address:



Enable/Disable Primary IDE Controller (J1 Connector)

The default EIDE*PRO* setting of the Primary (J1) IDE disk drive controller (IRQ 14, Address 1F0H) is Enabled. The primary IDE controller is for your first two hard disks including the system's bootable hard disk drive (the hard disk that is formatted as a system disk).

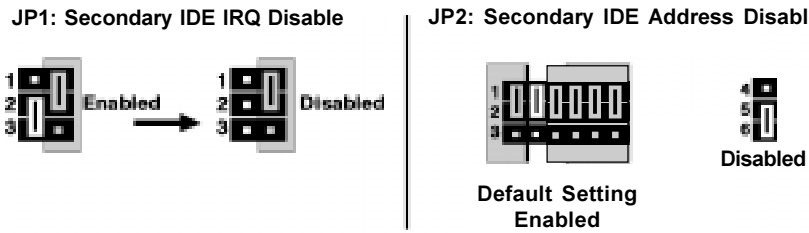
If you must use a different Primary IDE controller, you may disable the EIDE*PRO* Primary (J1) IDE controller by removing the jumper on JP1, column 2. and covering the lower two pins of JP2 column 3, as shown below:



Enable/Disable Secondary IDE Controller (J2 Connector)

The default EIDE*PRO* setting of the Secondary (J2) IDE disk drive controller (IRQ 15, Address 170H) is Enabled. The secondary IDE controller is for your non-bootable devices. Promise recommends to attach ATAPI devices (e.g. CD-ROM) to this Secondary IDE connector for best drive performance.

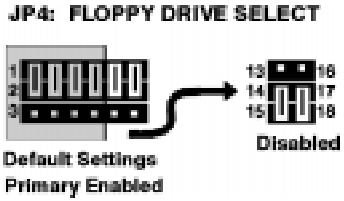
If you already have another controller occupying IRQ 15 and Address 170H, you may either change its setting or disable the EIDE*PRO* Secondary (J2) IDE controller by removing the jumper on JP2, column 1, and covering the lower two pins of JP2 columns 2, as shown below:



Enable/Disable Floppy Controller

The default of your EIDE*PRO* J3 enhanced floppy drive controller will support up to two 31/2 or 5 1/4 floppy drives of up to 2.88MB capacity and accelerate floppy tape drives to a 1000Kbit/s data transfer rate. In most systems, the EIDE*PRO* floppy controller setting should not be changed.

If you want to disable the EIDE*PRO* floppy controller, cover the lower two pins of JP4, columns 5&6, as shown below:



NOTE: For 2.88MB floppy drives you need support from the mainboard BIOS or software device drivers from a third party manufacturer. Most newer tape drives including QIC-80, QIC Wide, and Travan can take advantage of the tape accelerator feature.

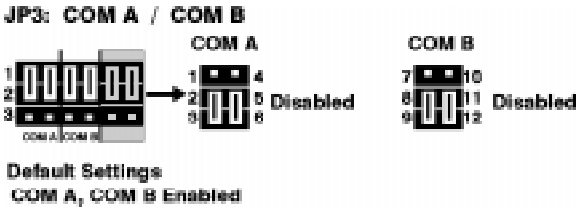
Configuring the COM Ports

The defaults of your EIDE*PRO* COM ports are Enabled: COM_A (J6 Connector) is set for COM 1 IRQ4, address 3F8H; COM_B (J5 Connector) is set for COM 2 IRQ3, address 2F8H. The built in 16550AFN high speed UART FIFOs will speed serial communication of external modems and other serial peripherals. The EIDE*PRO* COM ports have configurable address/COM settings while having fixed IRQ settings.

If there is an IRQ or COM port conflict, disable the specific EIDE*PRO* COM port(s) or configure the other card for a different COM port and/or IRQ.

Change internal Modem settings to avoid an IRQ conflict with your EIDE*PRO* COM ports. If the internal modem IRQ cannot be relocated, you may disable the EIDE*PRO* COM port (e.g. mouse installed on COM_A, disable COM_B, install modem at COM2 settings).

To Disable an EIDE*PRO* COM port(s) in the event of conflict, configure Jumper Block JP3: place jumpers to cover pins 2-3 and 5-6 to disable COM_A (COM1) and/or place jumpers to cover pins 8-9 and 11-12 to disable COM_B (COM2) as shown below:



Refer to Chapter 2 EIDE*PRO* Jumper Settings for more configurations.

Configuring LPT Port

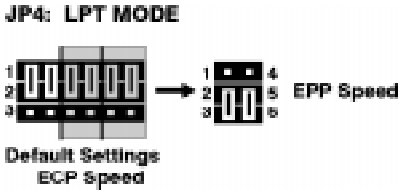
The default of your EIDE*PRO* LPT Printer port is set to IRQ 7, port address 378H. This setting is recognized by most operating systems as the LPT1 printer port and normally should not be changed.

If the printer port address or IRQ needs to be changed/disabled, refer to Chapter 2 Configuring your EIDE*PRO* Jumpers Settings for all possible configurations.

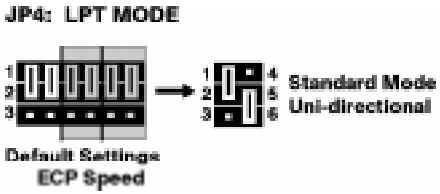
Configuring LPT Modes

Both ECP and EPP Printer Modes are bi-directional handshaking to increase transfer efficiency. The EIDE*PRO* default is ECP (Enhanced Capabilities Port) Mode which offers high speed transfer rates and can be configurable by LPT device software applications.

EPP (Enhanced Printer Port) also increases LPT transfer speed and can be selected for LPT devices that do not support ECP configuration. To configure for EPP printer mode set JP4 columns 1&2 to 2-3, 5-6 as shown below:



If there is a compatibility issue such as distorted printing, choose standard printer mode as shown below:

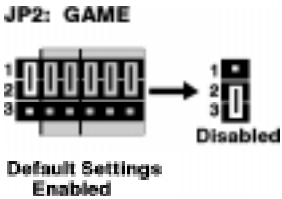


Selecting ECP DMA Channel

The Default ECP Mode DMA channel is 3. Avoid configuring DMA Channel 3 for other controllers. Do not set the ECP DMA Channel to 1 since it is used by most sound cards. Note that this setting applies only when ECP LPT Mode is selected.

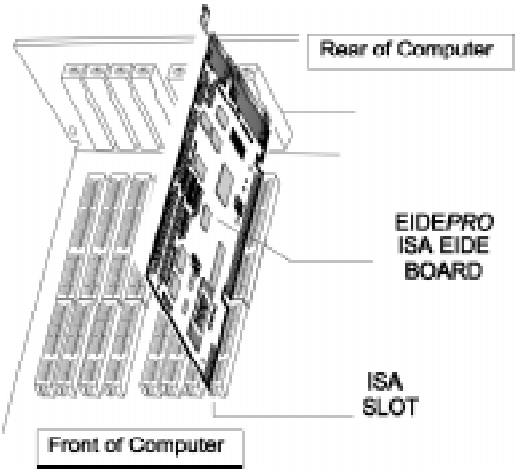
Configuring Game Port

If another adapter such as a sound card can provide game port support, disable this feature on the EIDE*PRO* by covering the lower two pins of JP2, column 1:



STEP 3: Install the EIDEPRO Into Your System

Inserting the EIDEPRO



IDE Devices Setup Considerations

Refer to your IDE device manufacturer documentation for proper settings. This section covers special IDE setup considerations which may apply to your system.

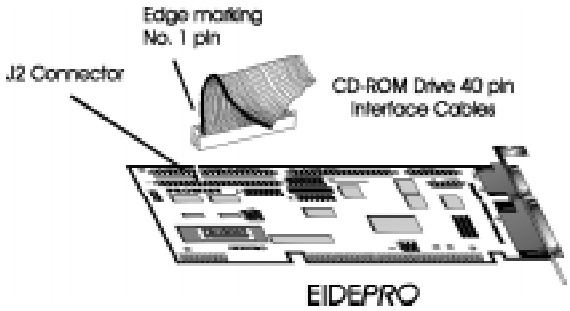
Multiple IDE Devices

Promise recommends to use the Primary (J1) IDE connector for the first two attached hard disk drives and the Secondary (J2) IDE connector should be used for the 3rd and 4th hard disk drive(s). However, there are scenarios as described below where it is beneficial to have one drive per connector when dealing with non-hard disk ATAPI devices.

Most System BIOS reference only two drives (C: and D:) in the System BIOS. They both refer to hard disk drives connected to the J1 Primary controller ONLY, not hard disk drives on the J2 Secondary which are supported by the EIDE*PRO* BIOS. Do not specify drives attached to the J2 connector in the Mainboard Standard CMOS Setup.

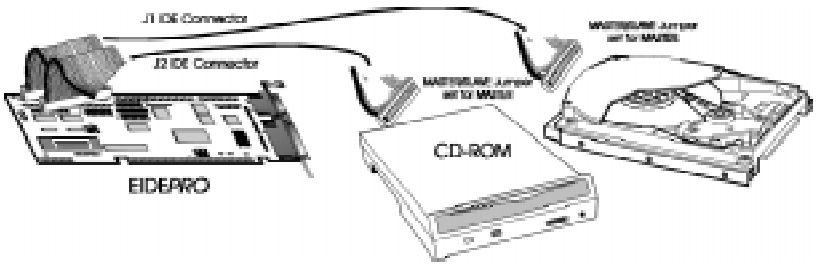
ATAPI IDE Devices

Devices such as IDE CD-ROM and IDE TAPE drives should be installed on the Secondary IDE controller. Separating slower ATAPI devices on the Secondary channel will give better performance for the main hard disk drive(s) on the Primary.



Master/Slave Jumper Settings

The general rule is that there should only be one master per cable connector. Connect the IDE drive cables to your EIDE*PRO* at J1 and J2 connectors. Remember to set master/slave setting for each pair of drives connected. Drives that are by themselves on an IDE connector should be configured as Master (single w/ no slave drive attached). If there is one hard disk on J1 and one device on J2, both should be configured as Master(single).



Note: If using an IDE CD-ROM and IDE disk drive together on the J2 IDE channel, remember to set the IDE disk drive as Master and the IDE CD-ROM as Slave (see manufacturer's manual).

Connecting IDE Devices

The first two IDE Hard Disks should be connected to the Primary (J1) IDE connector before installing drives on the Secondary (J2) IDE connector.

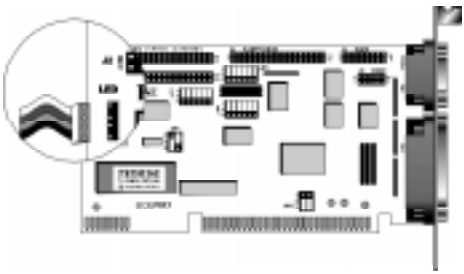
Attaching Hard Disk Drives to the Primary (J1) and Secondary (J2) IDE Connectors

Use the proper cabling connections between your IDE drives and EIDE*PRO* (see illustrations below).

NOTE: If connecting IDE drives to the EIDE*PRO*, make sure the colored or marked edge of IDE cable is aligned with Pin 1 of the 40-pin EIDE*PRO* IDE connectors as well as Pin 1 on the IDE drives.

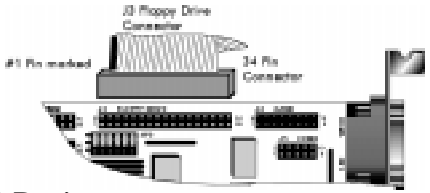
Connecting Disk Activity LED

Connect the disk activity LED cable to jumper block LED1 which consists of 4 pins - Pin 1&4 PWR, Pin 2&3 GND. If the Mainboard case LED cable has a 2-pin cap, connect the RED power lead to Pin 1 and the BLACK ground lead to Pin 2.



Connecting Floppy Drives

If connecting floppy drives to the EIDE*PRO*, make sure the colored or marked edge of the floppy cable is aligned with the EIDE*PRO* Pin 1 of the 34-pin (J3) floppy connector as well as Pin 1 on the drive's connector.

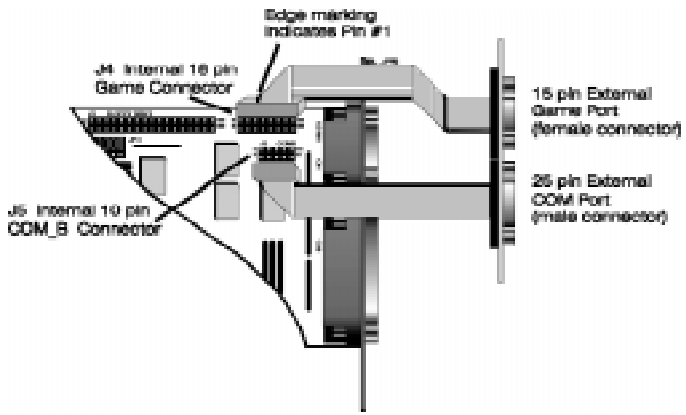


Connecting I/O Devices

Install the supplied External Port Extender in the closest available expansion slot to the EIDE*PRO*. Securely attach the faceplate to the chassis with the mounting screw. Attach the Port Extender cables to the COM_B (J5) connector and the GAME (J4) connector on the EIDE*PRO*.

Caution: Do not use anything other than the supplied External Port Extender. Other cables may not be pin compatible and will cause devices not to work properly.

You can now connect your I/O devices to the EIDE*PRO*.



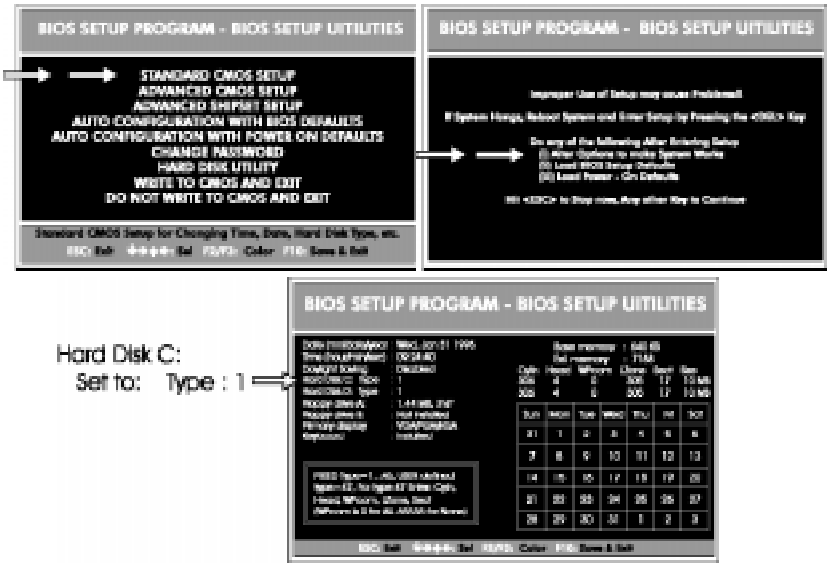
STEP 4: Configuring Mainboard BIOS CMOS Setup Settings

The Mainboard BIOS CMOS Setup settings are significant since they are read by the EIDE*PRO* BIOS for configuration information. For example, setting Drive TYPE1 in the Mainboard BIOS will enable drive translation from the EIDE*PRO* BIOS for the particular drive. Carefully read this Mainboard BIOS section to properly set up the EIDE*PRO* BIOS.

The EIDE*PRO* BIOS enables LBA drive translation if the Mainboard BIOS is set for Drive Type 1. It then autosenses for IDE hard disks on the Secondary (J2) IDE controller and automatically enables LBA mode parameters.

Enabling LBA Drive Translation

For DOS, Windows 3.1x and Windows95 installations, LBA drive translation should be ***Enabled*** for drives that exceed 504MBs capacity. With drive translation, the DOS partition utility FDISK will be able to access the full capacity. It is assumed that the drives with >504MB capacity have not been formatted previously (see warning below if drive has been previously formatted).



WARNING: If you have a >504MB hard drive that was partitioned with "software" drive translation (e.g. Ontrack Disk Manager), refer to Chapter 6 for information to remove this software.

Drive Translation for the Primary IDE controller (Drives 0&1)

Enable EIDE*PRO* BIOS (Recommended): Enter the Mainboard "Standard CMOS Setup Menu," and set the C: and D: drive Types to "TYPE 1" which will list as a 10MB capacity drive. When the EIDE*PRO* BIOS loads, it can detect the mainboard BIOS CMOS setting of drive TYPE 1 and enable drive translation autodetect. Note that the Standard CMOS Drive Types normally apply only to the Primary IDE controller.

You may optionally disable LBA Mode: Enter the Mainboard "Standard CMOS Setup Menu," set the C: and D: drive types to "USER DEFINED" or "AUTO DETECT" settings. Note that this applies only to the Primary IDE controller.

Drive Translation for the Secondary IDE controller (Drives 2&3)

The EIDE*PRO* BIOS always enables LBA drive translation and IDE autodetection for the Secondary IDE controller. By default, you may connect the third and fourth drive on the Secondary IDE connector and the Promise BIOS will autodetect and attach the drives.

If in the unlikely event LBA drive translation must be disabled for the Secondary IDE controller, the EIDE*PRO* BIOS must be completely disabled. When the BIOS is disabled, the Promise Banner will not appear and Secondary IDE drive autodetect and Primary IDE controller LBA support will not function. Refer to Chapter 2 - EIDE*PRO* Jumper Settings for the JP2 jumper BIOS disable setting.

EIDE*PRO* BIOS LBA Drive Translation in DOS environment

The EIDE*PRO* controller has an onboard BIOS which supports >504MB drives with LBA drive translation. The EIDE*PRO* BIOS supports >504MB EIDE drives even if your Mainboard BIOS does not.

In the majority of DOS/Windows and Windows95 environments, LBA drive translation should be ***Enabled*** to access the full capacity of EIDE hard disks. If using other operating systems such as UNIX or NetWare - Refer to Chapter 5 - Other Operating Systems for details.

The LBA feature will not perform translation on Non-EIDE hard disks with less than 504MB to maintain compatibility. There is no need to repartition or reformat drives less than 504MB. Drives with existing data that are greater than 504MB in capacity should be backed up and repartitioned. You may elect not to repartition the drive by disabling the EIDE*PRO* >504MB capacity support. Check with the drive manufacturer if you are unsure if the drive is capable of LBA translation.

NOTE: Many systems shipped with 540MB drives should be repartitioned when LBA is enabled.

LBA Drive Translation

Logical Block Addressing (LBA) drive translation method overcomes the 1024 cylinder limitation in the system BIOS. The EIDE*PRO* BIOS builds a translation table which reduces the Cylinder count of the drive while increasing the Head count proportionally. Thus, the effective capacity of the drive remains the same but is now accessible by operating systems that are limited by the system BIOS. Enhanced IDE drives and Fast-ATA drives that exceed 504MB in capacity support for LBA drive translation.

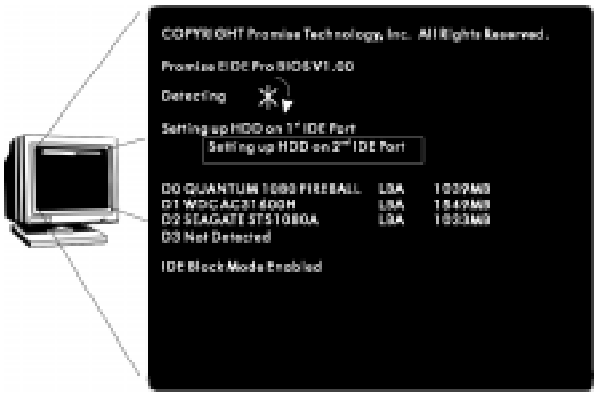
Example: Translation of 1 GB drive

Parameters	*Cylinders*	*Head*	*Sectors*	*DOS Capacity*
Actual	2100	16	63	504MB*
	/4	x4		
Translated	525	64	63	1034MB

* Capacity due to 1024 Cylinder Limitation

Reading the EIDE*PRO* BIOS Messages

On the system bootup, the EIDE*PRO* BIOS will appear and display the version and configuration status information. See the screen below:



The EIDE*PRO* BIOS enables LBA if it reads that the Mainboard BIOS is set for Drive Type 1. Then it autosenses IDE hard disks on the Secondary (J2) IDE controller and automatically sets up LBA parameters.

NOTE: LBA translation cannot be disabled for the Secondary (J2) IDE connector.

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DOS Windows 3.1x/Windows95 Operating Systems

This section gives installation notes on installing your EIDE*PRO* controller with DOS, Windows, and Windows95 operating systems.

Working with Existing OS Installations

Previous installations which consist of hard disks >504MB may have used software drive translation that accompanies such drives to access the full capacity. Refer to Chapter 6 In Case Of Trouble Removing Disk Manager and other drive translation software.

If adding a >504MB capacity drive into an existing installation, do not install the software drive translation that accompanies such a drive. Note that the existing smaller capacity non-LBA drives will not require reformatting.

Installing DOS

For first time installation, follow the standard methods of installing the DOS operating system onto your hard disk:

Place "Disk 1" of your DOS installation diskettes into the A: drive and type "A:\SETUP" at the A: prompt. Follow the normal DOS installation procedures and refer to your DOS manual for additional details. **OR**

Place a DOS bootable diskette into the A: drive. At the A: prompt, run your DOS FDISK utility program. Create a Primary partition onto the hard disk - the entire drive capacity should be accessible (if the entire capacity does not appear, refer to Chapter 6: In Case of Trouble). The utility program will continue until it asks you to put a DOS bootable floppy into the system and press a key to restart the system. After rebooting to a DOS bootable floppy, run the DOS FORMAT command with the /S - type "FORMAT C: /S" from the A: prompt. Refer to the DOS Operating System manual for installation and partitioning/ formatting additional hard disks.

Installing Microsoft Windows 3.1x or Windows'95

Follow the standard methods of installing Microsoft Windows onto your hard disk:

Place "Disk 1" of your WINDOWS installation diskettes into the A:

drive and type "A:\SETUP" at the A: prompt. Follow the normal WINDOWS installation procedure and refer to your WINDOWS manual for additional details.

The EIDE*PRO* Windows 3.1x Driver Setup

The EIDE*PRO* utility disk provides a driver setup utility "SETUP.EXE" which automatically installs Windows 3.1x or Windows for Workgroups 3.1x drivers. They are not to be used in any other Windows versions such as Windows95 or Windows NT which require NO additional Promise driver support.

The EIDE*PRO* Windows 3.1x drivers are supplied to maintain the virtual memory and file system "32-bit Disk/File Access" functions when using Drive translation and larger capacity hard drives. The standard Windows 3.1x driver will not support these functions with LBA drives and should be replaced.

Using the Automatic SETUP.EXE Drivers Setup Utility

Please follow the steps below to install the EIDE*PRO* Windows Driver:

1. Under Windows Program Manager, Main Group, click on "FILE" option.
2. Select "RUN".
3. Type "A:\Setup" then click the "OK" button and the Promise Setup program will initialize.
4. When the Thank You Box appears, click the "OK" button to continue.
5. To Install the Windows driver: In the next dialog box, "Menu Choices," select "Install EIDE*PRO* Windows drivers" and click "OK"

The installation is complete.

The Install function will modify the \WINDOWS\SYSTEM.INI file and copy the Promise Windows drivers to the "\WINDOWS\SYSTEM" directory. The pre-modified "SYSTEM.INI" is saved into the "\WINDOWS\" directory as "SYSTEM.0x" where "x" starts at "1"

and is incremented if ".0x" already exists.

The removal feature can be used to uninstall the driver and device driver line in the SYSTEM.INI for situations such as upgrading to Windows'95

To Remove the Windows driver:

In the next dialog box, "Menu Choices," select "Remove EIDE*PRO* Windows drivers" and click "OK"

Manually installing Windows 3.1x Drivers

It is recommended that the driver files PRO13.386 and PROCTRL.386 be copied to the Windows SYSTEM directory.

Check if the following line exists in the [386Enh] section of your SYSTEM.ini file.

[386Enh]

32BitDiskAccess=ON

If the statement does not exist, add it into the [386Enh] section. If the statement exists, but 32BitDiskAccess is set to "OFF", change it to "ON".

1) Remark out the "device=*int13" and "device=*wdctrl" statements

In the [386Enh] section of the \WINDOWS\SYSTEM.INI, add a ";" to the beginning of both device lines if they exist:

;device=*int13

;device=*wdctrl

2) Install the virtual device "PRO13.386" and "PROCTRL.386"

Add the following command lines in the [386Enh] section of the SYSTEM.INI file:

device=[drive:][\path\]PRO13.386

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Other Operating Systems

IBM OS/2 2.x and OS/2 3.0 Warp

The IBM default OS/2 3.0 Warp and updated OS/2 2.x driver "IBM1S506.ADD" will support the LBA drive translation used by the EIDE*PRO* to access large capacity EIDE drives. Refer to IBM documentation for driver support for IDE hard disks and ATAPI devices.

Microsoft Windows NT 3.1, 3.5x

The Microsoft default Windows NT drivers "ATDISK.SYS" will support the LBA drive translation used by the EIDE*PRO* to access large capacity EIDE drives. Refer to Microsoft documentation for driver support for IDE hard disk and ATAPI devices. Do not load Promise Windows 3.1x drivers for Windows NT installations.

NetWare 3.xx & 4.x

The Novell default NetWare drivers "IDE.DSK" and "ISADISK.DSK" will support EIDE/IDE drives used by the EIDE*PRO*. Note that these drivers should be loaded twice in the STARTUP.NCFto support two IDE ports on the EIDE*PRO*. Refer to Novell documentation.

Use of LBA translation with NetWare

The EIDE*PRO* BIOS should be completely DISABLED to disable LBA drive translation when using NetWare. LBA drive translation mode is not compatible with NetWare nor is it necessary. NetWare is capable of recognizing large capacity IDE drives without drive translation. Do NOT enable LBA drive translation for NetWare installations.

UNIX / LINUX

The UNIX default drivers for ST506 controllers will support drives used by the EIDE*PRO*. Refer to the UNIX documentation.

Use of LBA translation with UNIX

The EIDE*PRO* BIOS should be completely DISABLED to disable LBA drive translation when using UNIX. LBA drive translation mode is not compatible with UNIX nor is it necessary. UNIX is capable of recognizing large capacity IDE drives without drive translation. NOTE: The bootable partition must reside in the first 504MB of the drive. Do

NOT enable LBA drive translation for UNIX installations.

For LINUX versions that do not support LBA drive translation

Follow the explanation for the previous UNIX explanation.

For LINUX versions that do support LBA drive translation

You will want LBA drive translation enabled to boot straight to a LINUX partition that is >504MB in size or above the first 504MB.

In Case of Trouble

The following chapter is used to assist with troubleshooting conflicts and EIDE*PRO* installation problems. Also refer to the "README.TXT" file on the EIDE*PRO* driver and utility diskette for more recent information as well as the **PromiseOnline™** services listed in Appendix A.

Problems accessing previously formatted drives

Eliminate Master/Slave combination problems

Disable Onboard IDE controllers

IBM PS/1 and ValuePoint Systems

"Not Installed" Drive Type in Standard CMOS Setup enables LBA

Ontrack Disk Manager and other drive translation software

Partitioning and formatting IDE drive

ATAPI IDE CD-ROM Installation

Coexist with and boot to a SCSI adapter

QEMM Int76 ROM handler error

Windows for Workgroups 3.11 32-bit File Access

Problems accessing previously formatted drives

Previous DOS/Windows installations on hard disks >504MB must use LBA drive translation to be compatible with the EIDEPRO controller. When other methods are used, there may be symptoms where the drive is not bootable or is missing extended partitions or files. This can be the result of software drive translation or using other partitioning schemes besides LBA drive translation.

> NOTE: This does not apply to drives less than 504MB in capacity.

Refer to the following section "Ontrack Disk Manager and other drive translation software" which describes the removal process.

If there are drives typically specified at 540MB by the drive manufacturer that have been partitioned at the 504MB limit and not its full capacity, they should be backed up first, then repartitioned and reformatted with LBA drive translation enabled.

Eliminate Master/Slave combination problems

The EIDE*PRO* provides a workaround to master/slave problems that may exist when two IDE drives of different brands are attached to a single cable. With two hard disks in the system, it is possible to separate a master/slave combination by cabling one hard disk on the Primary (J1) IDE connector and one on the (J2) IDE connector. Both drives should be jumpered as Master (Single, master with no slave present) settings. In the standard CMOS Setup, indicate "Not Installed" or "None" for the D: Drive Type.

Disable Onboard IDE controllers

Disable any IDE controllers including those integrated onto the Mainboard to properly install the EIDE*PRO*. NOTE: Some manufacturers instruct to set "Not Installed" in the Mainboard CMOS Setup to disable the onboard IDE controller. However this may not free IRQ 14 and port address 1F0H which are needed for EIDE*PRO* operation.

If confirmed that the onboard IDE and/or floppy controller cannot disable, try disabling the EIDE*PRO* Primary (J1) IDE controller and/or floppy controller (Refer to Chapter 2 - EIDE*PRO* Jumper Settings) and attach the first two IDE hard disks to the Mainboard integrated primary IDE controller. The EIDE*PRO* BIOS will still provide LBA drive translation support for first two IDE drives installed on the Mainboard integrated IDE controller as well as for the third or fourth IDE drive on the EIDE*PRO* Secondary (J2) IDE controller.

IBM PS/1 and ValuePoint

The EIDEPRO BIOS will give support for LBA drive translation for up to 2 EIDE/IDE drives attached to the PS/1 or ValuePoint onboard IDE controller. The EIDEPRO Primary and Secondary IDE controllers and the floppy controllers must be disabled as well as the EIDEPRO Multi-I/O functions reconfigured to avoid conflicts.

"Not Installed" Drive Type in Standard CMOS Setup enables LBA

In the Mainboard Standard CMOS setup, you may indicate "Not Installed" or "None" to enable the EIDE*PRO* BIOS LBA drive translation as a substitute for "TYPE 1." The "Not Installed" setting may be more compatible for some Mainboard BIOS where "TYPE 1" fails or gives an error message.

Ontrack Disk Manager and other drive translation software

Drivers usually shipped on a diskette with large capacity hard disks are not compatible with the EIDE*PRO* LBA drive translation. Some of these software include Disk Manager and EZ Drive. The drivers sometimes display blue boxes that identify themselves during startup. Follow the procedure below:

WARNING: Use of the following procedures will result in data loss. Backup any necessary data before proceeding.

Sometimes FDISK cannot delete Disk Manager information from the boot sector. Follow these steps to remove Disk Manager drivers from the partition and boot sector:

1. Backup any necessary data first. All data will be lost during this process.
2. Make a DOS Bootable disk containing the FDISK and FORMAT utilities. Insert the disk into the A: drive and boot the system.
3. Restore the Boot sector: Type "FDISK /MBR <Enter>"; you should receive a blank line.
4. Use the DOS installation disks or follow the steps under "Partitioning and Formatting IDE drive(s)" in the next section.

Optional Removal Methods:

Disk Manager Erase Method

1. Boot to DOS Bootable disk in the A: Drive
2. Insert Disk Manager floppy; Type "DM<Enter>" to start Disk Manager
3. At the Menu, Press "<ALT>-T"
4. Select "Disk Subsystem Overview"
5. Press <CTRL><F10>. Answer Yes to Zero the Drive and Remove Disk Manager

EZ Drive Software Removal

1. Boot to DOS Bootable disk in the A: Drive
2. Insert EZ Drive floppy; Type "EZSETUP <Enter>" to start EZ Drive
3. Choose Disable EZ Drive

Partitioning and Formatting IDE drive(s)

The following section describes the process to manually partition and format a new high capacity IDE drive. The automatic DOS installation disk method is also recommended - refer to the DOS User manual.

In Standard CMOS setup, set "Type 1," "Not Installed," or "None" for greater than 504MB IDE drive(s).

Boot to DOS Bootable disk with FORMAT and FDISK utilities in the A: Drive.

Partition the drive(s): Type "FDISK <Enter>" and follow the steps to create a primary DOS partition. NOTE: Do not be alarmed when the size displayed by FDISK under "total disk capacity" of the drive is smaller than specified by the drive manufacturer. FDISK reports the unit 1MB=1,048,756 Bytes while drive specifications list 1MB=1,000,000 Bytes. Reboot to the floppy after completed.

Format the drive(s): Type "FORMAT C: /S <Enter>" and continue to format any additional drive letters.

ATAPI IDE CD-ROM Installation

The EIDE*PRO* controller features an ATAPI-ready IDE controller which supports an ATAPI IDE CD-ROM. Since the EIDE*PRO* is a standard IDE controller and its BIOS does not play a role supporting the CD-ROM, there are no special considerations to consider versus its compatibility. Under the DOS environment, a device driver is provided by the CD-ROM manufacturer that is loaded from the CONFIG.SYS and the EIDE*PRO* functions no different than a standard IDE controller. Follow the directions from the ATAPI CD-ROM manufacturer.

Coexist with and boot to a SCSI adapter

Set "Not Installed" or "None" in the Standard CMOS Setup Drive Types. Depending on whether the EIDE*PRO* or the SCSI card BIOS loads first determines which drive is the bootable C:.

Boot to SCSI

Configure the EIDE*PRO* BIOS to a higher address location than the SCSI adapter BIOS address.

For example: Change the EIDE*PRO* BIOS address to DC000H (See Chapter 2 - EIDE*PRO* Jumper Settings) and the SCSI Adapter to the C8000H.

Boot to IDE

Configure the EIDE*PRO* BIOS to a lower address location than the SCSI adapter BIOS address.

For example: Change the EIDE*PRO* BIOS address to C8000H (See Chapter 2 - EIDE*PRO* Jumper Settings) and the SCSI Adapter to the CC000H.

QEMM Int76 ROM handler error

With the QEMM memory management utility installed using the Stealth mode feature, use the "Optimize /ST" command option to add the proper exclusions. Or, manually edit the QEMM command line by adding "XSTI:76" or "XSTI=76" parameter to the CONFIG.SYS.

Device=C:\QEMM\QEMM386.SYS XSTI:76

Windows for Workgroups 3.11 32-bit File Access

The EIDE*PRO* is compatible with the software cache "32-bit File Access" in Windows for Workgroups 3.11. 32-bit File Access can be used for the drives on the Primary (J1) IDE controller but not drives on the Secondary (J2) IDE controller. There is no provision for Secondary IDE controller support from Microsoft's 32-bit File Access function.

NOTE: 32-bit Disk Access is a different function which is enabled system wide unlike 32-bit File Access which enables per individual drive. To maintain 32-bit Disk Access functions, keep the virtual memory swap file on drives on the Primary (J1) IDE controller.

Warranty Information

Limited Warranty

Promise Technology, Inc. ("Promise") warrants that for two (2) years from the time of the delivery to the original end user of the product, (a) the product will conform to Promise's specifications, and (b) the product will be free from defects in material and workmanship under normal use and service.

This warranty:

(a) applies only to products that are new and in their original cartons on the date of purchase;

(b) is not transferable; and

(c) is valid only when accompanied by a copy of the original purchase receipt.

This warranty shall not apply to defects resulting from the following causes:

- improper or inadequate maintenance by the end user
- unauthorized modification
- operation outside the environmental specification for the product
- abuse, result of an accident, misuse, negligence, misapplication, natural or personal disaster
- maintenance other than by Promise or an authorized service center.

Disclaimer of Other Warranties

This Warranty covers only parts and labor and excludes any coverage on software items except as expressly set above.

Except as expressly set forth above, Promise DISCLAIMS any warranties, express or implied, by statute or otherwise, regarding the product including, without limitation, any warranties for fitness for any purpose, quality, merchantability, non-infringement, or otherwise. Promise makes no warranty or representation concerning the suitability of any product for use with any other item. You assume full responsibility for selecting products and for

ensuring that the products selected are compatible and appropriate for use with other goods with which they will be used.

Promise DOES NOT WARRANT that any product is free from errors or that it will interface without any problems with your computer system. It is your responsibility to back up your computer or otherwise save important data before installing any product and to continue to back-up your important data regularly.

Promise's sole responsibility with respect to any product is, at Promise's election, to (a) replace the product with a conforming unit of the same or a superior product; (b) repair the product; or (c) recover the product and refund the purchase price for the product, less the amount of any damage and compensation for any use of the product. Promise shall not be liable for the cost of procuring substitute goods, or services, lost profits, unrealized savings, equipment damage, costs of recovering, reprogramming, or reproducing any programs or data stored in or used with the products, or for any other general, special, consequential, indirect, incidental, or punitive damages, whether in contract, tort, or otherwise, notwithstanding the failure of the essential purpose of the foregoing remedy and regardless of whether Promise has been advised of the possibility of such damages. Promise is not an insurer. If you desire insurance against such damage, you must obtain such insurance from another party.

Some states do not allow the exclusion or limitation of incidental or consequential damages for consumer product so the above limitation or exclusions may not apply to you.

This warranty gives specific legal rights, and you may also have other rights which vary from state to state. This limited warranty is governed by the laws of the state of California.

Contacting Technical Support

Promise Technical Support provides several support options for Promise users to access information and updates. We encourage using one of our electronic services which provide product information updates for the most efficient service and support.

If you decide to contact us, please have the following information available before reaching a Promise Technical Support technician:

1. Product Model & Serial #
2. BIOS and Driver Version Numbers (check the EIDEPRO BIOS banner and floppy label for version information)
3. Description of Problem
4. System Configuration
   - Mainboard and CPU type
   - Hard Drive Models
   - Other Controllers

These are the available Technical Support sources:

Internet E-Mail Support	PromiseOnline™ World Wide Web Page
Support@promise.com RecommendedTechnical Service	**http://www.promise.com** Tech Support; TP Documents, Drivers, Utilities

24 hr Bulletin Board Service	FAXBack Document Service
(408) 452-1267 Modem Settings: N/8/1 @14.4K Baud	**(408) 452-9160** Retrieve Document #2210; Call from FAX phone handset

Phone Technical Support	FAX Technical Support
(408) 452-1180 8:30-5:00p.m. M-F Pacific Standard Time	**(408) 452-9163** Attention to Technical Support

If you wish to write to us for support, address it to:

Promise Technology, Inc.
Attn: Technical Support
1460 Koll Circle
San Jose, CA 95112 USA

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Returning a Product for Repair

If you suspect the product is not working properly or if you have any questions about your product,

Contact our Technical Support Staff through one of our Technical Services with the following:

Product Model and Serial# (Required)
Return Shipping Address
Daytime Phone Number
Description of the Problem
Copy of original purchase invoice on hand

The technician can assist in determining whether the Product requires repair.

If the Product needs repair, our Technical Support Department representatives will issue a return merchandise authorization ("RMA") number.

Then return ONLY the specific defective part that is covered by the warranty (do not ship cables, manuals, diskettes, etc.) with a copy your proof of purchase to:

Promise Technology, Inc.
Customer Support Department
Attn: RMA# _____
1450 Koll Circle Suite 102
San Jose, CA 95112

You must follow the following packaging guidelines for returning products:

(a) Use the original shipping carton and packaging
(b) Include a summary of the problem(s) with product, return address, and daytime phone number
(c) Include a copy of proof of purchase
(d) With the supplied RMA#, label **"Attn: RMA#_____"** along with the Promise shipping address.

You are responsible for the cost of insurance and shipment on the product to Promise. Damage caused due to improper transportation or packaging is not covered under the above warranty.

In repairing the unit(s), Promise may elect to replace parts with new or reconditioned parts, or replace the entire unit with a new or reconditioned unit. In the event of a replacement, the replacement unit will be warranted for the remainder of the two (2) year period for the product or thirty days, whichever is longer.

Promise will pay for only standard return shipping charges. You will be required to pay for any shipping options such as express shipment you require.

Your Responsibilities

You are responsible for determining whether the product is appropriate for your use and will interface with your equipment without dysfunction or damage. You are responsible for backing up your data before you install any product and for regularly backing up your data after you install the product. Promise is not liable for any damage to equipment or data resulting from use of any product.