

Dual Channel, Enhanced BIOS, 16-Bit ISA Bus Adapter

HighSpeed Controller

EIDE Master ISA



New
510-353-7542
Technical Support Hotline
As of May 1st, 1996
please disregard the old number

User's Manual



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About this Manual

The purpose of this manual is to introduce you to your EIDE Master ISA Controller Board. It will guide you on how to configure and install the board for proper operation in your computer. Please save this manual for future reference in the event you wish to connect other devices to your system.

This manual is comprised of the following sections:

Chapter 1: Introduction

Introduces the EIDE Master ISA and its features.

Chapter 2: Quick Installation

Provides a quick summary of jumper settings for configuring the EIDE Master ISA for proper operation.

Chapter 3: Installation

Provides instructions on how to configure the EIDE Master ISA for proper operation, plus installation in your computer.

Chapter 4: Technical Reference

Provides the pin assignments for the disk drives.



Chapter 1

Introduction

1-1 Introducing the EIDE Master ISA

Congratulation on your purchase of the EIDE Master ISA Controller Board. Your EIDE Master ISA is a high-performance 16-bit dual channel controller for use in AT-compatible personal computers. It supports up to four IDE hard disk drives and two floppy disk drives up to 1.44MB (5.25" 360KB/1.2MB and/or 3.5" 720KB/1.44MB).

The EIDE Master ISA provides the latest in interface technology for connecting today's high-performance peripheral devices to your computer. The EIDE Master ISA is the only ISA IDE card available on the current market that provides Multiword DMA transfer hardware (up to 8.33 MB/sec). It breaks the bottleneck of IDE performance.

It supports up to four IDE devices up to 8.4GB each. In other words, you can connect multi-gigabyte drives to your computer, breaking the existing 528MB drive size limitation.

The Enhanced Smart BIOS is a unique featured ROM BIOS. It will auto-configure the IDE hard drive parameters without involving any setup procedures in the mainboard setup utility. The EIDE Master ISA has the ability to prevent data loss from parameter setting mistakes.

The EIDE Master ISA's Enhanced Smart BIOS assigns the physical drive number automatically once you have done setting up the master and slave configurations of your hard drives.

1-1.1 Key Features and Benefits

- Compatible with AT-compatible computers
- Supports up to four IDE hard disk drives
- Supports up to two 5.25" 360KB/1.2MB and/or 3.5" 720KB/1.44MB floppy drives
- Doubles your IDE performance with a transfer rate of 8.33 MB/sec through the Multiword DMA transfer hardware design
- Auto-configures your IDE hard drive with the Enhanced Smart BIOS feature (you do not need to use any manual setup procedures)
- Prevents data loss by eliminating the chance of parameter setting mistakes
- Supports ATA-2 LBA mode protocol (no device driver is needed)

1-1.2 Enhanced IDE Interface Features

- Supports dual IDE channels, both primary and secondary
- You can individually enable or disable each channel
- Supports up to four IDE devices, including most brands of hard disk drives, CD-ROM drives, and tape backup drives
- Supports ATAPI interface for EIDE CD-ROM drives and other non-hard type devices
- Provides Multiword DMA transfer hardware with a transfer rate of up to 8.33 MB/sec)
- Doubles your IDE performance with high transfer rate

1-1.3 Floppy Drive Interface Features

- Supports 3¹/₂" and 5¹/₄" floppy disk drives
- Supports formats of 720KB/1.44MB and 360KB/1.2MB
- You can enable or disable the floppy controller

1-1.4 Enhanced Smart BIOS Features

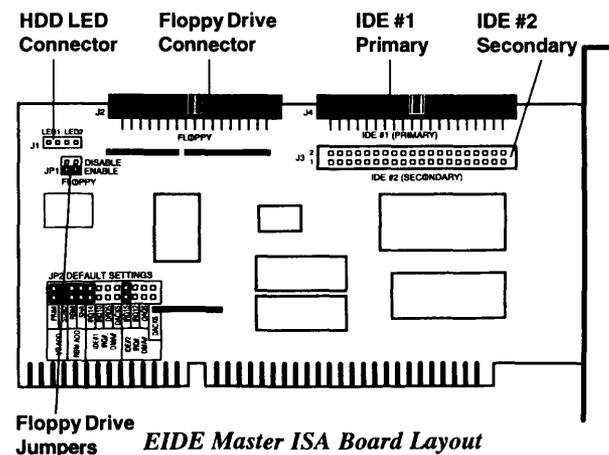
- Enhanced BIOS is fully compatible with ATA-2 LBA mode protocol
- On-board Enhanced Smart BIOS supports drive partitions greater than 528MB; directly supports drives up to 8.4GB
- Auto-configures your IDE hard drive with the parameters without running your CMOS setup.
- Prevents data loss by eliminating the chance of parameter setting mistakes
- Assigns the physical drive number (C:, D:, etc.) automatically once you have done setting up the master and slave configurations of your hard drives
- Ideal for rack solutions

1-2 Package Contents

Before installing your EIDE Master ISA, verify that the following items are included in the packaging carton:

- One 16-bit EIDE Master ISA controller Board
- All necessary cables and hardware
- This comprehensive User's Manual

Please consult your dealer if any item is damaged or missing



Chapter 2 Quick Installation

This chapter provides a quick summary of jumper settings for configuring the EIDE Master ISA for proper operation in your system. Also refer to *Chapter 3* if you need further information on how to configure and install the board in your system.

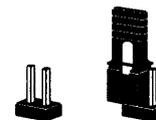
2-1 Connectors

- J1: LED1/LED2 indicators of IDE #1 and IDE #2
- J2: Floppy port
- J3: Secondary IDE port (IDE #2)
- J4: Primary IDE port (IDE #1)

2-2 Jumpers

2-2.1 Setting Jumpers

When setting jumpers, the terms "open" and "closed" for 2-pin jumper blocks JP1 and JP2 are defined as follows:



Open
(No Jumper Installed)

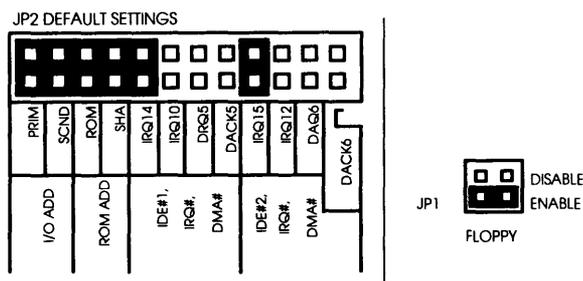


Closed
(Jumper Installed)

2-2.2 Factory Configured Settings

The following table and figure identify the default factory configured jumper settings.

Description	Jumper	Default Setting
Enable IDE #1 (Primary) channel	JP2 I/O Add	PRIM - Closed
Enable IDE #2 (Secondary) channel	JP2 I/O Add	SCND - Closed
Set ROM Address at C800 = 0000	JP2 ROM Add	ROM - Closed SHA - Closed
Set IDE #1 (Primary) IRQ14 and no DMA	JP2 IDE #1 IRQ # DMA#	IRQ14 - Closed IRQ10 - Open DRQ5 - Open DACK5 - Open
Set IDE #2 (Secondary) IRQ15 and no DMA	JP2 IDE #2 IRQ # DMA#	IRQ15 - Closed IRQ12 - Open DRQ6 - Open DACK6 - Open
Enable Floppy Drive Controller	JP1	Disable - Open Enable - Closed



Factor Set Jumper Configuration

Chapter 3 Installation

This chapter will guide you through the installation of your EIDE Master ISA board. It includes instructions on:

- how to properly configure the jumpers on your EIDE Master ISA board
- how to install your EIDE Master ISA board in your computer

3-1 Configuring the EIDE Master ISA

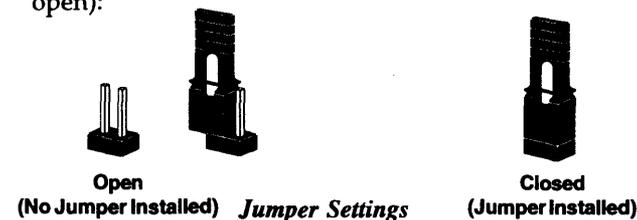
Prior to installing the EIDE Master ISA board in your computer, verify the jumper switches on the board for proper operation. To do this, you must know the following about your computer:

Are there any other hard and/or floppy disk drive controllers installed in your computer?

After determining your computer's configuration, make sure the port addresses and IRQs set on the EIDE Master ISA board are different from any existing ports in your system. A conflict results when two addresses are the same. Refer to the next sections for determining the correct jumper settings for configuring ports on the board.

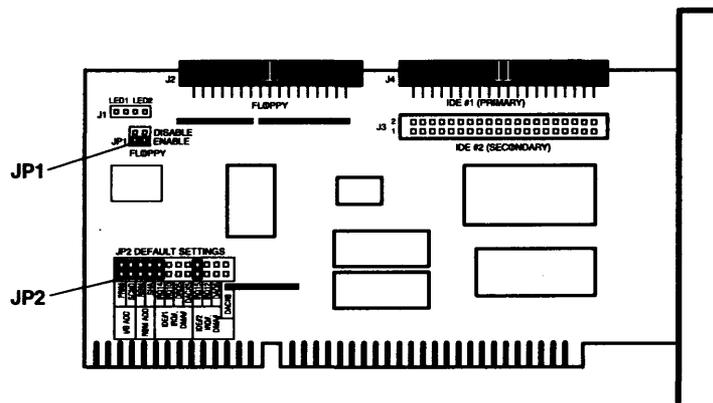
3-1.1 Setting Jumpers

The EIDE Master ISA options are set via 2-pin jumper blocks on JP1 and JP2. The following illustrates the possible jumper position when the pins are installed or not (closed or open):

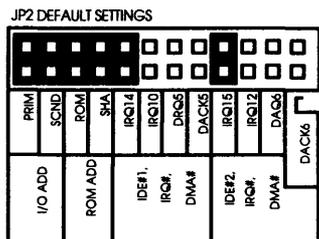


3-1.2 Factory Default Jumper Settings

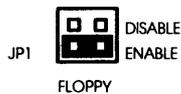
The factory default jumper settings for the EIDE Master ISA for both JP1 and JP2 are as follows:



EIDE Master ISA Jumper Locations



JP2 (IDE) Defaults



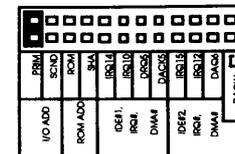
JP1 (Floppy) Defaults

Factory Set Jumper Configuration

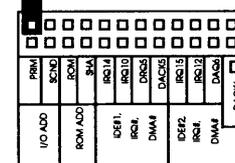
3-1.3 I/O ADD Settings

The I/O ADD denotes a primary and secondary setting that can be enabled or disabled. Use the **PRIM** jumper on jumper block **JP2** to *enable/disable* the primary setting.

Enable IDE#1 (Primary)
JP2 I/O Add - PRIM Closed

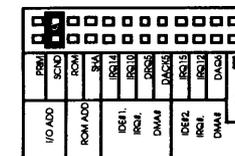


Disable IDE#1 (Primary)
JP2 I/O Add - PRIM Open

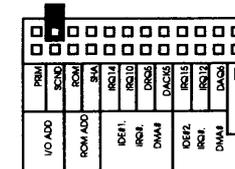


The secondary can be enabled or disabled, as follows. Use the **SCND** jumper on jumper block **JP2** to *enable/disable* the secondary setting. The I/O Port Address is included.

Enable IDE#2 (Secondary)
JP2 I/O Add - SCND Closed



Disable IDE#2 (Secondary)
JP2 I/O Add - SCND Open



Shaded areas are factory default

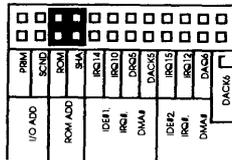
3-1.4 ROM ADD Settings

The ROM ADD denotes EBIOS ROM Address settings. Use ROM and SHA jumpers on jumper block JP2 to set different ROM addresses.

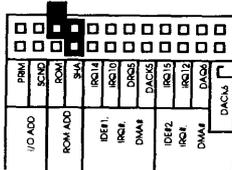
ROM AD

JP2

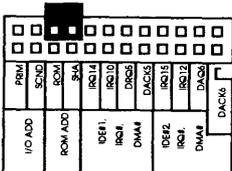
EBIOS ROM Address at C800 : 0000
 JP2 ROM Add - ROM Closed
 SHA Closed



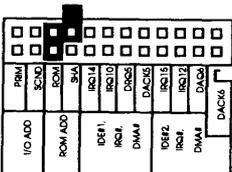
EBIOS ROM Address at D800 : 0000
 JP2 ROM Add - ROM Open
 SHA Closed



EBIOS ROM Address at DC00 : 0000
 JP2 ROM Add - ROM Open
 SHA Open



EBIOS ROM Address at CC00 : 0000
 JP2 ROM Add - ROM Closed
 SHA Open

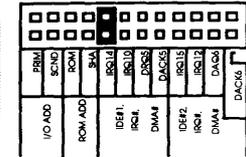


Shaded areas are factory default

3-2.4 Primary IDE IRQ Settings

The IDE#1 has a factory set default of IRQ14 and must set at IRQ14

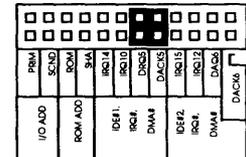
Select IRQ14 for IDE#1 (Primary)
 JP2, IDE#1, IRQ#, DMA# - IRQ14 Closed



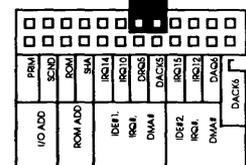
3-2.5 Primary IDE DMA Settings

The IDE#1's factory default for DMA settings is disabled. Use the DRQ5 and DACK5 jumpers on jumper block JP2 to enable/disable the DMA settings.

IDE#1 Primary DMA#5 Selected
 JP2, IDE#1, IRQ#, DMA#, DRQ5 Closed
 DACK5 Closed



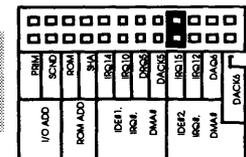
IDE#1 Primary No DMA Used
 JP2, IDE#1, IRQ#, DMA#, DRQ5 Open
 DACK5 Open



3-2.6 Secondary IDE IRQ Settings

The IDE#2 has a factory set default of IRQ15 and must be set at IRQ15.

Select IRQ15 for IDE#2 (Secondary)
 JP2, IDE#2, IRQ#, DMA# - IRQ15 Closed



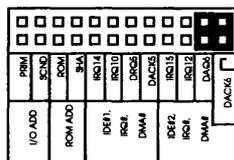
Shaded areas are factory default

3-2.7 Secondary IDE DMA Settings

The IDE#2's factory default for DMA settings is disabled. Use the DRQ6 and DACK6 jumpers on jumper block JP2 to enable/disable the DMA settings.

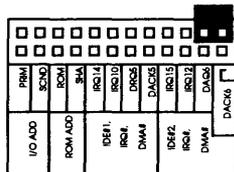
**IDE#2 Secondary
DMA#6 Selected**

JP2, IDE#2, IRQ#, DMA#, DRQ6 Closed
DACK6 Closed



**IDE#2 Secondary
No DMA Used**

JP2, IDE#2, IRQ#, DMA#, DRQ6 Open
DACK6 Open

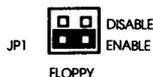


3-2.8 Floppy Disk Drive Controller Settings

The floppy disk drive controller interface is factory set for normal operation (enabled). If you have another floppy disk controller in your system, the floppy controller on the EIDE Master ISA can be disabled by changing the ENABLE and DISABLE jumpers on jumper block JP1.

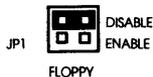
Floppy Drive Enabled

JP1 Disable - Open
Enable - Closed



Floppy Drive Disabled

JP1 Disable - Closed
Enable - Open



Shaded areas are factory default

3-3 Installing the EIDE Master ISA

After verifying the jumper settings of your EIDE Master ISA, proceed with the following instructions to install it in your computer. General instructions for installing the board are given since the design of computer cases varies. Refer to your computer's reference manual whenever in doubt.

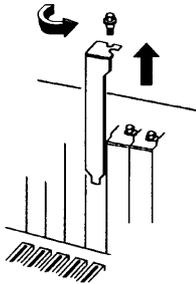
1. Turn OFF the power to your computer and any other connected peripheral devices. Follow the precautions for static electricity discharge.

WARNING: STATIC ELECTRICITY DISCHARGE may permanently damage your system. In order to avoid possible static electricity discharge during installation procedures, please follow the guidelines below:

- Discharge any static electricity build up in your body by touching a large grounded metal surface such as the computer case if plugged in, a metal window frame, refrigerator, or water tap for a few seconds.
- During installation procedures, avoid any contact with internal parts. Handle cards only by their edges.

WARNING: Disconnect the AC power source before removing the cover.

2. Unplug all power cords and cables from the back of the computer. (Be sure to note the cable connections for reconnection when the installation is complete.)
3. Remove your computer's cover by removing its mounting screws with a screwdriver. Slide the cover OFF.
4. Your EIDE Master ISA board must be installed in an available 16-bit expansion slot.
5. Remove the board's selected slot cover by unscrewing the holding screw and sliding it out. Save this screw for securing the EIDE Master ISA board after it's installed.

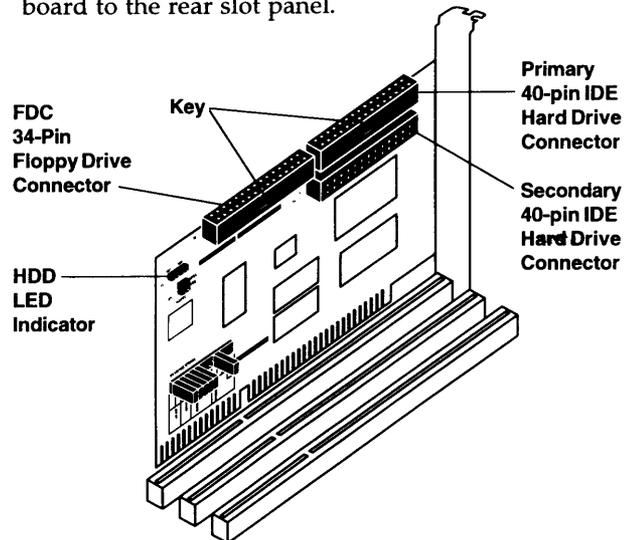


Remove the Slot Cover

- To install the EIDE Master ISA, carefully align the board's bus connector with the selected ISA-bus connector slot on the motherboard. Push the board down firmly, but gently, until it is well seated.

NOTE: Hold the board by its external edges only. Try to avoid touching the components, connectors or pins.

- Replace the slot cover holding the screw to secure the board to the rear slot panel.



Installing the EIDE Master ISA and Connector Bracket

3-4 Connecting the Disk Drives

If you have another hard disk controller in your computer, you should remove it. There is no guarantee that the EIDE Master ISA will operate properly if both controllers are enabled in the system.

3-4.1 IDE Hard Disk Drive

- Attach the 40-pin ribbon cable that was included with the EIDE Master ISA to the **IDE#1 (PRIMARY)** connector on the EIDE Master ISA board (**J4**). Note that the connector is keyed to insure that both pin 1s are matched. Make sure the connector is well seated when making the connection.
- After installing the hard drive(s) in the computer, attach the other end of the 40-pin cable to the connector edge of the hard disk drive. Note that the ribbon cable has two connectors. If you have one drive, connect the last, end connector to the drive (drive C). If you have two drives, the middle connector attaches to drive **D**. Make certain that pin 1 on the cable matches pin 1 on the hard disk drive when making the connections.
- If your computer has a hard disk activity LED, attach the connecting LED wire to the **J14**-pin connector on the EIDE Master ISA.

3-4.2 Floppy Disk Drive

- If you have another floppy disk controller in your computer, you may experience address conflicts between the controllers. You should disable one of the controllers.
- Attach the 34-pin ribbon cable that was included with the EIDE Master ISA to connector **FLOPPY** on the board (**J2**). Note that the connector is keyed to insure that both pin 1s are matched. Make sure the connector is well seated when making the connection.

3. After installing the floppy drive(s) in the computer, attach the other end of the 34-pin cable to the connector edge of the floppy disk drive. Note that the ribbon cable has two connectors. If you have one drive, connect the last, end connector to the drive (drive A). If you have two floppy drives, the middle connector attaches to drive B. Make certain that pin 1 on the cable matches pin 1 on the drive when making the connections.

After making all your internal connections, replace the computer's cover and screws. Then reconnect all power cords and cables to the back of the computer and make any new connections to the EIDE Master ISA's ports.

Your EIDE Master ISA board is now installed. You need to set your drive C:/ as type 1 to indicate there is at least one IDE drive. If you enabled the shadow ROM function, make sure the RAMs are not write protect. The Smart Enhanced BIOS will automatically setup your CMOS SETUP program.



Chapter 4 Technical Reference

This chapter provides the pin assignments for the disk drives, serial, parallel and game port connectors on the EIDE Master ISA Controller Board.

4-1 Connector Pin Assignments

4-1.1 IDE Interface (J3 & J4)

Pin assignments for the IDE 40-pin hard disk interface connector.

Pin	Function	Pin	Function
1	-Host Reset	21	Reserved
2	Ground	22	Ground
3	Host Data 7	23	-HIOW
4	Host Data 8	24	Ground
5	Host Data 6	25	-HIOR
6	Host Data 9	26	Ground
7	Host Data 5	27	Reserved
8	Host Data 10	28	Host ALE
9	Host Data 4	29	Reserved
10	Host Data 11	30	Ground
11	Host Data 3	31	IRQ14
12	Host Data 12	32	-Host ADD1
13	Host Data 2	33	Host ADD1
14	Host Data 13	34	-PDIAG
15	Host Data 1	35	-Host ADD0
16	Host Data 14	36	-Host ADD2
17	Host Data 0	37	Host CS0\0
18	Host Data 15	38	-Host CS1
19	Ground	39	-Host SLV/ACT
20	Key	40	Ground

4-1.2 Floppy Disk Interface (J2)

Pin assignments for the FDC 34-pin floppy disk interface connector.

Pin	Function	Pin	Function
1	Ground	18	-Direction
2	Reduced Write	19	Ground
3	Ground	20	-Step
4	Reserved	21	Ground
5	Ground	22	-Write Data
6	Reserved	23	Ground
7	Ground	24	-Write Gate
8	-Index	25	Ground
9	Ground	26	-Track 0
10	-Motor0	27	Ground
11	Ground	28	-Write Pro
12	-Drive Sel 1	29	Ground
13	Ground	30	-Read Data
14	-Drive Sel 0	31	Ground
15	Ground	32	-Side
16	-Motor 1	33	Ground
17	Ground	34	-Disk Change

4-1.3 HDD Activity Indicator LED (J1)

Pin assignments for the 4-pin HDD LED connector.

Pin No.	Function
1	LED Anode (+) for IDE #1
2	LED Cathode (-) for IDE #1
3	LED Cathode (-) for IDE #2
4	LED Anode (+) for IDE #2