

The logo for Akom Technology is located at the top of the page. It consists of a dark blue rectangle on the left containing the word "Akom" in white, and a white rectangle on the right containing the words "Akom Technology" in dark blue. An orange shape is partially visible on the far right edge of the logo area.

Akom

Akom Technology

RAID Manual

(Preliminary)

Rev. 0.01

Release Date: May 6, 2002

Table of Contents

1	RAIDs	1
1.1	Supported RAIDs	1
1.2	BIOS Configuration Utility (Hardware RAID)	2
1.3	RAID Administration.....	5
1.3.1	File.....	6
1.3.2	Configuration.....	6
1.4	Installing Windows OS on a RAID Controller-supported Disk	
	13	

1 RAIDs

1.1 Supported Hardware RAIDs

There are four HighPoint HP372 RAID controllers embedded on the server board; each of the controllers supports 2 IDE channels that allow for connection with up to four IDE hard disk drives. With the built-in BIOS Array Configuration utilities or supplied RAID Administration software, the hard disk drives on RAID controllers-supported IDE channels, i.e. the disks connected to the IDE 3 through IDE 10 connectors, can be configured as RAID 0, 1, 0+1 and JOBD. A brief description on the supported hardware RAID levels as follows:

Disk Array	Mini. # of disks	Description
RAID 0	2	Data striping Increased performance without data redundancy
RAID 1	2	Disk mirroring Data protection through 100% data duplication
RAID 0+1	4	Data striping and mirroring Increased performance with data protection
JOBD	2	Disk spanning Combine two or more disks into one virtual disk; no data security and performance improving; full usage of disk capacity

Caution

It is strongly recommended that you use disks of the same model throughout the system. Different models exhibit different timing characteristics, which might decrease overall RAID performance. Besides, if disks of various sizes are grouped as a mirror array, the actual data capacity of the array equals the smaller capacity disk.

1.2 BIOS Configuration Utility

The four built-in HPT372 BIOS Array Configuration utilities allow the user to configure the disks attached to the respective controllers. Starting with IDE3, every two neighboring channels attached to the RAID controller are handled by its respective BIOS Array utility. IDE 3 and 4 are controlled by the first utility; IDE 5 and 6 by the second, and so on. During the system boot-up, pay close attention to the messages that flash through the screen. The utilities will run sequentially during the system boot and scan the installed hard disks. If all the connected hard disks are correctly detected out, it means that there is no problem with the installation and recognition of the hard disks.

HighPoint Technologies, Inc. HPT372/372A BIOS Setting Utility v2.1
(c) 1999-2001. HighPoint Technologies, Inc. All rights reserved

Press <Ctrl><H> to run BIOS Setting Utility
Scan Devices. Please wait...

Depending on the hard disks you want to configure, enter the appropriate BIOS Array utility by pressing the <Ctrl> and <H> keys simultaneously. The BIOS Array Configuration Utility main menu will appear. The main menu contains the following columns:

- Main Menu : This column offers the options for disk array managements.
- Help : This column provides on-screen help information about the currently selected item and hot-key information.
- Channel Status : This column lists all the disks attached to the controller. When this column is activated, the user can select target device(s) to perform a specific operation.

 **Note**

If you are using mirrored pairs, group each pair on a separate connector.

Create Disk Array

1. In the **Menu** column, select **Create Array** and press Enter.
2. The **Create RAID** menu will appear. Highlight the desired **Array Mode** - RAID 0, 1, 0/1 or JBOD and press Enter.
3. Select **Array name** to specify an array name of eight characters or

less. If you do not type in anything but press enter, one will be automatically created.

4. Highlight **Select Disk Drives** and press Enter to activate the **Channel Status** column.
5. In the **Channel Status** column, use the arrow key to select the target hard disk. When a disk is selected, an asterisk will appear in the parentheses on the left to the selected disk..
6. If you are creating a RAID 0 or 0+1 array, select **Block Size** to set the block size; otherwise, skip to step 7.
7. Highlight **Start Creation Process** and press Enter for processing.

Creating a RAID 1 array

To create a RAID 1 array, you may choose either of the ways - **Duplication** and **Create Only**. Duplication will preserve the data on source disk (the first selected disk) and copy it into the mirror disk (the second selected disk) when creating a mirror array; while Create Only will erase all the data on the source disk and create a clean mirror array.

When Duplication has been selected, depending on the size of the source disk, the BIOS may take up to several hours to make the duplication. Wait or press Esc to abort the operation.

When Create Only has been selected, a warning that all the data on the selected disks will be deleted. Press Y to continue.

Note

The size of the Source disk drive must be less than or equal to the size of the Target disk drive.

Delete Disk Array

In the **Menu** column, select **Delete Array** to activate the **Channel Status** column. Use arrow keys to select the array you want to remove and press Enter. When a message appears to warn you the action will result in data loss, press Y to confirm the deletion of the disk array.

Create/Delete Spare

When a disk fails in a mirror array, a spare disk will automatically act as a replacement for the failed disk, and then a rebuilding task will be performed. To add a spare disk for a mirror array, select **Create/Delete Spare** in the **Menu** column to activate the **Channel Status** column. And then select one available disk as the spare. In the same manner, you can delete the spare.

 **Caution**

The size of the disk that is set as a spare (replacement) must be equal to or larger than that of the original disk in the mirror array; otherwise the rebuilding task will fail.

Select Boot Disk

To set a boot disk, highlight **Select Boot Disk** and press Enter in the Menu column to activate the **Channel Status** column. And then use arrow keys to select the disk you want to set as the bootable disk and press Enter. An asterisk appeared in parentheses indicates the disk selection has been made and the selected one will be marked **Boot** in its status field. Reselecting the disk again will have the asterisk disappeared.

Note

You have to disable the setting of boot for the disk before deleting it; otherwise, the deletion will not be allowed.

1.3 RAID Administration

In addition to using the BIOS utility for disk array configuring, a window-based RAID administration software program contained in the provided CD is available for the same purpose. The software program provides a user-friendly interface for the user to create, delete or reconfigure RAID arrays on your system.

To install the software under the Windows environment, insert the provided CD into your CD-ROM drive and then run **setup.exe** in the directory `d:\HighPoint\GUI\`. Follow the prompts to complete the installation.

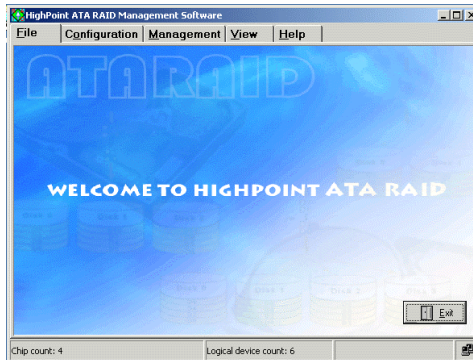
After completion of the installation, restart your system. A small icon will appear on the Windows task bar. Double click the icon to open the RAID administration interface.



The interface mainly contains five options tab: **File**, **Configuration**, **Management**, **View** and **Help**.

1.3.1 File

This screen displays a welcome message and has an **Exit** button for the user to exit the ATA RAID software.



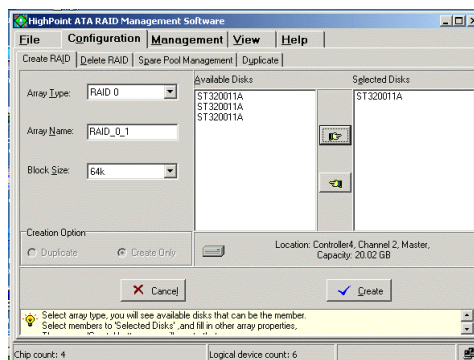
1.3.2 Configuration

On clicking this tab, four sub-tabs will be displayed, allowing the user to select **Create RAID**, **Delete RAID**, **Spare Pool Management** or **Duplicate**.

Create RAID

 **Note**

Disk array configuration across the RAID controllers is not allowed. Only the disks on the same controller can be configured as a disk array.

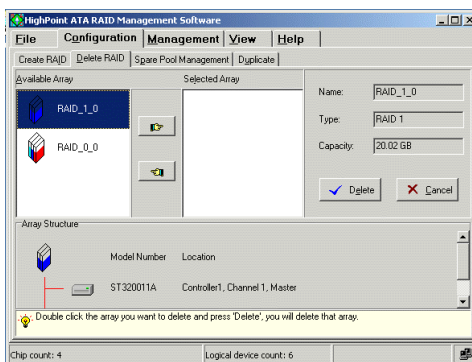


1. Click the tab **Configuration** -> **Create RAID**
2. In the **Array Type** box, click on the arrow symbol to drop down the RAID options list. Select the RAID level you want to create. Four options are available: RAID 0, 1, 0+1, JBOD.
3. In the **Array Name** box, you can type in a preferred name of eight characters or less or use the default name.
4. If you are creating a RAID 0 or 0+1, you can choose a chunk size in the **Block Size** box or use its default setting, 64K. This field is locked out (dimmed) when you are creating a RAID 1 or JBOS array.
5. All the installed disks attached to the four on-board ATA RAID controllers are shown in the **Available Disks** column. Select the intended disks by clicking the upper hand icon.
6. The selected disks will be showed in the **Selected Disks** column. If the selection is what you desire. Click the **Create** button.
7. Follow the prompts to complete the operation.

Note

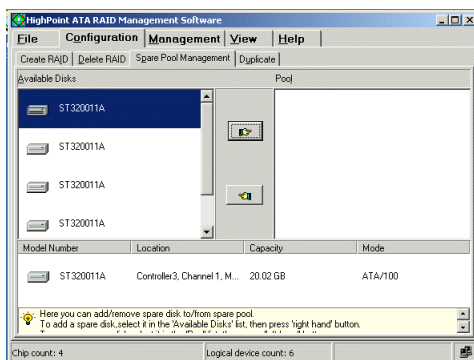
- *If you want to create a RAID 1 array, you may choose either of the ways, **Duplication** and **Create Only**. **Duplication** will preserve the data on source disk (the first selected disk) and copy it into the mirror disk (the second selected disk) when creating mirror array; while **Create Only** will erase all the data on the source disk and create a clean mirror array.*
- *Depending on the size of your hard disk drive, the BIOS may take up to several hours to make the duplication. You can press Esc to abort the operation.*

Delete RAID



1. Click the tab **Configuration** -> **Delete RAID**
2. In the **Array Type** box, you can see all the created RAID's. Select the disk array you want to delete.
3. The selected array(s) will be showed in the **Selected Array** column. If the selection is what you desire. Click the **Delete** button.
4. Follow the prompts to complete the deletion.

Spare Pool Management



When a disk fails in a mirror array, a spare disk will automatically act as a replacement for the failed disk, and then a rebuilding task will be performed.

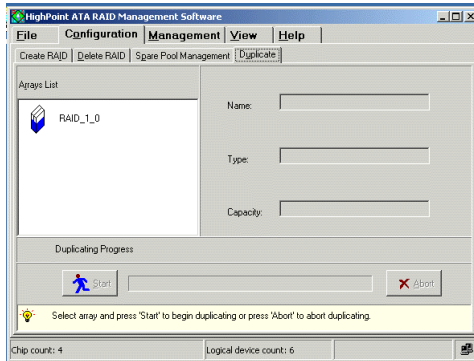
To add/remove a spare disk into/from the spare pool, do the following:

1. Click the tab **Configuration** -> **Spare Pool Management**.
2. All the available disks are listed in the **Available Disks** column. Highlight the intended hard disk and click the hand icon pointing to the right to add the disk to the spare pool. The selected disks will be shown in the **Pool** column. The selected can be removed from the spare pool by clicking the hand icon pointing to the left.
3. Follow the prompts to complete the operation.

Caution

The capacity of the disk that is set as a spare (replacement) must be equal to or more than that of the original disk in the mirror array; otherwise, the rebuilding task will fail.

Duplicate



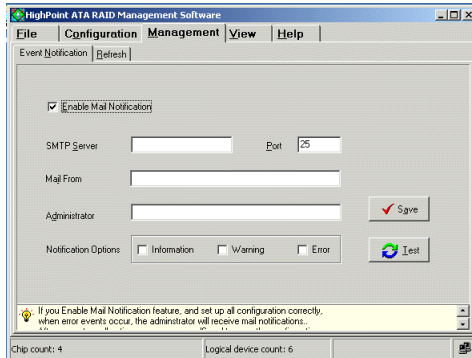
When a RAID 1 or 0+1 array is in critical status, the user can manually duplicate that RAID 1 or 0+1 array.

1. Click the tab **Configuration** -> **Duplicate**.
2. Highlight the disk array to be duplicated.
3. Click the **Start** button to start duplication.

The progress bar will show the duplication progress. You can abort the duplication by clicking the Abort button in course of duplication.

Management

On clicking this tab, two sub-tabs, **Event Notification** and **Refresh**, will be displayed.



Event Notification

Event Notification allows the user to set an automatic email notification according to a specified option - Information, Warning or Error.

1. Click the tab **Management**.
2. Click on the check box to enable Mail Notification.
3. Type in the domain name or IP address for the SMTP server used to send email.
4. Type in the port of the SMTP service on the email server.
5. Type in the email address where the notification information will be sent.
6. Select a kind of events that you want to be notified.
7. Click the Save button.

Before saving the settings, the user can test this notification function by clicking the Test button.

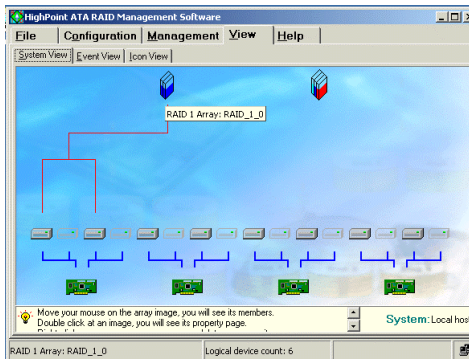
Refresh

When the user clicks the Refresh tab, the software will rescan the devices for any updated system information and then switch to the View display.

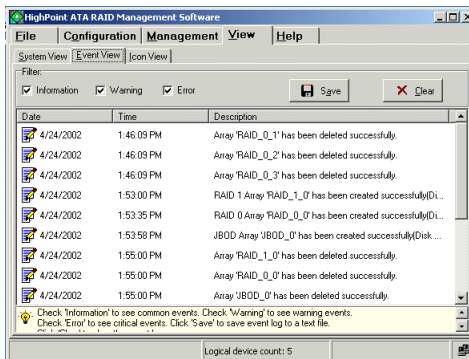
View

This screen includes three sub-tabs: **System View**, **Event View** and **Icon View**.

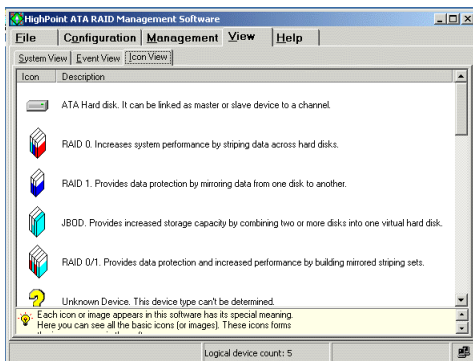
System View: illustrates the status of the disk connection and RAID creation.



Event View: lists all the recorded events during the execution of the software program.



Icon View: displays the meaning of different icons in the software.



1.4 Installing Windows OS on a RAID Controller-supported Disk

If you want to install the Windows operating system on a HPT372 RAID controller-supported disk, the HPT372-supported disks must be recognizable to your computer system first. The HighPoint-supplied driver disk is needed for installation of the driver before completion of the Windows installation.

1. During the system boot, enter the appropriate BIOS RAID configuration utility to specify a disk as the bootable disk.
2. To install Windows from CD-ROM, you have to enter the Setup and select the option of CD-ROM for the First Boot Device item. Save the changes and Exit Setup.
3. Insert the Windows installation CD into your system's CD-ROM drive and power on the system. The system will boot from the CD-ROM.
4. Upon entering the Windows installation screen, read carefully the messages shown in the status bar at the bottom of the screen. The following message will appear:

Press F6 if you need to install a third party SCSI or RAID driver...

5. Press **F6** to install the driver for HPT372 RAID controllers.
6. Press **S** to specify the additional device.
7. An on-screen message prompting you to insert the manufacturer-supplied disk appears.
8. Insert the HighPoint HPT372 driver floppy into the disk drive and then press Enter.
9. In the RAID controller driver installation screen, use the arrow keys to select the driver for the intended operating system and press Enter.
10. Follow the prompts to complete the installation of the HPT372 IDE RAID controller driver.
11. Having had the driver installed, continue the Windows installation. You will be allowed to install the Windows operating system on the HPT372 controller-supported disk.