# GigaRAID (IT8212) ATA RAID Controller

**USER'S MANUAL** 

12ME-IT8212-006R

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## Introduction

This manual is mainly to help users setup the GigaRAID (IT8212) ATA RAID Controller and solve problems when they use it.

If it is your first time to use the GigaRAID (IT8212) ATA RAID Controller and you are about to install it, please refer to the "<u>Quick Start</u>" section on page 7. After finishing installing it, you can get the advantages of enhancing the performance and raising the system's reliability.

When you face any difficulties and find anything you don't understand while using the GigaRAID (IT8212) ATA RAID Controller, please refer to the "**Q&A**" section on page 88. In this section, you can refer to the problems users may face and find the correct solutions. You can follow its instructions to solve your problems and then you will get satisfactory results.

## Features

- Compatible with the ATA133 specification and supports two IDE channels with 4 drives.
- Supports ANSI ATA proposal PIO modes 0,1,2,3,4 with flow control, DMA Modes 0,1,2,3,4,5,6.
- 512 bytes FIFO for auto transfer per IDE channel to get a high performance
- Supports the RAID 0/1/0+1 function
- Supports the JBOD function
- Supports the Scatter/Gather function for the DMA/UDMA function
- Includes one embedded CPU and firmware on system to handle the RAID function. It can reduce the driver's loading of system CPU and improve the system's ability.
- Low CPU utilization based on a local processor architecture
- Compatible with PCI Local bus specification v2.2. Users can easily install our systems to your PCs.
- Supports PCI power Management v1.0 to reduce power consumption.
- Supports the drivers for windows 98SE/Me/XP, Windows NT 4.0, Windows 2000 and Linux v2,4,1,0

### What is the GigaRAID (IT8212) ATA RAID Controller

This GigaRAID (IT8212) ATA RAID Controller is an excellent product resulting from Soc concept. It includes one RAID Chip combining CPU, firmware, advanced PCI controller and IDE controller. Its architecture can provide users a RAID system with low CPU utilization. When a PC is in high CPU operation or PCI traffic, users won't have any penalties for installing RAID system. This is because this system embeds a local CPU to deal with the RAID function and it's unnecessary to share CPU's performance. It is entirely different from the traditional software RAID system. Similarly, it also provides users more system stability. It provides users high speed and integration and low price PC RAID system. Additionally, it also provides PCI 33MHz interface and is compatible with PCI spec. v2.2. It can be easily installed into the PC system nowadays. Besides, we provide each OS a corresponding driver so that users don't have to worry that your systems and the IDE RAID system have any compatibility issue.

This GigaRAID (IT8212) ATA RAID Controller can support IDE drivers ranging from the lowest speed of PIO mode drive to the highest speed of ATA/133 drive. Thus, users can use this characteristic to combine RAID system without any limitations. Users can use ATA/133 drive and RAID function to achieve the best performance and get the merit of system's stability.

The GigaRAID (IT8212) ATA RAID Controller can support the RAID0 (striping), RAID1 (mirroring), RAID0+1 (striping and mirroring) or JBOD (spanning) mode. When a system is programmed to the RAID0 mode, it can read or write two drivers at the same time to enhance the performance. When a system is programmed to the RAID1 mode, two drivers have the same data and it will prevent data from being damaged. Once data is damaged, the system will start the rebuild function automatically and save data back to another new drive. Similarly, this system can use this data-copying characteristic to let two drivers transmit at the same time and balance the performance to raise throughput. The RAID0+1 mode uses four drivers to get the merits of RAID0 and RAID1. As for the JBOD mode, it combines more than two drives into a drive with a large capacity. This mode does not have the RAID function and its merit.

## **Quick Start**

This section leads you to quickly establish your RAID system with default settings. The default settings can meet most people's requirements. If you need more advanced optimal, please refer to <u>Setup Utility</u> on page 15 to achieve your goal.



Warning: In order to prevent any data loss resulting from inappropriate operation, please backup data before you start to install your system. The hard drives which are required for the installation

The hard drives, which are connected on the GigaRAID (IT8212) ATA RAID Controller, can support Ultra ATA/ 133, Ultra ATA/ 100, Ultra ATA/ 66, Ultra ATA/33, EIDE or Fast ATA-2 drives. Nevertheless, for the best performance, it is suggested that you had better use the hard drives of the same type and capacity to establish your own RAID system. After getting ready for the hard drives, you can follow the procedures below to install the system.

- Exactly set up every hard drive's master and slave setting to assure that the hard drives can surely action and unnecessarily incorrect action of data access won't occur.
- Exactly insert the hard drive's cables into the connectors on the hard drive and check if it's really firmly inserted.
- Insert every power cable connector into the corresponding hard drive and check if it's firmly inserted in a correct direction.



Warning: Because this system can support the hard drives of Ultra ATA/133, it is suggested that you can use the 80-wire, 40-pin cable to connect the GigaRAID (IT8212) ATA RAID Controller and hard drives in order to assure the system's ability

and efficiency. If the cable is damaged after a period of time, it is also suggested to buy the cable of the same specification.

## **Create Your Disk Array**

You can create your own array using the onboard BIOS utility of the

GigaRAID (IT8212) ATA RAID Controller with the attached hard drives. Please follow the steps below to setup your disk array.



Warning: Please backup data in your hard drives to prevent data damage resulting from the unfamiliarity with the operation.

1. Boot your system

Please attach your hard drives to the GigaRAID (IT8212) ATA RAID Controller, boot your system and then you will see the following message shown by the GigaRAID (IT8212) ATA RAID Controller onboard BIOS on the screen.

IT8212 BIOS test Version for Gigabyte F/W Ver 02093030 Copyright 2002 ITE, Inc. All Rights Reserved Please wait for IDE scan.. Press <Ctrl-G> to enter Setup Utility or Press <ESC> to continue booting.... Please press "Ctrl-G" keys to enter the BIOS utility **Main Menu**. The screen below will be shown.



Please click "1" to enter the **Auto Configuration** window. It will guide you to set an array and this is the simplest and fastest way to create your first array. Under the **Setup Array Type as** option, you can use arrow keys  $\rightarrow$  and  $\leftarrow$  and the "space" bar key to change your option to setup your array type.

TT8212 Setup Utility (C)Copyright 2002 ITE, Inc.	u <b>1</b>
Setup Array Type as:	RAID O
[ Array Configuration	]
RAID Mode	Stripe
Un-used Drive(s)	0
Drive(s) in Array	4
Array Capacity (size in MB)	19568
[+,+,Space] Change Option [CTRL-Y] Saw	e [ESC] Exit

RAID level/Type	Configurations	Number of disks needed
RAID 0	Disk Striping	2 or 3 or 4
RAID 1	Disk Mirroring	2
RAID 0+1	Disk Striping + Mirroring	4
JBOD	Disk Concatenation	2 or 3 or 4
Normal	None	1 or 2 or 3 or 4

Totally, there are five configurations supported:

### Setup Array for RAID 0:

The GigaRAID (IT8212) ATA RAID Controller allows you to use two, three or four hard drives to set a RAID 0 (stripe) array. All the hard drives attached on the controller will be set as array 0. When you create a striped array, files are broken into 64k (stripe size) and stripes are sent to each disk in the array. Selecting RAID 0 can increase data transfer rate and allow the best overall performance characteristics because of giving up redundancy.

### Setup Array for RAID 1:

The GigaRAID (IT8212) ATA RAID Controller allows two drives to be setup as a RAID 1 (mirror) array or four drives as two arrays. The first mirrored array will be set as array 0 and the second as array 1. RAID 1 is implemented as mirroring; a drive has its data duplicated on the other different drive. Selecting RAID 1 can enhance read performance and allow fault tolerance. A RAID 1 array can thoroughly backup your files to prevent data loss.



Warning: Two hard drives that form a RAID 1 array have to be attached as the same master or slave hard disks.

### Setup Array for RAID 0+1:

A RAID 0+1 (mirror and stripe) array has to be formed by four hard drives. RAID 0+1 is implemented as a mirrored array whose segments are RAID 0 arrays so RAID 0+1 also has fault-tolerance capacity as RAID 1. It not only enhances hard disk access performance but also backups data to prevent data loss. The formed array is automatically set as array 0.

### Setup Array for JBOD:

The GigaRAID (IT8212) ATA RAID Controller allows you to use two, three or four hard drives to form a JBOD (Just a Bunch Of Disks) array as array 0. Although JBOD doesn't offer other RAID functionality, it makes the hard disks appear to be a single one by combining the drives into one larger logical one without any capacity loss.

### Setup Array for Normal:

You can use the GigaRAID (IT8212) ATA RAID Controller as a normal IDE controller. The GigaRAID (IT8212) ATA RAID Controller allows you to use one, two, three or four hard drives. All the hard drives attached on the GigaRAID (IT8212) ATA RAID Controller are left to act as independent drive volumes.

Please follow the procedures below to set an array:

- Use the "space" bar key to select a RAID type.
- Press "Ctrl-Y" keys to save and create an array. If you select RAID 0, 1, 0+1 or JBOD, the boot sector of the new created array will be erased. If you select Normal, the boot sector will be remained.



Warning: If you prefer to keep data in your hard drives, please follow the procedures in <u>Define RAID</u> section on page 22 to setup your arrays manually.

- Click the "Esc" key to go back to the **Main Menu** on page 10.
- Click the "Esc" key to quit BIOS and boot.
- You need to FDISK and format your new array. The new array will be regarded as a new hard drive by the system.

## Setup Utility Using the GigaRAID (IT8212) ATA RAID Controller Setup Utility

The GigaRAID (IT8212) ATA RAID Controller Setup Utility provides functions to create, delete and rebuild an array. It also provides the information of each hard drive and the configuration of the GigaRAID (IT8212) ATA RAID Controller. Please attach your hard drives to the GigaRAID (IT8212) ATA RAID Controller and boot your system. If your array's configuration is correct, you will see the following message shown by the GigaRAID (IT8212) ATA RAID Controller onboard BIOS on the screen. You can press "Ctrl-G" keys to enter Setup Utility or press the "Esc" key to skip and boot directly.

IT8212 BIOS test Version for Gigabyte F/W Ver 02093030 Copyright 2002 ITE, Inc. All Rights Reserved Please wait for IDE scan.. Press <Ctrl-G> to enter Setup Utility or Press <ESC> to continue booting....

If your array's configuration is incorrect, you will see an error message on your screen. You have to enter Setup Utility to reconfigure the arrays then quit utility to boot.

IT8212 BIOS test Version for Gigabyte F/W Ver 02093030 Copyright 2002 ITE, Inc. All Rights Reserved Please wait for IDE scan... Error!! RAID configuration error.... Press <Ctrl-G> to enter Setup Utility.... GigaRAID (IT8212) ATA RAID Controller Setup Utility Main Menu

There are five options in the **Setup Utility Main Menu**, please press 1 ~ 5 to enter the submenu or the "Esc" key to quit the Setup Utility.



If you are not familiar with the array setting, please follow the procedures in <u>Auto</u>. <u>Configuration</u> on page 17 to create new arrays automatically. You can use <u>Define</u> <u>RAID</u> on page 22 and <u>Delete RAID</u> on page 28 to manually create or delete arrays. You can also use <u>Rebuild RAID</u> selection on page 31 to help you rebuild a mirrored (RAID 1 or RAID 0+1) array. Besides, you can use <u>RAID Card Configuration</u> on page 36 to see the controller's resources, each hard drive's status and the setting of the GigaRAID (IT8212) ATA RAID Controller.

### **Auto Configuration**

Click "1" on the Main Menu to enter Auto Configuration. You can use arrow keys  $\rightarrow$ 

and  $\,\leftarrow\,$  and the "space" bar key to change your option. After selecting your option,

you can press "Ctrl-Y" keys to save the setting and click the "Esc" key to leave Auto

Configuration menu and go back to the Main Menu on page 10.

TT8212 Setup Utility (C)Copyright 2002 ITE, Inc.	
Setup Array Type as:	RAID O
[ Array Configuration ]	]]
RAID Mode	Stripe
Un-used Drive(s)	0
Drive(s) in Array	4
Array Capacity (size in MB)	19568
[→,+,Space] Change Option [CTRL-Y] Saw	e [ESC] Exit

### Setup Array for RAID 0:

The GigaRAID (IT8212) ATA RAID Controller allows you to use two, three or four hard drives to set a RAID 0 (stripe) array. All the hard drives attached on the controller will be set as array 0. When you create a striped array, files are broken into 64k (stripe size) and stripes are sent to each disk in the array. Selecting RAID 0 can increase data transfer rate and allow the best overall performance characteristics because of giving up redundancy.



### Setup Array for RAID 1:

The GigaRAID (IT8212) ATA RAID Controller allows two drives to be setup as a RAID 1 (mirror) array or four drives as two arrays. The first mirrored array will be set as array 0 and the second as array 1. RAID 1 is implemented as mirroring; a drive has its data duplicated on the other different drive. Selecting RAID 1 can enhance read performance and allow fault tolerance. RAID 1 array can thoroughly backup your files to prevent data loss.

Note: Two hard drives that form a RAID 1 array have to be attached as the same master or slave hard disks.

RAID 1



### Setup Array for RAID 0+1:

A RAID 0+1 (mirror and stripe) array has to be formed by four hard drives. RAID 0+1 is implemented as a mirrored array whose segments are RAID 0 arrays so RAID 0+1 also has fault-tolerance capacity as RAID 1. It not only enhances hard disk access performance but also backups data to prevent data loss. The formed array is automatically set as array 0.

RAID 0+1



### Setup Array for JBOD:

The GigaRAID (IT8212) ATA RAID Controller allows you to use two, three or four hard drives to form a JBOD (**J**ust a **B**unch **O**f **D**isks) array as array 0. Although JBOD doesn't offer other RAID functionality, it makes the hard disks appear to be a single one by combining the drives into one larger logical one without any capacity loss.

### Setup Array for Normal:

You can use the GigaRAID (IT8212) ATA RAID Controller as a normal IDE controller. The GigaRAID (IT8212) ATA RAID Controller allows you to use one, two, three or four hard drives. All the hard drives attached on the GigaRAID (IT8212) ATA RAID Controller are left to act as independent drive volumes.

## Define RAID

Click "2" on the **Main Menu** then you can enter the **Define RAID Menu**. Please use arrow keys  $\uparrow$  and  $\downarrow$  to highlight the array number you want to define; use "space" key to specify the bootable array if you like to boot your system from array attached on GigaRAID (IT8212) ATA RAID Controller; and click the "Enter" key to select it and enter the **Define RAID Sub-Menu** to create your array. If you want to quit and go back to the <u>Main Menu</u>, please click the "Esc" key.

IT8212 Setup Ut	cility (C)Copyr [Det	ight 2002 ITE, fine RAID Menu	Inc.	
Array No	Array Mode	Drive No	Size(MB)	Status
Array O				
Array 1				
+ Array 2	Mirror	2	4892	Functional
Array 3				
A Conneity (CE				Rootable erray
[†] Up [1]	Down [Space	e] Boot Array	[Enter] Selec	t [ESC] Exit

When an array is not assigned a RAID level, you will see "- - - " on the raw. Column "Array Mode" shows the RAID level (Stripe, Mirror, Stripe + Mirror or JBOD) assigned to the array. Column "Drive No" shows the number of hard drive included in the array. Column "Size" shows the array's total capacity. If there is a symbol shown in front of "Size", the capacity unit is gigabyte. Column "Status" shows array status. You will see "Functional" if the array is operational and "Non-Functional" if the array has lost its functionality.

Please highlight the array number you want to define, click the "Enter" key, then the **Define RAID Sub-Menu** will appear and allow drive assignments to the array.

#### Define RAID Sub-Menu

When you highlight the array you want to define on the **Define RAID Menu**, click the "Enter" key then you will enter this **Define RAID Sub-Menu**. You can use arrow keys  $\uparrow$  and  $\downarrow$  to highlight different positions. The "space" bar key can help you cycle through the different options. "Ctrl-Y" keys can save the change and the "Esc" key can help you quit then go back to the **Define RAID Menu** on page 22.

TT8212 Setup Utility (C)Copyright 2002 ITE, Inc [ Define RAID Sub-Menu ]		
Array No Array Mode Drive No		Status
Array 2 Mirror 2	Fu	nctional
Block Size: Not Available		
Channel [Drive Assignments ]= ID Drive Name Pri/DO ST340016A	Size (MB) 38166	Assignment Y
Sec/DO QUANTUM FIREBALL ELS.IA	4892	
♦ :Capacity (GB) [†] Up [l] Down [Space] Change Option	[Ctrl-Y] Save	[ESC] Exit

Block Size Option:

You can select Stripe Block size ranging from 1k to 64k for Stripe (RAID 0) or Stripe + Mirror (RAID 0+1) array. The selection of block size is related to how your data is sent and regained from hard drives. You can do some tests to decide which block size is suitable for your system. Generally, a large block size is suitable to manage large file transfer such as MPEG files. On the contrary, the small block size is suitable to manage small files such as e-mail files.

Drive Assignments Option:

You can use arrow keys  $\uparrow$  and  $\downarrow$  to highlight the drive you want to assign to the disk array and change the status of **Assignments** to "Y" by pressing the "space" bar key.

For the meanings of "Array Mode", "Drive No" and "Status", please refer to **Define <u>RAID Menu</u>** on page 22. The location of the hard drive is shown at the column "Channel ID". "Pri" represents the primary channel and "Sec" represents the secondary channel. D0 represents a master hard drive while D1 represents a slave hard drive. Column "Drive Name" shows the model name of the hard drive. Column "Size" shows the capacity of each hard drive. When a symbol **\*** is shown before the size, the capacity unit is gigabyte.

When you press "Ctrl-Y" keys to save your change, Setup Utility will check if the setting is legal. If not, an error message will pop up to show you what the error is and you have to correct the setting. Limitations are shown as below.

Stripe (RAID 0): There isn't any specific limitation.

Mirror (RAID 1): Two hard drives that form a RAID 1 array have to be attached as the same master or slave hard disks. For example, primary channel (Pri) master drive (D0) and secondary channel (Sec) master drive (D0) can form a mirror array; primary channel (Pri) slave drive (D1) and secondary channel (Sec) slave drive (D1) can form a mirror array; but primary channel master drive and primary channel slave drive cannot form a mirror array.

Stripe + Mirror (RAID 0+1): A RAID 0+1 array has to be formed by four hard drives.

RAID 0+1 is implemented as a mirrored array whose segments are RAID 0 arrays.

SPAN (JBOD): There isn't any specific limitation.

Normal: If a hard drive is not included in an array (Column "Assignment" in the View **Drive Assignment** is shown "Free"), this hard drive is regarded as a normal drive. The existence of the normal hard drive sometimes will influence the array number user specified. If the Pri/D0, Pri/D1, Sec/D0 or Sec/D1 hard drive is a normal drive, array 0, 1, 2 or 3 cannot have the array setting respectively. However, you do not have to concern about this limitation. If Setup Utility finds any conflicts, Array No will be adjusted automatically. After finishing setting the array, go back to the **Define RAID Menu** on page 22 then you will find the Array No is changed. This is because the existence of the normal hard drive(s) causes the Array No to be adjusted automatically.

When you press "Ctrl-Y" keys to save your change and your settings checked by Setup Utility are correct, the following window will appear. You can choose to clear the boot sector for the newly created array or not. If your RAID Mode is neither Mirror nor Stripe + Mirror, this array setting is finished then you can click the "Esc" key to go back to the **Define RAID Menu** on page 22.

IT8212 Setup Utility (C)Copyright 2002 ITE, Inc.		
Array No Array Mode Drive No Array 2 <mark>Mirror</mark> 2	Fu	Status nctional
Block Size: Not Available		
Channel ID Drive Na Pri/DO ST340016 Y - Yes / N - No	в)	Assignment Y
Sec/DO QUANTUM FIREBALL ELS.1A	4892	
<pre></pre>	-Y] Save	[ESC] Exit

If your RAID Mode selection is Mirror or Stripe + Mirror and you choose not to delete the boot sector of the array, the following window will appear to ask whether you want to rebuild an array. If you choose "Y", the **<u>Rebuild RAID Menu</u>** will appear. (Please refer to page 31.)

_IT8212 Setup Utility (C)Copyright 2002 ITE, Inc.	
Array No Array Mode Drive No	Status
Array 2 Mirror 2	Functional
Block Size: Not Available	
Channel ID Drive Na Y - Yes / N - No Pri/DO ST340016	B) Assignment
Sec/DO QUANTUM FIREBALL ELS.1A 489	2 Y
♦ :Capacity (GB) [†] Up []] Down [Space] Change Option [Ctrl-Y]	Save [ESC] Exit

If you choose not to rebuild this array for the time being, the GigaRAID (IT8212) ATA RAID Controller cannot read data correctly because the data is inconsistent in the

mirrored hard drives. Thus, the following window will appear.

IT8212 Setup U	tility (C)Copyrigh	t 2002 ITE, Inc.	
Because drives	reconstruction is is inconsistent. P	not completed yet, data i lease select the source di	in the isk now.
Channel ID	Drive Name	rive List J <del>eeseense</del> e	Size (MB)
Pri/DO	ST340016A		38166
Sec/DO	QUANTUM FIREBALL	EL5.14	4892
♦ :Capacity (G [†] Up	B) [1] Down	[Enter] Select	[ESC] Exit

Please press arrow keys  $\uparrow$  and  $\downarrow$  to highlight your selection and press the "Enter" key to select the source disk(s) then you have finished the setting and the screen will go back to the **Define RAID Sub-Menu** automatically. This array's setup is completed. You can press the "Esc" key to go back to the **Define RAID Menu** on page 22.

## Delete RAID

Press "3" on the **Main Menu** then the **Delete RAID Menu** will appear. Please use arrow keys  $\uparrow$  and  $\downarrow$  to highlight the array you want to delete, press "Del" to select it and then enter the **Delete RAID Sub-Menu** to delete your array. The "Del" key has no effect if the highlight raw is an empty array. If you want to leave and go to the <u>Main</u> <u>Menu</u>, press the "Esc" key.

	8212 Setup Ut	ility (C)Copyr [De	ight 2002 ITE, lete RAID Menu	Inc.	]
	Array No	Array Mode	Drive No	Size(MB)	Status
	Array O				
	Array 1				
	+ Array 2	Mirror	2	4892	Functional
	Array 3				
	Conseity (CD				A (Rootable orray)
Êt	lup ]Up	[1] Down	De	el] Delete	ESC] Exit

As for the detailed descriptions of "Array Mode", "Drive No", "Size" and "Status", please refer to **Define RAID** on page 22.

#### Delete RAID Sub-Menu

When you highlight the array you select to delete at the **Delete RAID Menu** and press the "Del" key, the **Delete RAID Sub-Menu** will appear. Please press "Ctrl-Y" keys to confirm to delete an array or press any other keys to abort array delete.

IT8212 Setup Uti	lity (C)Copyr Dele	ight 2002 ITE, Ir te RAID Sub-Menu	ic.	
Array No	Array Mode	Drive No		Status
Array 2	Mirror	2	Fu	nctional
Block Size:	Not Availa	ble		
	[ Dr	ive Assignments (	]	
Channel ID Drive N Pri/DO ST34001	lame IGA		Size (MB) 38166	Assignment Y
Sec/DO QUANTUN	I FIREBALL ELS	.lA	4892	
Are you sure you want to delete this array? Press Ctrl-Y to Delete or other key to abort.				
<pre>*:Capacity (GB)</pre>				

If you press "Ctrl-Y" keys to make sure to delete an array, the following window will appear. You can choose to clear the array's boot sector or keep it. After you finish the selection, **Delete RAID Menu** will pop up automatically.

IT8212 Setup Utility (C)Copyright 2002 ITE, Inc. [Delete RAID Sub-Menu ]		
Array No Array Mode Drive No		Status
Array 2 Mirror 2	Fu	nctional
Block Size: Not Available		
Channel ID Drive Na Pri/DO ST340016 Y - Yes / N - No	в)	Assignment Y
SEC/DO QUANTUM FIREBALL ELS.1A	4892	
<pre></pre>		

### **Rebuild RAID**

Press "4" when you are at the **Main Menu** then the **Rebuild RAID Menu** will appear. You can use  $\uparrow$  and  $\downarrow$  keys to highlight different arrays, press the "Enter" key to select an array and enter the next rebuild drive select screen. If the RAID Mode of the array you want to select is neither mirror nor stripe + mirror, the "Enter" key will have no effect. If you want to leave and go back to the <u>Main Menu</u>, press the "Esc" key.

IT8212 Setup Ut	ility (C)Copyr [Rel	ight 2002 ITE, puild RAID Menu	Inc.	]
Array No	Array Mode	Drive No	Size(MB)	Status
Array O				
Array 1				
+ Array 2	Mirror	2	4892	Functional
Array 3				
♦ :Capacity (GB [†] Up	) [1] Down	[Ent	er] Select	<ul> <li>Bootable Array</li> <li>[ESC] Exit</li> </ul>

Rebuild RAID Drive Select

When you highlight the array you want to rebuild on the **Rebuild RAID Menu**, press the "Enter" key then the following screen will appear.

IT8212 Setup	Utility (C)Copyright	t 2002 ITE, Inc.
Channel ID	Drive Name	Size (MB)
	[ Tai	rget Drive ]
Channel ID	Drive Name	Size (MB)
	F D	rive List ]
Channel ID	Drive Name	Size (MB)
Pri/DO	ST340016A	38166
Sec/DO	QUANTUM FIREBALL	EL5.1A 4892
	(cp.)	
ft1 Up		[Enter] Select [ESC] Exit
LIJ YP	C+3 00 mi	

You can use arrow keys  $\uparrow$  and  $\downarrow$  to highlight the source disk(s) then press the "Enter" key to select the source disk(s). The following window will appear to make sure if you would like to continue.

118212 Setup	Utility (C)Copyright 2002 ITE, Inc.	
Channel ID Sec/DO	L SOURCE DRIVE J Drive Name QUANTUM FIREBALL EL5.1A	Size (MB) 4892
	F Target Drive ]	
Channel ID Pri/DO	Drive Name ST340016A	Size (MB) 38166
	Start to duplicate the image.	
Channel ID	Drive Y - Continue / ESC - Abort	Size (MB)
Pri/DO	ST340016A	38166
Sec/DO	QUANTUM FIREBALL ELS.1A	4892
♦ :Capacity ( [†] Up	GB) [4] Down [Enter] Select	[ESC] Exit

If you press "Y", the following window will pop up. You can select to monitor the whole rebuild process until it ends completely or select background rebuild. You can leave Setup Utility and boot directly if you choose background rebuild and rebuild can proceed at the background.

IT8212 Setup	Utility (	C)Copyright 2002 ITE, Inc.	
Channel ID Sec/DO	Drive QUANTU	Name Marre M FIREBALL ELS.IA	Size (MB) 4892
Channel ID Pri/DO	Drive ST3400	Name [ Target Drive ] Name LIGA	Size (MB) 38166
		Do you like monitoring the	
Channel ID	Drive	completes? Y - Yes / N - Escape	Size (MB)
Pri/DO	ST340016A		38166
Sec/DO	QUANTUM FIREBALL ELS.1A		4892
♦ :Capacity ( [†] Up	GB) [4]	Down [Enter] Select	[ESC] Exit

The following screen will appear if you choose to monitor the whole rebuild process.

IT8212 Setup	o Utility (C)Copyright 2002 ITE, Inc.	
Channel II Sec/DO	) Drive Name QUANTUM FIREBALL ELS.IA	Size (MB) 4892
Channel II Pri/DO	D Drive Name ST340016A	Size (MB) 38166
Channel I	Please wait while dupincating image 49% Com	mpleted e (MB)
Channel I Pri/DO Sec/DO	Viease wart will e dupincating image 49% Con ST340016A QUANTUM FIREBALL ELS.1A	npleted e (MB) 38166 4892
Channel I Pri/DO Sec/DO	ST340016A QUANTUM FIREBALL ELS.IA	pleted e (ME) 38166 4892

When rebuild is completed, a message below will pop up to inform you that rebuild is

finished.

IT8212 Setup U	Itility (C)Copyright 2002 ITE, Inc.	
Channel ID Sec/DO	QUANTUM FIREBALL ELS.1A	Size (MB) 4892
Channel ID Pri/DO	Drive Name [ Target Drive ] ST340016A	Size (M8) 38166
Channel ID Pri/DO Sec/DO	Array has been recoverd Dri Press ANY KEY to continue. ST340016A QUANTUM FIREBALL ELS.1A	Size (MB) 38166 4892
♦ :Capacity (G [†] Up	8) [1] Down [Enter] Select	[ESC] Exit

Then you leave and go back to the **<u>Rebuild RAID Menu</u>**.

## **RAID Card Configuration**

Press "5" on the Main Menu then the RAID Card Configuration menu will appear.

You can use arrow keys  $\rightarrow$  and  $\leftarrow$  and the "space" bar key to enable or disable

Auto-Rebuild option.

IT8212 Setup Utility (C)Copyright 2002	TTE, Drc.
Auto-Rebuild:	Enable
[ RAID Car	d Resource ]
Channel O Interrupt: 9	I/P Port: 00000800
Channel 1 Interrupt: 9	I/P Port: 00000000
L	Staur 1
Channel ID Drive Name Pri/DO ST340016A	Stans J Size Drive (MB) Array No Mode 38166 Free US
Pri/D1 MAXTOR 6LO4032	38172 Free U6
Sec/DO QUANTUM FIREBALL ELS.1A	4892 Free U2
Sec/D1 IBM-DTLA-307030	29314 Free US
◆ :Capacity (GB) [+,+,Space] Change Option	Drive Mode: P = PIO, D = DMA, U= UDMA [ESC] Exit

When Auto-Rebuild enables, the GigaRAID (IT8212) ATA RAID Controller can rebuild your mirrored array automatically. If a failed mirrored drive is replaced without shutting down your PC, the GigaRAID (IT8212) ATA RAID Controller can detect the hot-swap action and start rebuilding automatically. When Auto-Rebuild is disabled, you need to rebuild your mirrored array manually from <u>Application</u> (Please refer to page 72) or from <u>Rebuild RAID Menu</u> (Please refer to page 31).

On the **RAID Card Resource** section, you can see the PCI slot interrupt and I/O port address used by the GigaRAID (IT8212) ATA RAID Controller. You can also see the status of each hard drive from the **Drive Status** section. For the meanings of
"Channel ID", "Drive Name" and "Size", please refer to **Define RAID sub-Menu** on page 23. Column "Array No" shows hard drive's array number. If a hard drive is not assigned to an array, it's shown as free. A free hard drive is taken as a normal one. Column "Mode" shows hard drive's data transfer mode. "U" represents Ultra DMA (UDMA) mode, "D" represents Multiword DMA (DMA) mode and "P" represents PIO mode. PIO modes 0, 1, 2, 3, and 4 correspond to maximum transfer rates of 3.3, 5.2, 8.3, 11.1 and 16.7 megabytes per second (MB/s) respectively. Multiword DMA modes 0, 1, and 2 have maximum transfer rates of 4.2, 13.3, and 16.7 MB/s respectively. Ultra DMA modes 0, 1, 2, 3, 4, and 5 have maximum transfer rates of 16.7, 25, 33.3, 44.4, 66.7, and 100 MB/s respectively.

# **Driver Installation**

This section details the procedures to install the GigaRAID (IT8212) ATA RAID Controller driver under the following various operating systems. Before starting to install this driver, please make sure that GigaRAID (IT8212) ATA RAID Controller has already been properly setup in the system.

- Windows XP
- Windows 2000
- Windows 98/ME
- Windows NT 4.0

For the Windows operating system (Win NT, WinXP, Win2000), for IDE RAID/SCSI/Serial ATA functioning, the driver must first be transferred to a floppy disk. Please follow the steps below to complete driver transfer to a floppy disk:

- 1) Please insert the provided driver CD into the hard disk drive eg. Drive D:
- 2) Insert a blank formatted floppy disk into the floppy disk drive.
- 3) Either from "Command Prompt" or DOS, please type in "D:\BootDrv\menu.exe"
- 4) Information on all chipsets should be listed on the screen, please select the proper chipset model.

Your system will then automatically zip and transfer this driver file to the floppy disk.

After you complete the steps, boot from the Windows CD to install the RAID drivers. When install Windows 2000 or Windows XP from HDDs in serial ATA controller, press F6 as Win2000 or XP boots up, then supply serial ATA controller driver by this floppy disk. Follow on-screen instructions to complete installation.

(Each time you add a new hard drive to a RAID array, the RAID driver will have to be installed under Windows once for that hard drive. After that, the driver will not have to be installed.)

### Windows XP

Install the driver during Windows XP installation

1. Start Windows XP installation.



Warning: Because of the different selections of the following installation methods, the time when step2 starts will be different.

- Boot from floppy with Windows installation diskette.
- Boot from floppy with un-installable diskette.
- Boot from CD-ROM with Windows installation CD.
- When the message "Press F6 if you need to install third party SCSI or RAID driver" appears on the bottom of the screen, please press the <F6> key.
- The installation will continue. When a message appears to ask you to designate the device you want to install, press the <S> key.
- Follow the instruction of the installation program to insert the GigaRAID (IT8212) ATA RAID Controller Driver diskette into the floppy disk drive then press the <Enter> key to continue.
- Select GigaRAID (IT8212) ATA RAID Controller (Windows 2000/XP) from the device list shown on the window then press the <Enter> key to continue.
- The devices that are going to be installed will be listed on the next window.
   GigaRAID (IT8212) ATA RAID Controller (Windows 2000/XP) should be contained on

the list. If you need to install any other devices, please designate them now. After designating all the devices, please proceed to the next step.

7. Press the <Enter> key to continue the installation of Windows XP.

Install the driver under existing Windows XP

- 1. Start Windows.
- When Windows detects GigaRAID (IT8212) ATA RAID Controller in the system, a dialog box named Found New Hardware Wizard will show on the screen. Select the Install from a list or specific location (Advanced) option then click "Next" to continue to setup.

Found New Hardware Wizard	
	Welcome to the Found New Hardware Wizard
	This wizard helps you install software for:
	RAID Controller
	If your hardware came with an installation CD or floppy disk, insert it now.
	What do you want the wizard to do?
	<ul> <li>Install the software automatically (Recommended)</li> <li>Install from a list or specific location (Advanced)</li> </ul>
	Click Next to continue.
	< Back Next > Cancel

 Insert the GigaRAID (IT8212) ATA RAID Controller Driver diskette into the floppy disk drive then check the Search for the best driver in these locations option and type A:\WIN2K\_XP on the field designating the file's location. Press "Next" to continue to setup.

Found New Hardware Wizard	
Please choose your search and installation options.	
<ul> <li>Search for the best driver in these locations.</li> </ul>	
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.	
Search removable media (floppy, CD-ROM)	
Include this location in the search:	
A:\WIN2K_XP Browse	
O Don't search. I will choose the driver to install.	
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.	
< Back Next > Cancel	

4. The driver installation has finished. Press "Finish" to continue.



5. Follow the instruction to restart the computer then the driver will take effect.

System S	em Settings Change	
2	Windows has finished installing new devices. The software that supports your device requires that you restart your computer.You must restart your computer before the new settings will take effect.	
	Do you want to restart your computer now?	
	Yes No	

Verify Installation

Follow the previous section to install the driver. After the system restarts, you can do the following steps to check if the driver has been installed successfully.

- Right-click My Computer icon on Desktop. Select the Properties option from the form.
- Select the Hardware tab from the System Properties window then click the Device Manager button on the panel. If GigaRAID (IT8212) ATA RAID Controller device is shown below the SCSI and RAID controllers item (see the following figure), it means that the driver has been installed successfully.



 If there is a marking ! or ? under SCSI and RAID Controller device as shown below, it indicates that the driver has not been correctly installed. User should remove the device and reinstall.

🚇 Device Manager	
File Action View Help	
$\leftarrow$ $\rightarrow$ $\blacksquare$ $\triangleq$ $e$ $\aleph$ $\gg$ $\gg$	
AK-47         Disk drives         Disk drives         Disk drives         DyD/CD-ROM drives         Floppy disk controllers         Floppy disk drives         IDE ATA/ATAPI controllers         Keyboards         Monitors         Network adapters         Ports (COM & LPT)         Processors         SCSI and RAID controllers         Sound, video and game controllers         System devices         Universal Serial Bus controllers	

## Windows 2000

Install the driver during Windows 2000 installation

1. Start Windows 2000 installation.



Warning: Because of the different selections of the following installation methods, the time when step2 starts will be different.

- Boot from floppy with Windows installation diskette.
- Boot from floppy with un-installable diskette.
- Boot from CD-ROM with Windows installation CD.
- When the message "Press F6 if you need to install third party SCSI or RAID driver" appears on the bottom of the screen, please press the <F6> key.
- The installation will continue. When a message appears to ask you to designate the device you want to install, press the <S> key.
- Follow the instruction of the installation program to insert the GigaRAID (IT8212) ATA RAID Controller Driver diskette into the floppy disk drive then press the <Enter> key to continue.
- Select GigaRAID (IT8212) ATA RAID Controller (Windows 2000/XP) from the device list shown on the window then press the <Enter> key to continue.
- The devices that are going to be installed will be listed on the next window.
   GigaRAID (IT8212) ATA RAID Controller (Windows 2000/XP) should be contained on

the list. If you need to install any other devices, please designate them now. After designating all the devices, please proceed to the next step.

7. Press the <Enter> key to continue the installation of Windows 2000.

Install the driver under existing Windows 2000

- 1. Start Windows.
- 2. When Windows detects GigaRAID (IT8212) ATA RAID Controller in the system,

a dialog box named Found New Hardware Wizard will show on the screen.

Select the Search for a suitable driver for my device (recommended) option

then click "Next" to continue to setup.

ind New Har	rdware Wizard
Install Hard A device an opera	dware Device Drivers e driver is a software program that enables a hardware device to work with ating system.
This wiza	ard will complete the installation for this device:
¢	RAID Controller
A device needs dr installatio	e driver is a software program that makes a hardware device work. Windows river files for your new device. To locate driver files and complete the on click Next.
What do you want the wizard to do?	
ΘS	earch for a suitable driver for my device (recommended)
O D dr	Display a list of the known drivers for this device so that I can choose a specific Iriver
	< Back Next > Cancel

3. Check the Specify a location option on the following window then press "Next"

to continue to setup.

Found New Hardware Wizard	
Locate Driver Files Where do you want Windows to search for driver f	iles?
Search for driver files for the following hardware de	vice:
The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify. To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.	
Optional search locations:	
CD-ROM drives	
Specify a location	
Microsoft Windows Update	
<	Back Next > Cancel

 Insert the GigaRAID (IT8212) ATA RAID Controller Driver diskette into the floppy disk drive then type A:\WIN2K\_XP on the field designating the file's location. Press "Next" to continue to setup.

Found New	v Hardware Wizard	×
<b>_</b>	Insert the manufacturer's installation disk into the drive selected, and then click OK.	OK Cancel
	Copy manufacturer's files from:           A:\WIN2K_XP	Browse

5. The driver for GigaRAID (IT8212) ATA RAID Controller is found. Press "Next" to continue to setup.

Found New Hardware Wizard
Driver Files Search Results The wizard has finished searching for driver files for your hardware device.
The wizard found a driver for the following device:
ITE IT8212 ATA RAID Controller
Windows found a driver for this device. To install the driver Windows found, click Next.
a:\win2k_xp\iteraid.inf
< Back Next > Cancel

6. The driver installation has finished. Press "Finish" to continue.



7. Follow the instruction to restart the computer then the driver will take effect.

System Settings Change 🛛 🛛 🔀		
?	To finish setting up your new hardware, you must restart your computer. Do you want to restart your computer now?	
	<u>Yes</u> <u>N</u> o	

Verify Installation

Follow the previous section to install the driver. After the system restarts, you can do the following steps to check if the driver has been installed successfully.

- Right-click My Computer icon on Desktop. Select the Properties option from the form.
- Select the Hardware tab from the System Properties window then click the Device Manager button on the panel. If GigaRAID (IT8212) ATA RAID Controller device is shown under the SCSI and RAID controllers item (see the following figure), it means that the driver has been installed successfully.



 If there is a marking ! or ? under SCSI and ATA RAID Controller device, it indicates that the driver has not been correctly installed. User should remove the device and reinstall.

## Windows SE/ME

Install the driver

- 1. Start Windows.
- When Windows detects GigaRAID (IT8212) ATA RAID Controller in the system, a dialog box named Add New Hardware Wizard will show on the screen. Select the Specify the location of the driver (Advanced) option then click "Next" to continue to setup.

Add New Hardware Wizard	
	Windows has found the following new hardware: PCI RAID Controller Windows can automatically search for and install software that supports your hardware. If your hardware came with installation media, insert it now and click Next. What would you like to do? Automatic search for a better driver (Recommended) Specify the location of the driver (Advanced)
	< <u>B</u> ack Next > Cancel

 Insert the GigaRAID (IT8212) ATA RAID Controller Driver diskette into the floppy disk drive then select Search for the best driver for your device (Recommended) from the following dialog box and type A:\WIN98\_ME on the field designating the file's location. Press "Next" to continue to setup.

Add New Hardware Wizard		
	Windows will search for new drivers in its driver database on your hard drive, and in any of the following selected <ul> <li>Search for the best driver for your device. (Recommended).</li> <li>Removable Media (Floppy, CD-ROM)</li> <li>Specify a location:</li></ul>	
	< Back Next > Cancel	

4. The driver for **GigaRAID (IT8212) ATA RAID Controller** is found. Press "Next" to continue to setup.



5. The driver installation has finished. Press "Finish" to continue.



6. Follow the instruction to restart the computer then the driver will take effect.



Verify Installation

Follow the previous section to install the driver. After the system restarts, you can do the following steps to check if the driver has been installed successfully.

 Right-click My Computer icon on Desktop. Select the Properties option from the form.



 Select the Device Manager panel from the System Properties window. If GigaRAID (IT8212) ATA RAID Controller device is shown under the SCSI controllers item (see the following figure), it means that the driver has been installed successfully.

System Properties
General Device Manager Hardware Profiles Performance
• View devices by type • View devices by connection
<ul> <li>Computer</li> <li>Disk drives</li> <li>Display adapters</li> <li>Floppy disk controllers</li> <li>Hard disk controllers</li> <li>Hard disk controllers</li> <li>Monitors</li> <li>Monitors</li> <li>Mouse</li> <li>Network adapters</li> <li>Ports (COM &amp; LPT)</li> <li>SCSI controllers</li> <li>System devices</li> <li>Universal Serial Bus controllers</li> </ul>
Properties Refresh Remove Print
OK Cancel

3. If there is a marking ! or ? in front of the GigaRAID (IT8212) ATA RAID

**Controller** device as shown below, it indicates that the driver has not been correctly installed. User should remove the device and reinstall.

System Properties
General Device Manager Hardware Profiles Performance
• View devices by type • View devices by connection
<ul> <li>Computer</li> <li>Disk drives</li> <li>Display adapters</li> <li>Floppy disk controllers</li> <li>Hard disk controllers</li> <li>Keyboard</li> <li>Monitors</li> <li>Mouse</li> <li>Network adapters</li> <li>Ports (COM &amp; LPT)</li> <li>SCSI controllers</li> <li>System devices</li> <li>Universal Serial Bus controllers</li> </ul>
P <u>r</u> operties Re <u>f</u> resh R <u>e</u> move Pri <u>n</u> t
OK Cancel

# Windows NT

Install the driver during Windows NT installation

1. Start Windows NT installation.



Warning: Because of the different selections of the following installation methods, the time when step2 starts will be different.

- Boot from floppy with Windows installation diskette.
- Boot from floppy with un-installable diskette.
- Boot from CD-ROM with Windows installation CD.
- When the message "Setup is inspecting your computer's hardware configuration" appears on the bottom of the screen, please press the <F6> key.
- The installation will continue. When a message appears to ask you to designate the device you want to install, press the <S> key.
- The device list of SCSI Adapter will show on the following window. Select "Other" and press the <Enter> key to continue.
- 5. Insert GigaRAID (IT8212) ATA RAID Controller Driver diskette into the floppy disk drive then press the <Enter> key to continue.
- Select GigaRAID (IT8212) ATA RAID Controller (Windows NT) from the device list shown on the window then press the <Enter> key to continue.
- The devices that are going to be installed will be listed on the next window.
   GigaRAID (IT8212) ATA RAID Controller (Windows 2000/XP) should be contained on

the list. If you need to install any other devices, please designate them now. After designating all the devices, please proceed to the next step.

8. Press the <Enter> key to continue the installation of Windows NT.

Install the driver under existing Windows NT

- 1. Start Windows.
- 2. Select **Settings** from the **Start** menu then choose the **Control Panel** option from the **Settings** form.



3. In the Control Panel window, double-click on the SCSI Adapters icon.



4. Choose the **Drivers** tab from the **SCSI Adapters** window then press "Add" to continue.

SCSI Adapters	?×
Devices Drivers	
Installed SCSI Adapter drivers are listed below.	
IDE CD-ROM (ATAPI 1.2)/Dual-channel PCI IDE Co	(Started)
<u>A</u> dd <u>R</u> emove	
ОК	Cancel

5. Click **Have Disk** from the **Install Driver** window.

Install Drive	er (			×
	ick the driver you wa you have an installati isk.	nt to install, and the ion disk for a driver I	n click OK. hat is not in th	e list, click Have
<u>M</u> anufacture	ers:	SCSI Adapter		
[Standard I Adaptec Advanced AMI BusLogic Compaq	nass storage co	IDE CD-ROM (ATA	API 1.2)/Dual-	channel PCI IDE Cor
				<u>H</u> ave Disk
			OK	Cancel

 Insert the GigaRAID (IT8212) ATA RAID Controller Driver diskette into the floppy disk drive then type A:\WINNT on the field designating the file's location. Press "OK" to continue to setup.

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

7. Select GigaRAID (IT8212) ATA RAID Controller from the window then click

"OK" to continue.

Install Dr	iver	x
¢	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	
ITE IT8	212 ATA RAID Controller	
	OK Cancel	

8. Follow the instruction to restart the computer then the driver will take effect.

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

Verify Installation

Follow the previous section to install the driver. After the system restarts, you can do the following steps to check if the driver has been installed successfully.

- Follow step1 to step3 described in the previous section to activate the SCSI Adapters option.
- If the GigaRAID (IT8212) ATA RAID Controller device is shown on the Devices panel as shown below, it means that the driver has been installed successfully.

SCSI Adapters	?×
Devices Drivers	
SCSI adapters and connected devices are listed below.	
<ul> <li>IDE CD-ROM (ATAPI 1.2)/Dual-channel PCI IDE Controller</li> <li>IDE CD-ROM (ATAPI 1.2)/Dual-channel PCI IDE Controller</li> <li>ITE IT8212 ATA RAID Controller</li> </ul>	
Properties	
OK Car	ncel

## Linux

#### Install the GigaRAID (IT8212) ATA RAID Controller on Red Hat 7.3

1. Mount the driver CD-ROM.

[/]mkdir cdrom ← For mount point

[/]mount −t iso9660 /dev/cdrom /cdrom ← Mount CD-ROM under /cdrom

#### directory

2. Copy and unzip the new kernel

[/]cp /cdrom/linux/linux-2.4.18.tar.gz /usr/src/ ← Copy new kernel to the

/usr/src/

[/]cd /usr/src/

[/]tar zxvf linux-2.4.18.tar.gz ← Untar the kernel

1. Compile the new kernel

[/]cd linux-2.4.18 ← Go to the new kernel directory

already selected , you don't have to select again)

The following are the procedures to compile the new kernel:

[/]make dep

[/]make clean

[/]make bzlmage

[/]make modules

[/]make modules\_install

#### or you can use this way

[/] make dep clean bzImage modules modules\_install

then

[/]make install  $\leftarrow$  This will copy the necessary stuffs to the /boot directory

2. Update the new kernel into LILO

```
[/] cd /etc/
yours
prompt
timeout=50
default=Linux
boot=/dev/had
map=/boot/map
install=/boot/boot.b
message=/boot/message
linear
#
# Original kernel
#
image=/boot/vmlinuz-2.4.18-3
     label=Linux
     initrd=/boot/initrd-2.4.18-3.img
     read-only
     root=/dev/hda1
#
# Add the new kernel here
#
image=/boot/vmlinuz-2.4.18 ← The kernel is in /boot directory
     label=Linux-RAID 
< The new kernel label (you can change it)
     read-only
     root=/dev/hda1
```

3. Run LILO to update the book record on disk by typing the following:

[/] /sbin/lilo

The output should be similar to:

Added Linux \*

Added Linux-RAID

4. Reboot the system then choose the Linux-RAID.

[/]reboot

# Application

## Installation

#### Pictures below are shown in Windows XP (CD ver. 2.2)

Insert the driver CD-title that came with your motherboard into your CD-ROM drive, the driver CD-title will auto start and show the installation guide. If not, please double click the CD-ROM device icon in "My computer", and execute the setup.exe.

1. Click "GigaRAID Utility.


2. Click "Next".



#### 3. Click "Next".



4. Click "Next".



5. Click "Finish".



# **Functions Description**

# 1. Starting

RAID Manager will be executed automatically when Microsoft Windows is booted. A small icon, " , will show in the system tray at the right bottom corner to indicate RAID Manager is active.

🛃 start

🔇 🕖 🏷 🎎 📶 9:57 AM

#### **Open RAID Manager**

Double click on the small icon in the system tray to open the RAID Manager control panel.

Click the right button on the small icon to open the menu then choose "Open".

The system information will be presented in the beginning when the RAID Manager

control panel is opened. Please read the next section **System Information** for more detail about system information.

#### **Close RAID Manager**

Click "Close" to close RAID Manager. The RAID Manager will be minimized to the system tray at the right bottom corner but will not exit.

#### Terminate RAID Manager

Right click the small icon, and choose "Exit" to terminate RAID Manager.

Note: Click the "Start Menu" at the left bottom on the RAID Manager control panel to choose RAID functions.

If more than one adapter exists, click the "RAID Adapter" at the right bottom to choose RAID Adapter.

#### Alert LED, at the right bottom, is used to indicate the whole system situation.

GREEN: Normal.

RED: If the configuration error of any array occurs.

BLINKING: If there is any array in rebuilding process.

# 2. System Information

#### **Device Status**

Click the "Start Menu" at the left bottom on the RAID Manager control panel then choose "Device Status" to show the system information.

RaidMgr			
		GigaRAID	
6			
6			
	$\sim$ $\sim$		$\sim$
D	evice Properties:	and the second second second second	
	Array ID	0	
	Array Name	Array U	
	Capacity	38172 Megabytes	
	Stripe Size	N/A BAID 1	
	Raid Type	RAID 1	
	Actual Disk Count	2	
	Total Disk Count	2 00/	
	lute Rebuild	Vee	
	Roat Diak	No	
	State	Active	
	Juio	Addite	Reset Adapter
		Defrech Olece	
Device Status	s <u> </u>	neiresii Glose	RAID Adapter 3 🔽 🔘

- If the disk arrays exist, they will be listed at the first row.
- If the physical disks exist, they will be listed at the second row.
- Click the disk array or physical disk icons to list the device properties.
- Reset Adapter: Check to reset adapter.
- Click "Refresh" to refresh system information.

#### 3. Configuration

#### Create Disk Array

Click the "Start Menu" at the left bottom on the RAID Manager control panel then choose "Create Disk Array" to create a disk array.

RaidMgr			
	Giga	RAID	11-12 × 20-1-1
Available Disks: Disk1 - MAXTOR 6L040J2 Disk3 - MAXTOR 6L040J2	Select	ted Disks:	Existing Arrays:
Array Name: Array Type: RAD 0 Stripe Size: 64K Bytes Auto Rebuild Boot Disk Frase Partition Source:	Device Properties: Disk ID Model Number Capacity Raid ID Raid ID Raid Type Auto Rebuild Boot Disk State	Primary DE, Slave Devid Dist - MAXTOR RUAD 38172 Mogabytes Not In Array Not In Array Yes No Active	22 12
Create Disk Array	Create	CIOSE RAID A	Adapter 3

- Array Type: RAID 0, RAID 1, RAID 0+1, JBOD
- Array Name: Assigned by RAID Manager
- Block Size: Virtual block size for RAID 0 or RAID 0+1
- Auto Rebuild: Check to rebuild by hardware automatically.
- Boot Disk: Check to boot from this array.
- Erase Partition: Check to erase partition table.
- Source: Source disk
- Existing Arrays: Existing arrays list
- Available Disks: Disks can be used to create an array.
- Selected Disks: Disks will be put in an array.

- Click "Create" to create a disk array.
- Remarks:
  - Stripe Size is valid when Array Type is RAID 0 or RAID 0+1.
  - Auto Rebuild is valid when Array Type is RAID 1 or RAID 0+1.
  - Source Disk is valid when Array Type is RAID 1 or RAID 0+1 and Erase Partition is disabled.
  - Check "Erase Partition" to erase partition table or uncheck "Erase Partition" not to erase partition table. If there is an Array of RAID 1 or RAID 0+1, "Erase Partition" can't be modified.
  - If "Erase Partition" is unchecked, the "Source" must be assigned.

# **Delete Disk Array**

Click the "Start Menu" at the left bottom on the RAID Manager control panel then choose "Delete Disk Array" to delete disk array.

aidMgr	Gig	aRAID		_
Available Array Array 0	s:	Selected		
✓ Erase Partition	Device Properties: Array ID	0		
	Array Name Capacity Stripe Size Raid Type	Array 0 38172 Megabytes N/A RAID 1		
	Actual Disk Count Total Disk Count Disk ID Auto Rebuild Boot Disk	2 2 0/2/ Yes No		
	Relete	Close	DAD Advetor 2	

- Available Arrays: List existing arrays.
- Selected Arrays: Arrays will be deleted.
- Erase Partition: Check to erase partition table.
- Click "Delete" to delete disk arrays.

#### Rebuild Disk Array

Click the "Start Menu" at the left bottom on the RAID Manager control panel then choose "Rebuild Disk Array" to rebuild disk array.

RaidMgr	
	GigaRAID
Rebuild Array:	Array 0 💽 Resume Previous Rebuild Process
Source Disk: Destination Disk: Device Propert	Disk2 - MAXTOR 6L040L2  Status Timer: 30 Sec. Disk2 - MAXTOR 6L040L2
Array (D Array Name Capacity Stripe Size Raid Type Actual Disk C Total Disk Co Disk ID Auto Rebuild Boot Disk State	0 Array 0 38172 Megalatytes N/A RAID 1 2 nt 2 0/2/ Yes No Active
	0 %
Rebuild Disk Array	Rehuild Close RAID Adapter 3 🗸 🔾

- Rebuild Array: List arrays which can be rebuilt.
- Source Disk: The source for rebuilding the array
- Destination Disk: The destination for rebuilding the array
- Resume Previous Rebuild Process: Check to resume the last rebuild process.
- Status Timer: Time interval for polling rebuild status
- Click "Rebuild" to start rebuilding a disk array.

# 4. Records

#### **Activity Records**

Click the "Start Menu" at the left bottom on the RAID Manager control panel then choose "Activity Records" to show the activity records.



Click "Clear" to clear all records.

# 5. Options

#### **Email Notification**

Click the "Start Menu" at the left bottom on the RAID Manager control panel then choose "Email Notification" to modify the settings.

RaidMgr		
	GigaRA	
T	Enable Email Notification	
	Event Timer: 600 Sec.	
	Email Address:	
	Please Select Email Notification Type: • Default Windows Messenger (ex. Out • SMTP SMTP Server: Email Address:	ook)
	Test	
Email Notification	Set (	RAID Adapter 3

- Event Timer: Self error detection time interval
- Enable Email Notification: Check to enable email notification.
- Email Address: If email notification is enabled, a warning message will be sent to this email box.
- Click "Test" to send a test email to the above email address.
- Click "Set" to save the settings.

#### **Remote Access**

Click the "Start Menu" at the left bottom on the RAID Manager control panel then choose "Remote Access" to modify the settings.

RaidMgr
GigaRAID
Single Machine Client Server
Server Name:
Set Close Data data
RAID Adapter 3 JGL GIUSG RAID Adapter 3 JGL GIUSG

- Machine Type: Single Machine, Client or Server
- Server Name: If this machine is client, a server is required.
- Server Name can be a computer name or an IP address.
- Click "Set" to save the settings.
- Restart RAID Manager if settings are modified.

#### Miscellaneous 6.

#### Icon list



represents disk array is inactive.



represents disk array is active.



represents physical disk is inactive.



represents physical disk is active.

# How to ...

# 1. Create RAID 0

- Open RAID Manager.
- Change the control panel to "Create Disk Array".
- Select "Array Type" as "RAID 0".
- Check "Erase Partition" to erase partition table or uncheck "Erase Partition" not to erase partition table.
- Select "Stripe Size". Default is 64 KB.
- Select at least two disks.
- Click "Create".

#### 2. Create RAID 1

- Open RAID Manager.
- Change the control panel to "Create Disks Array".
- Select "Array Type" as "RAID 1".
- Check "Erase Partition" to erase partition table or uncheck "Erase Partition" not to erase partition table. If there is an Array of RAID 1 or RAID 0+1, "Erase Partition" can't be modified.
- If "Erase Partition" is unchecked, the "Source" must be assigned.
- Select exactly two disks (These two disks must be "primary master and secondary master" or "primary slave and secondary slave").
- Click "Create".

# 3. Create RAID 0+1

- Open RAID Manager.
- Change the control panel to "Create Disks Array".
- Select "Array Type" as "RAID 0+1".
- Check "Erase Partition" to erase partition table or uncheck "Erase Partition" not to erase partition table. If there is an Array of RAID 1 or RAID 0+1, "Erase Partition" can't be modified.
- If "Erase Partition" is unchecked, the "Source" must be assigned.
- Select exactly four disks.
- Click "Create".

## 4. Create JBOD

- Open RAID Manager.
- Change the control panel to "Create Disk Array".
- Select "Array Type" as "JBOD".
- Select at least two disks.
- Click "Create".

# Q&A

1. **Q:** How to set RAID as startup disk?

A: Please set booting device to Array0 and set as SCSI boot in the BIOS.

2. **Q:** Is CD ROM able to be used?

A: This product does not support any ATAPI devices.

3. **Q:** How can two RAID0 perform well?

A: For two RAID0, it is suggested that HD should be put in different

channels to get a better performance.

- Q: Is a special mobile rack necessary for HOT Swap?
   A: It's not necessary. The regular one is just enough.
- Q: What if R1 and R0+1 just create RAID but don't Rebuild right away?
  A: It is suggested that they should Rebuild as soon as possible because the HD data of two mirrors are different and if the HD with the correct data is damaged, the data will lose.
- Q: For R0+1, when two HDs in the same channel are hot swapping at the same time, sometimes AP can't find that Slave is back again.

**A:** This situation may happen to some HDs. To avoid this situation, please set Slave HD first then set Master HD.