HPT370 RAID Controller Guide

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1. Introduction of RAID

Thank you for purchasing ABIT's latest motherboard with RAID function. Please read this guide as a reference for setting up the RAID BIOS and installing the driver software of this motherboard. This motherboard uses the HighPoint 370 controller which allows for RAID.

1-1. What is RAID?

RAID (Redundant Array of Inexpensive/Independent Disks) technology was developed to offer a combination of outstanding data availability, excellent performance, and high capacity that one single disk drive can not meet up with. A RAID array is defined as two or more disks grouped together to appear as one single device to the host system, which can tolerate the failure of a drive without losing data, and which can operate independently from each other.

To manage MTBF (Mean Time Between Failures) and prevent any single drive failure causing data loss within an array, UC Berkeley scientists proposed five types of redundant array architectures, defining them as RAID levels 1 through 5. Each RAID level has its own strengths and weaknesses, and is well

suited for certain types of applications and computing environments. RAID 1, RAID 3 and RAID 5 of these five types are commonly used. RAID 2 and RAID 4 do not offer any significant advantages over these other types. RAID 3 is designed for single-user or data-intensive environments, such as imaging or data acquisition that access extremely large sequential records. This leaves RAID 1 and RAID 5 as the RAID levels is applicable for networked and transaction processing-based environments utilizing NetWare, Windows NT, Unix, and OS/2.

In addition to these five redundant array architectures, it has become popular to refer to a non-redundant array of disk drives as RAID 0 array.

1-2. Why RAID?

Data security is a very important issue for system administrators. They have to adopt efficient methods of data protection to guard against potential losses due to drive failures. Tape-based backups are used to be one solution for data security, but this method is becoming a task more difficult. Slow, cumbersome tape backup solutions lose their effectiveness for servers and workstations.

RAID technology is another solution for data security. There are a number of factors responsible for the growing adoption of arrays for critical network storage. Because today's applications create larger files, the need for network storage has proportionately increased. To accommodate expanding storage requirements, users are adding disk drives --- raising the probability of drive failures. In addition, the development of CPU speed has exceeded data transfer rates to storage media, causing I/O bottlenecks for networking application.

RAID technology overcomes these challenges by providing a combination of outstanding data availability, extraordinary and highly scalable performance, as well as high capacity. RAID provides real-time data rebuild when a disk drive fails, increasing system uptime and network availability, while protecting against the loss of data. Multiple drives working together also increases system performance.

1-3. The RAID levels

RAID Level 0:



Striped Disk Array without Fault Tolerance

RAID 0 is typically defined as a non-redundant collection of striped disk drives. It doesn't provide data protection but it offers very high data throughput, especially for large files.

RAID 0 does not deliver any fault tolerance. All data is lost if any drive in the array fails. It is intended for noncritical data requiring high performance. Simply put, RAID 0 splits the information in two, with half of the information going to each hard disk. Thus, performance is quickened by this approach.

RAID Level 1



RAID Level 2



Mirroring and Duplexing

RAID 1 provides 100% redundancy by mirroring one drive to another one. In the event of a disk drive failure, the array controller will automatically switch the read/write activity to another drive.

Each individual drive can execute simultaneous read operations. Mirroring thus doubles the read performance of a single drive and leaves the write performance unchanged.

RAID 1 is a good entry-level redundant system, since only two drives are required. However, the cost of RAID 1 is higher because one drive has to be used to store duplicate data.

Disk Striping with error-correction code (ECC)

RAID 2, which uses Hamming error correction codes, is intended for use with drives which do not have built-in error detection. Because the check method of Hamming code is very complicated, and more than one drive is required to store ECC information, RAID 2 offers no significant advantages over RAID 3.

RAID Level 3



Parallel transfer with parity

RAID 3 uses a separate drive to store parity and stripes data on a byte-by-byte basis across all of the data disks in the array.

Because each I/O accesses all drives in the array, RAID 3 does not support multiple, simultaneous read/write requests. It is optimized for large, sequential data requests.

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RAID Level 4



Independent Data disks with shared parity disk

RAID 4 is identical to RAID 3 except the block level stripes are used.

RAID 4 supports multiple simultaneous read requests. However, since all write operations require that parity data to be updated each time, they can not be overlapped. And so the RAID 4 offers no significant advantages over RAID5.

RAID Level 5



Independent Data disks with distributed parity blocks

RAID 5 also stripes data at a block level across several drives. But it distributes parity among the drives, this avoids the write bottleneck caused by the single dedicated parity drive. Each drive takes turns storing parity information for a different series of stripes. RAID 5 can execute read/write to disk drives either in parallel or independently.

1-4. Which RAID level should I use?

Many different disk array configurations are possible, depending on end-user requirements and the goals of the manufacturer. Each controller design has a different functionality to accomplish specific performance and data availability goals. Therefore, no individual RAID level is inherently superior to any other. Each of the five array architectures is well suited for certain types of applications and computing environments. The follow table summarizes the strengths and weaknesses of each RAID level.

RAID Level	Min. No. of Drives	Description	Characteristics / Strengths	Weaknesses
RAID 0	2	Striped Disk Array without	Highest I/O Performance Very simple design	 No redundancy One drive fails
		Fault Tolerance	Easy to implement	all data is lost
RAID 1	2	• Mirroring and Duplexing	 100% redundancy of data Twice the Read transaction rate of a single disk, same Write transaction rate as single a disk Simplest RAID storage subsystem design 	High redundancy cost overhead

	1			
RAID 2 RAID 3	Not used in LAN	Disk Striping with error- correction code (ECC) Parallel transfer	 Previously used for RAM error environments correction (known as Hamming Code) and in disk drives before the use of embedded error correction Very high Read data transfer rate 	No practical use Doesn't
		with parity	 Very high Write data transfer rate Excellent performance for large, sequential data requests Low ratio of ECC (Parity) disks to data disks means high efficiency 	support multiple, simultaneous Read and Write requests • Transaction rate equal to that of a single disk drive at best (if spindles are synchronized)
RAID 4	3	Independent Data disks with shared parity disk	 Very high Read data transaction rate High aggregate Read transfer rate Low ratio of ECC (Parity) disks to data disks means high efficiency 	• Worst Write transaction rate and Write aggregate transfer rate
RAID 5	3	Independent Data disks with distributed parity blocks	 Highest Read data transaction rate Medium Write data transaction rate Best cost/performance for transaction- oriented networks Supports multiple, simultaneous Read and Write Low ratio of ECC (Parity) disks to data disks means high efficiency 	• Write performance is slower than RAID 0 or RAID1

2. The features of RAID on this motherboard

This motherboard supports Striping (RAID 0), Mirroring (RAID 1), or Striping/Mirroring (RAID 0+1) operation. For the striping operation, the identical drives can read and write data in parallel to increase performance. The Mirroring operation creates a complete backup of your files. Striping with Mirroring operation offers both high read/write performance and fault tolerance although requiring 4 hard disks in order to do so.

2-1. Setting up RAID on this motherboard

Enter Advanced BIOS Features in the BIOS setup. Change the settings of First Boot Device, Second Boot Device and Third Boot Device to read ATA - 100. See the figure below:

CMOS Setup Utility - C Ad	opyright (C) 1984–20 vanced BIOS Features	00 f	Award Software
Virus Warning CPULLougl 1 Cacho	Disabled Epabled	4	Item Help
CPU Level 2 Cache CPU L2 Cache ECC Checking	Enabled Enabled	L	Menu Level 🕞
Processor Number Feature Quick Power Un Self lest	Enabled Enabled	L	Allows the system to skip certain tests
Second Boot Device		L	while booting. This will decrease the time
Boot-Other_Device Swap Floppy Drive	Enabled Disabled		system
Boot Up Floppy Seek Boot Up NumLock Status TDE HDD Block Mode	Disabled Off Epabled		
Typematic Rate Setting × Typematic Rate (Cars/Sec)	Disabled 30		
x Typematic Delay (Msec) Security Option	250 Setup New OS2		
Report No FDD For WIN 95	Non-USZ No	÷	
Video BIUS Shadow C8000-CBFFF Shadow CC000-CEEE Shadow	Enabled Disabled Disabled	L	
D0000-D3FFF Shadow D4000-D7FFF Shadow	Disabled Disabled	L	
D8000-DBFFF Shadow DC000-DFFFF Shadow Dolay TDE Twitial (Soc)	Disabled Disabled	ļ	
t↓++:Move Enter:Select +/-/	PU/PD:Value F10:Save Fail-Safe Defaults	e E	ESC:Exit F1:General Help 7:Optimized Defaults

2-2. The BIOS setting menu

Reboot your system. Press <CTRL> and <H> key while booting up the system to enter the BIOS setting menu. The main menu of BIOS Setting Utility appears as shown below:

. Create RAID . Delete RAID . Duplicate Mirror : . Create Spare Disk . Remove Spare Disk . Set Drive Mode . Select Bost Disk	Dåsk	Create a F hard disks HFT3xx	AID Array attached	v with th 1 to the
		Fl: Via f.i: Mor Enter: Co Esc: Re	w Array S To next ofirm the turn to to	Status t item selecti op menu
Channal Status	Drive Name	Mode	S1.ze (M)	Status
Channel				
Channel Primary Master Primary Slave	QUANTUM FIREBALL CR4.3 No Drive	UDMA4	4209	HDDO

To select the option in the menu, you may:

• Press F1 to view array status.

- Press $\uparrow \downarrow$ (up, down arrow) to choose the option you want to confirm or to modify.
- Press Enter to confirm the selection.
- Press **Esc** to return to top menu.

Create RAID

This item allows you to create a RAID array.

After you had selected the function you want in the main menus, you may press the <Enter> key to enter the sub menu as shown below:

Create New Array 1. Array Mode 2. Select Disk Drive 3. Block Size 4. Start Creation Pre-	Array 81 Striping (RAID 0) s 64K Docess	Select the a mode for the	ppropri desire	ated RAI d array
		F1: View T.J: Move Enter: Confi Esc: Retur	Array S to next Lrm the rn to to	Status : itém :selectio :p menu
Channel Status Channel	Drive Name	Mode Si	.ze(M)	Status
Primary Master Primary Slave	QUANTUM FIREBALL CR4.3	UDMA4	4209	HDDD
Sacondary Mastar	QUANTUM FIREBALL CR4.3 No Drive		4209	HDD1

Array Mode:

This item allows you to select the appropriate RAID mode for the desired array. There are four modes to choose.

- Striping (RAID 0): This item is recommended for high performance usage. Requires at least 2 disks.
- Mirror (RAID 1): This item is recommended for data security usage. Requires at least 2 disks.
- Striping and Mirror (RAID 0+1): This item is recommended for data security and high performance usage. Allows Mirroring with a Strip Array.
- Span (JBOD): This item is recommended for high capacity without redundancy or performance features usage. Requires at least 2 disks.

Select Disk Drives:

This item allows you to select the disk drives to be used with the RAID array.

<u>Block Size:</u>

This item allows you to select the block size of the RAID array. There are five options: 4K, 8K, 16K, 32K, and 64K.

Start Creation Process:

After you have made your selection, choose this item and press <Enter> to start creation.

Delete RAID

This item allows you to remove a RAID Array.

Note: After you have made and confirmed this selection, all the data stored in the hard disk will be lost!

Duplicate Mirror Disk

This item allows you to select the disk you wish to duplicate in preparation for a "Mirror Disk Array".

After you have selected the function you want in the main menu, you may press the <Enter> key to enter the sub menu as shown below:

1. Select Source Disk: 2. Select Target Disk: 3. Start Duplication P	Select the Source Disk. The Source Disk Size must be smaller or equal to the Target Disk Size			
		F1: Vie f.J: Mov Enter: Cor Esc: Ret	w Array S to next ofirm the curn to to	Status item selectic op menu
Channel Status Channel	Drive Name	Mode	Size(M)	Status
Primary Master QU Primary Slave No	JANTUM FIREBALL CR4.3	UDMR4	4209	HDD0
Secondary Master Q	JANTUM FIREBALL CR4.3		4209	HDD1

- Select Source Disk: This item is to select the source disk. The size of source disk must be smaller or
 equal to the one of target disk.
- Select Target Disk: This item is to select the target disk. The size of target disk must be greater or
 equal to the one of source disk.
- Start Duplicating Process: After you had selected this item, the BIOS setting will take up to 30
 minutes to run the duplication. Please wait or you may press <Esc> to cancel.

Create Spare Disk

This item allows you to select the disk to be used as a spare for a Mirror Disk Array.

Remove Spare Disk

This item allows you to remove the spare disk from a Mirror Disk Array.

Set Drive Mode

This item allows you to select the drive transfer mode for the hard disk(s).

Use the up/down arrow to select the menu option to "Set Drive Mode" and press <Enter>. In the Channel

Status, select the channel you would like to set and press \leq Enter>, there will comes out an asterisk mark in the parentheses indicating that the channel selection had be done. Choose the mode from the pop-up menu. You can choose from PIO 0 ~ 4, MW DMA 0 ~ 2, and UDMA 0 ~ 5.

1. Create RAID 2. Delete RAID 3. Duplicate Mi 4. Create Spare 5. Remove Spare	PIC 0 PIC 1 PIC 2 PIC 3 PIC 4		Select the mode for th attached to	drive tr e hard d the HPT	ansfer isk(s) 3xx
6. Sat Drive Mo	MW DMA U MW DMA 1 MW DMA 2 UDMA 0 UDMA 1 UDMA 2 UDMA 3 UDMA 4		F1: View f,l: Move Enter: Conf Esc: Retu	Array S to next 1rm the Irm to to	itatus item selectio p menu
Channel	UDMA 5	Name	Mode S	ize(M)	Status
(*) Primary Maste	T QUANTUM FIREBA	LL CR4.3	UDMA4	4209	HDDO
() Secondary Ma Secondary Side	ster QUANTUM FIREBA No Drive	LL C R4 .3		4209	HDD1

Select Boot Disk

This item allows you to select the boot disk among the hard disk(s).

 Creste RAID Duplicate Mirror Di Create Spare Disk Remove Spare Disk Set Drive Mode Set Drive Mode 	ek	Select th the hard the HPT3x	e hoot di s di sk(s) e t x	k among tach ed to
		F1: Vi f,t: Ma Enter: Ca	ew Array S we to next	Status t <mark>ite</mark> m selectio
		Esc: R	turn to te	p monu
Channel Status	Drive Name	Esc; Re	Size(M)	Status
Channel Status Channel (*) Primary Master QU Primary Slave No	Drive Name JANTUM FIREBALL CR4.3	Esc: Re Mode UDMA4	Size(M) 4209	Status HDD0

Use the up/down arrow to select the menu option to "Select Boot Disk" and press <Enter>. In the Channel Status, select the channel you would like to set as bootable disk and press <Enter>, there will comes out an asterisk mark in the parentheses indicating that the channel selection had be done.

3. Software installation

Here we will show you the driver installation procedure under various operating systems.

3-1. DOS

This IDE RAID card BIOS supports DOS 5.x (or above) and Windows 3.1x without the software driver.

3-2. Windows 9x



Step 1: After the Windows 9x operating system had been installed and rebooted successfully, go to the "Control Panel" → "System Properties"
→ "Device Manager". You can see the driver is not yet installed, and there is a device of "? PCI Mass Storage Controller" under "Other devices".



Step 2: Click right button of your mouse on the "? PCI Mass Storage Controller", and then go to "Driver" tab. Click "Update Driver" to go to next step.

Update Device Driver V	/izard
	This wizard searches for updated drivers for:
	PCI Mass Storage Controller
	A device driver is a software program that makes a hardware device work.
	Upgrading to a newer version of a device driver may improve the performance of your hardware device or add functionality.
	< <u>B</u> ack Next> Cancel

Step 3: The wizard is going to install the PCI Mass Storage Controller. Click "<u>Next</u> >" to go to next step.



Step 4: Choose "Display a list of all the drivers in a specific location..." and click "Next >" to go on.



Step 5: Choose "SCSI controllers" and click "Next >" to go on.

Update Device Driver Wizar Select the manufactur disk that contains the driver, click Finish.	d er and model of your hardware device. If you have a updated driver, click Have Disk. To install the updated
Manufacturers: Advance Advancy Advancy Advancy Advancy Bustogic Porman Portology	Moglels: Adaptec AHA 150 X/1510/152X/AIC-RX80 SCS1 Adaptec Adaptec AHA 1510 SCS1 Host Adapter Adaptec AHA 152X/AHA 1510 SCS1 Host Adapter Adaptec AHA 154X/AHA 1510 SCS1 Host Adapter Adapter AHA 154X/AHA 154X/AHA 1510 SCS1 Host Adapter Adapter AHA 154X/AHA
	< Back Next > Cancel

Step 6: Click "Have Disk..." to go on.



Step 7: Insert the driver disk and type the path in the text box "a:\WIN" ("a:\" is your floppy drive letter), or "E:\Drivers\hpt370\Win9x" (E:\ is your CD-ROM drive letter).

Click "OK" to go on.

Update	Device Driver Wizard
¢	Select the manufacturer and model of your hardware device. If you have a disk that contains the updated driver, click Have Disk. To install the updated driver, click Finish.
Models:	
HPT37	0 LIDMA/ATA100 RAID Controller [6-16-2000]
	Have Disk
	< Back Next> Cancel

Step 8: Choose "HPT370 UDMA/ATA100 RAID Controller" and click "<u>Next</u> >" to go on.

Jpdate Device Driver Wizard			
	Windows driver file search for the device:		
	HPT370 UDMA/ATA100 RAID Controller		
	Windows is now ready to install the selected driver for this device. Click Back to select a different driver, or click Next to continue.		
🏽 🇞 🌧 🛛	Location of driver:		
\$	A:WIN\HPT3XXINF		
			
	< <u>B</u> ack Next> Cancel		

Step 9: Windows is now ready to install the driver. Click "<u>N</u>ext >" to go on.



Step 10: Windows has finished installing the driver. Click "Finish" to end the installation.



Step 11: After rebooting the system, go to the "Control Panel" \rightarrow "System Properties" \rightarrow "Device Manager". Now you can see the driver is installed under the item of "SCSI controllers".

3-3. Windows NT 4.0

Before you start to install Windows NT 4.0, you have to create a driver disk for the Hot Rod 100 Pro. You can copy the Ultra ATA/100 driver files from the CD-Title that comes with this motherboard. The path for the Ultra DMA/100 driver files is "E:\drivers\hpt370\winnt (E is your CD-ROM drive letter)."

Please note two things before you copy the driver files to diskette. Firstly, the driver files

must be copied to the root directory of the diskette. Secondly, you have to set your system to "Show all files". Otherwise you will be unable to copy some important system files to diskette.

Installing drivers during Windows NT installation:

If the NT 4.0 is first installed on the ATA100 drive, please follow the following installation procedure:

Step 1: Set your system to boot from "**Drive A**" and then insert the Windows NT installation diskette 1/3. Power on your computer.



Step 2: The setup program will display a message about installing mass storage devices (see figure left) while you install NT4.0. Please press "**S**" to install the hpt370 driver

1	Vindows HT Workstation Setup
	You have asked to specify an additional SCSI adatper, CD-ROM drive, or special disk controller for use with windows HT
	 To selec a mass storage device from the following list use the UP or DOWH ARROW key to move the highlight to the mass storage device you want, and then press ENTER.
	 To return to the previous screen without specifying an additional mass storage device for use with Windows NT, press ESC.
	Other, requires disk provided by a hardware manufacturer
	ENTER=Select F3=Exit ESC=Cancel

Step 3: Select "Other, requires disk provided by a hardware manufacturer", and then press <ENTER>.



Step 4: Insert the driver disk into drive A and press <ENTER>.



Step 5: Use the UP or DOWN arrow key to move the highlight to the mass storage device you want and press <ENTER> to continue setup.



Step 6: Windows NT setup has recognized this HPT 370 IDE RAID controller

Press <ENTER> to continue setup.



Step 7: After you configure your hard disk and specify the installation path, the NT setup will ask you to insert this HPT 370 IDE RAID controller driver disk into drive A again. Insert the driver disk, and then press <ENTER> to continue setup.

If you have followed the steps described above, you should be finished installing your HPT 370 controller. For the rest of Windows NT installation steps, please follow the instructions displayed in the NT setup program.

Installing drivers with existing Windows NT:

If there is an existing NT 4.0 file system, you can install the HPT 370 IDE RAID controller into the existing system by the following procedure:

	🔯 Control P	anel					_ 🗆 ×
l	<u>E</u> ile <u>E</u> dit ⊻i	ew <u>H</u> elp					
I	Č.	*	MS	B	ø	5	A
I	Accessibility Options	Add/Remove Programs	Console	Date/Time	Devices	Display	Fonts
I	٨		1		Ø	<u>60</u>	₽ 2
I	Internet	Keyboard	Licensing	Modems	Mouse	Multimedia	Network
I		P	,	۲	¢	-	₩.
I	PC Card (PCMCIA)	Ports	Printers	Regional Settings	SCSI Adapters	Server	Services
I	1			2	31		
I	Sounds	System	Tape Devices	Telephony	UPS		
l	Add/Remove S	SCSI adapters ar	nd view their prop	erties.			

Step 1: Go to "Control Panel", and then enter "SCSI Adapters".

SCSI Adapters	? ×
Device Drivers	
Installed SCSI Adapter drivers are listed below.	
IDE CD-RDM (ATAPI 1.2)/Dual-channel PCI IDE Co (Start	
OKC	ancel

Step 2: Select "Drivers", and then click "<u>A</u>dd...".

Install Driver	×
Click the driver you w If you have an installa Disk.	ant to install, and then click OK. tion disk for a driver that is not in the list, click Have
Manufacturers:	SCSI Adapter
Blandard mass storage co ▲ Adaptec Advanced Micro Devices AMI BusLogic Compaq ♥	IDE CD-ROM (ATAPI 1 2)/Dual-channel PCI IDE Co Lave Disk
	Cancel

Step 3: Click "Have Disk..." to go on.



Step 4: Insert this HPT 370 IDE RAID controller driver disk into drive A, and then click "OK."

Install D	iver	×
¢	Click the driver you want to install, and then click OK. If you have an installation disk for a driver that is not in the list, click Have Disk.	
SCSI Ad	apter	
HPT37	0 UDMA/ATA100 RAID Controller	
	OK Cancel	

Step 5: Click "OK" to go on.

Install Fro	om Disk		×
_	Insert the manufacturer's installation disk into the drive selected, and then click OK.	OK Cancel	
	Copy manufacture's files from:	Browse	

Step 6: Insert the driver disk and type the path in the text box "A:\nt" ("a:\" is your floppy drive letter), or "E:\Drivers\hpt370\NT" (E:\ is your CD-ROM drive letter).

System Settings Change	×
You must restart your computer before the r settings will take affect.	iew
Do you want to restart your computer now?	
Yes No	

Step 7: Click "Yes" to restart your computer.

3-4. Windows 2000

If you want to install the Windows 2000 operating system on the hard drive utilizing the HPT 370 controller, please refer to the NT4.0 installation procedure. The following procedure is used only when you don't want to install the Windows 2000 operating system onto the hard drive utilizing the HPT 370 controller.



Step 1: Reboot the system. Windows will detect the new hardware automatically.

Click "<u>N</u>ext>" to go to the next step.



Step 2: Choose "Display a list of all the drivers in a specific location..." and click "<u>N</u>ext >" to go on.

Found New Hardware Wizard	
Hardware Type What type of hardware do you want to install?	
Select a hardware type, and then click Next. Hardware types:	
INT Ann/Legacy Support Other devices Profit (Daskgers Profit (Daskgers) Profit (Dask & LPT) Profit (Dask & LPT) Profit (Dask & LPT) Profit (Dask & LPT) Profit (Daskgers) Pro	*
< <u>B</u> ack Next>	Cancel

Step 3: Choose "SCSI and RAID controllers" and click "<u>N</u>ext >" to go on.

ound New Hardware Wizar	1
Select a Device Driver Which driver do you wa	nt to install for this device?
Select the manufactu have a disk that cont	rer and model of your hardware device and then click Next. If you ains the driver you want to install, click Have Disk.
Manufacturers: Adopted BusLogic Compag Future Domain Corporation Mylex NCR Unknown Manufacturer	Model: Adapter: AMA: 100: SCI: Host Adapter Host Dist.
	< <u>₿</u> ack <u>N</u> ext> Cancel

Step 4: Click "Have Disk..." to go on.

Install Fro	om Disk	×
_	Inset the manufacturer's installation disk into the drive selected, and then click DK.	OK Cancel
	Copy manufacturer's files from:	Browse

Step 5: Insert the driver disk that comes with the Hot Rod 100 Pro and type the path in the text box "A:2K" ("a:\" is your floppy drive letter), or "E:Drivershpt370/2k" (E:\ is your CD-ROM drive letter).

Found New Hardware Wizard	
Select a Device Driver Which driver do you want to install for this device?	Ø
Select the manufactures and model of your hardware device and have a disk that contains the driver you want to install, click Have	lhen click Next. If you a Disk.
Modelin: HPT 355 Uha DMA 56 Controller HPT 358 Uha DMA 56 Controller HPT 370 URM MATA 100 FAIL Controller	
	Have Disk
< Back Me	xt > Cancel

Step 6: Choose "HPT370 UDMA/ATA100 RAID Controller" and click "<u>N</u>ext >" to go on.



Step 7: Windows is now ready to install the driver. Click "<u>Next</u> >" to go on.



Step 8: Click "Yes >" to go on.



Step 9: Windows has finished installing the driver. Click "Finish" to end the installation.



Step 10: Click "Yes" to restart the system.

System Properties	
General	Device Manager Hardware Profiles Performance
• Vie	w devices by type O View devices by connection
	smputer Disk drives Hard disk controllers Keyboard Monitors Mouse Network dapters Ports (CDM & LPT) Coll controllers Coll controllers Coll Controllers Universal Serial Bus controllers Universal Serial Bus controllers
•	
Properties Refresh Remove Print	
	0K Cancel

Step 11: Go to the "Control Panel" \rightarrow "System Properties" \rightarrow "Device Manager". Now you can see the driver is installed under the item of "SCSI and RAID controllers".