# **RAIDExpress 133 RAID**

# **USER MANUAL**

**Preliminary Specification 0.3** 

### Notice

Reasonable efforts have been made to ensure that the information in this manual is accurate. We assume no liability for technical inaccuracies, typographical, or other errors contain herein.

Backup your important data before using the IDE RAID product, and use at your own risk. In no event shall we be liable for any loss of profile, or for direct, indirect, special, incidental or consequential damages arising from any defect or error in our products or manuals.

Introduction	1
Features	2
What is the RAIDExpress 133 card	
Quick Start	5
Unpack your RAIDExpress 133 Card package	5
Install the RAIDExpress 133 Card	6
Create Your Disk Array	8
Setup Utility	14
Using the RAIDExpress 133 Card Setup Utility	14
RAIDExpress 133 Card Setup Utility Main Menu	15
Auto Configuration	16
Define RAID	21
Delete RAID	27
Rebuild RAID	30
RAID Card Configuration	35
Driver Installation	37
Windows XP	
Windows 2000	44
Windows 98SE/ME	52
Windows NT	60
Linux	68
Application	76
Installation	76
Functions Description	79
How to Create Disk Array?	91
Q&A	93

### Contents

echnology Support94
---------------------

## Introduction

This manual is mainly to help users setup the RAIDExpress 133 card and solve problems when they use it.

If it is your first time to use the RAIDExpress 133 card and you are about to install it, please refer to the "<u>Quick Start</u>" section on page 5. 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 RAIDExpress 133 card, please refer to the "**Q&A**" section on page 93. In this section, you can refer to the problems users may face and find the correct solutions. You can follow the instructions to solve your problems and then you will get satisfactory results.

If there are still any questions you don't understand, please refer to the "<u>Technology</u> <u>Support</u>" section on page 94 to look for technical support.

### Features

- I Compatible with the ATA/ATAPI-6 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.
- I 512 bytes FIFO for auto transfer per IDE channel to get a high performance
- I Supports the RAID 0/1/0+1 function.
- I Supports the JBOD function.
- I Supports the Scatter/Gather function for the DMA/UDMA function.
- I Includes one embedded CPU and firmware on the system to handle the RAID function. It can reduce the driver's loading of system CPU and improve the system's ability.
- I Supports Hot Swap function and doesn't need any special HD removable box.
- I Low CPU utilization based on local processor architecture.
- I Compatible with PCI Local bus specification v2.2. Our systems can be easily installed to PCs.
- I Supports PCI power Management v1.0 to reduce the power consumption.
- I Supports the drivers for Windows 98SE/ME, Windows NT 4.0, Windows 2000/XP/2003 server and Linux v2.4.1.0.

### What is the RAIDExpress 133 card

This RAIDExpress 133 card is an excellent product resulting from Soc concept. It includes one RAID Chip combining the 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 the high CPU operation or PCI traffic, users won't have any penalties for installing the 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 a 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 their systems and the IDE RAID system have any compatibility issue.

This RAIDExpress 133 card 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 RAIDExpress 133 card 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 are 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 the 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 merits.

# **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 Setup Utility on page 14 to achieve your goal.

### Unpack your RAIDExpress 133 Card package

When you unpack your RAIDExpress 133 card package, you can see the following items.

- I RAIDExpress 133 card.
- I RAIDExpress 133 manual.
- I RAIDExpress 133 card software CD.
- I Two 80-wire/40-pin Ultra ATA/133 hard drive cables.

I f you lack anything mentioned above, please contact your distributor to ask for remedy.



Warning: In order to prevent any data loss resulting from inappropriate operation, please backup data before you start to install your system.

### Install the RAIDExpress 133 Card

This RAIDExpress 133 card meets the PCI v2.2 standard and can be easily installed under 32-bit PCI slots of different PC systems. Please follow the following procedures to install it.

- 1. Remove the case of the PC system.
- 2. Remove the inside slot cover of any available 32-bit PCI slot.
- 3. Install the RAIDExpress 133 card in this open slot.
- 4. Attach Ultra ATA/133 hard drives to the RAIDExpress 133 card.

#### The hard drives which are required for the installation

The hard drives, which are connected on the RAIDExpress 133 card, 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.
- 2. 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 included in the package to connect the RAIDExpress 133 card 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 with the same specification.

### **Create Your Disk Array**

You can create your own array using the onboard BIOS utility of the RAIDExpress 133 card 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 RAIDExpress 133 card, boot your system and then you will see the following message shown by the RAIDExpress 133 card onboard BIOS on the screen.

IT8212 RAID BIOS V1.7.1.91 F/H Ver 02093030 Copyright 2002-2004 ITE, Inc. All Rights Reserved Please wait for IDE scan.. Drive 0: QUANTUM FIREBALLP LM30 Array 0 JB00 Drive 1: Not Detected Drive 2: IBM-DTTA-350840 Array 0 JB00 Drive 3: Not Detected Press <Ctrl-F> or <Ctrl-E> to enter Setup Utility or Press <ESC> or <S> to continue booting.... Please press "Ctrl-F" or "Ctrl-E" keys to enter the BIOS utility **Main Menu**. The screen below will appear.

IT8212 Setup Util	ity (C)Copyright 2002–2004 ITE, Inc.	
	E Hain Henu J	
	Auto Configuration [1]	
	Auto Configuration	
	Define RAID[2]	
	Delete RAID	
	Rebuild RAID 4 J	
	RAID Card Configuration[5]	
[1][5] Select		[ESC] Exit

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 2002-2004 ITE,	
Setup Array Type as:	RAID D
E Array Configuration	]
RAID Mode	Stripe
Un-used Drive(s)	0
Drive(s) in Array	2
Array Capacity (size in MB)	16127
[→,←,Space] Change Option [CTRL-Y] Sav	le [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
IDE	None	1 or 2 or 3 or 4

Totally, there are five configurations supported:

#### Setup Array for RAID 0:

The RAIDExpress 133 card 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 RAIDExpress 133 card 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 RAIDExpress 133 card 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 IDE:

You can use the RAIDExpress 133 card as an IDE controller. The RAIDExpress 133 card allows you to use one, two, three or four hard drives. All the hard drives attached on the RAIDExpress 133 controller are left to act as independent drive volumes. Please follow the procedures below to set an array:

- I Use the "space" bar key to select a RAID type.
- I 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 newly created array will be erased. If you select IDE, the boot sector will be remained.



Warning: If you prefer to keep data in your hard drives, please follow the procedures in the <u>Define RAID</u> section on page 21 to setup your arrays manually.

- I Click the "Esc" key to go back to the <u>Main Menu</u> on page 9.
- I Click the "Esc" key to quit BIOS and boot.
- I 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 RAIDExpress 133 Card Setup Utility

The RAIDExpress 133 card 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 RAIDExpress 133 card. Please attach your hard drives to the RAIDExpress 133 card and boot your system. If your array's configuration is correct, you will see the following message shown by the RAIDExpress 133 card onboard BIOS on the screen. You can press "Ctrl-F" or "Ctrl-E" keys to enter Setup Utility or press the "Esc" key to skip and boot directly.

IT8212 RAID BIOS V1.7.1.91 F/H Ver 02093030 Copyright 2002-2004 ITE, Inc. All Rights Reserved		
Please наit for IDE scan Drive O: QUANTUM FIREBALLP LM3D Drive D: QUANTUM FIREBALLP LM3D	Array D	JBOD
Drive 1: Not Detected Drive 2: IBH-DTTA-350840 Drive 3: Not Detected	Array D	JBOD
Press <ctrl-f> or <ctrl-e> to enter Setup Utility Press <esc> or <s> to continue booting</s></esc></ctrl-e></ctrl-f>	or	

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

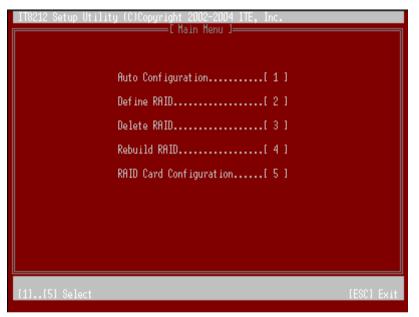
boot.

IT8212 RAID BIOS V1.7.1.91 F/H Ver O2O93O3 Copyright 2002–2004 ITE, Inc. All Rights R		
Please наit for IDE scan Drive D: QUANTUH FIREBALLP LH3O Drive 1: Not Detected	Array D	JBOD
Drive 1: Not Detected Drive 2: IBH-DTTA-350840 Drive 3: Not Detected	Array 3	JBOD
Harning‼ RAID configuration error Press <ctrl-f> or <ctrl-e> to enter Setup  </ctrl-e></ctrl-f>	Utility	

### **RAIDExpress 133 Card 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 16 to create new arrays automatically. You can use <u>Define</u> <u>RAID</u> on page 21 and <u>Delete RAID</u> on page 27 to manually create or delete arrays. You can also use <u>Rebuild RAID</u> selection on page 30 to help you rebuild a mirrored (RAID 1 or RAID 0+1) array. Besides, you can use <u>RAID Card Configuration</u> on page 35 to see the controller's resources, each hard drive's status and the setting of the RAIDExpress 133 card.

### **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

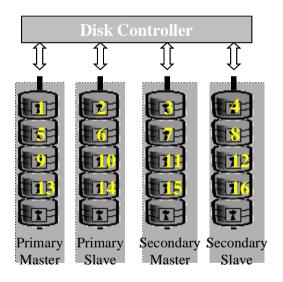
Configuration menu and go back to the Main Menu on page 15.

IT8212 Setup Utility (C)Copyright 2002–2004 ITE,	
Setup Array Type as:	RAID D
E Array Configuration 3	]
RAID Hode	Stripe
Un-used Drive(s)	0
Drive(s) in Array	2
Array Capacity (size in MB)	16127
[+,+,Space] Change Option [CTRL-Y] Saw	e [ESC] Exit

### Setup Array for RAID 0:

The RAIDExpress 133 card 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.

#### RAID 0

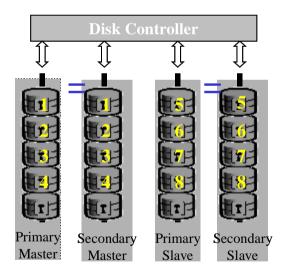


### Setup Array for RAID 1:

The RAIDExpress 133 card 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.

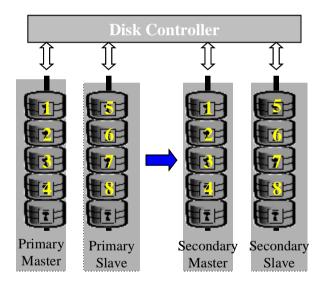
RAID 1



### 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 RAIDExpress 133 card 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 IDE:

You can use the RAIDExpress 133 card as an IDE controller. The RAIDExpress 133 card allows you to use one, two, three or four hard drives. All the hard drives attached on the RAIDExpress 133 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 the "space" key to specify the bootable array if you would like to boot your system from array attached on RAIDExpress 133 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 **Main Menu**, please click the "Esc" key.

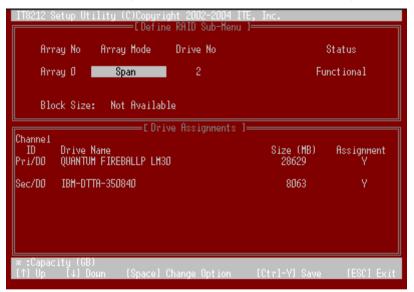
Array No	Array Mode	Drive No	Size(MB)	Status
Array D	Span	2	36693	Funct ional
Array 1				
Array 2				
Array 3				

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  $\ddagger$ 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 and 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 21.



### **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 RAID Menu** on page 21. The location of the hard drive is shown at 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.

IDE: 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 an IDE drive. The existence of the IDE hard drive sometimes will influence the array number user specified. If the Pri/D0, Pri/D1, Sec/D0 or Sec/D1 hard drive is an IDE 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 21 then you will find the Array No is changed. This is because the existence of the IDE 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 and then you can click the "Esc" key to go back to the **Define RAID Menu** on page 21.

IT8212 Setup Utility (C)Copyright 2002-2004 ITE, Inc. E Define RAID Sub-Menu J Array No Array Mode Drive No	Si	tatus
Array D Span 2 Block Size: Not Available	Fun	ctional
Channel ID Drive Na Erase old data in this new array? Pri/DD QUANTUH Y - Yes / N - No Sec/DD IBH-DTTR-350840	8063	Assignment Y Y
ˈ≈ :Capacity (GB) [↑] Up [↓] Doun [Space] Change Option [Ctr]	-Y] Save	[ESC] Exit

RAIDExpress 133 RAID USER MANUAL

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 30.)

IT8212 Setup Uti		ight 2002–2004 I ne RAID Sub-Menu	TE, Inc.	
Array No Array D Block Size:	Array Hode Hirror Not Availa	Drive No 2		Status Functional
Channel ID Drive N Pri/DD QUANTUH Sec/DD IBH-DTT	Do you lik a Y - Yes /	iuo Accianmonto e to rebuild cur N - No		Assignment Y Y
≭:Capacity (GB) [↑] Up [↓] Do	un [Space]	Change Option	[Ctrl-Y] Save	e [ESC] Exit

If you choose not to rebuild this array for the time being, the RAIDExpress 133 card cannot read data correctly because the data is inconsistent in the mirrored hard drives. Thus, the following window will appear.

IT8212 Setup Ut	ility (C)Copyright	2002-2004 ITE,	Inc.	
Because drives i	reconstruction is n s inconsistent. Pla	ease select the	et, data in the source disk nou.	
Channel ID	Drive Name	ive List ] <del></del>	Size	(MB)
Pri/DD Sec/DD	QUANTUH FIREBALLP Ibh-otta-350840	LH3D	286 80	
≋ :Capacity (GB [↑] Up	) [↓] Doun	[Enter] S	elect	[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 the setting will be finished 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 21.

### 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 "D" to select it and then enter the **Delete RAID Sub-Menu** to delete your array. The key "D" has no effect if the highlight raw is an empty array. If you want to quit the menu and go to the **Main Menu**, press the "Esc" key.

IT8212 Setup Utility (C)Copyright 2002-2004 ITE, Inc. [ Delete RAID Menu ]				
Array No	Array Hode	Drive No	Size(MB)	Status
Array D	Span	2	36693	Funct ional
Array 1				
Array 2				
Array 3				
×:Capacity (GB [↑] Up	) [↓] Down	[[	)] Delete	Bootable Array: ♦ ESC] Exit

As for the detailed descriptions of "Array Mode", "Drive No", "Size" and "Status", please refer to **Define RAID** on page 21.

#### Delete RAID Sub-Menu

When you highlight the array you select to delete at the Delete RAID Menu and

press the "D" 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 Utility (C)Copyright 2002-2004 ITE, Inc.				
C Delete RAID Sub-Menu ]				
Array No Array Mode Drive No Status				
Array D	Span	2	Fu	nctional
Block Size:	Block Size: Not Available			
	——————————————————————————————————————	rive Assignments l		
Channel ID DriveM Pri/DD QUANTUM	lane I FIREBALLP LH	30	Size (MB) 28629	Assignment Y
Sec/DD IBH-DTTA-350840			8063	۷
Are you sure you want to delete this array? Press Ctrl-Y to Delete or other key to abort.				
≍ :Capacity (GB)				

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 2002–2004 ITE, Inc.				
Array No Array D	Array Hode Span	Drive No 2	Fu	Status Inctional
	Not Availa			
Channel ID Drive N Pri/DD QUANTUM	a Erase old	rive Assignments I— data in this new arr N - No	a <b>y?</b> 3)	Assignment Y
Sec/DO IBH-DTT	A-350840		8063	Y
≍ :Capacity (GB)				

### **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 Utility (C)Copyright 2002-2004 ITE, Inc.				
Array No	Array Mode	Drive No	Size(MB)	Status
Array D				
Array 1				
Array 2	Hirror	2	8063	Funct ional
Array 3				
un affanantitu. (ffD				A Destable Owner
⊯:Capacity (GB) [↑] Up	, [↓] Down	(Ent	erl Select	♦ :Bootable Array [ESC] Exit

### **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		2002-2004 ITE, Inc.
Channel ID	Drive Name	rce Drive ]Size (HB)
	r T <sub>av</sub>	get Drive ]
Channel ID	Drive Name	Size (HB)
	[ Dr	
Channel ID	Drive Name	Size (MB)
Pri/DO	HDS722540VLAT20	39266
Sec/DD	IBH-DTTA-350840	8063
≍:Capacity ()	GB)	
LTJ Up	[↓] Down	[Enter] Select [ESC] Exit

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.

IT8212 Setup	Utility (C)Copyright 2002–2004 ITE, Inc.	
Channel ID Pri/DD	Drive Name Drive Name HDS722540VLAT20	Size (HB) 39266
Channel ID	Drive Name	Size (MB)
Sec/DD	IBH-DTTR-350840	8063
	Start to duplicate the image.	
Channel ID	Drive Y - Continue / ESC - Abort	Size (MB)
Pri/DO	HDS722540VLAT20	39266
Sec/DO	IBH-DTTR-350840	8063
≋:Capacity ( [↑] Up	GB) [↓] 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.

Channel ID Drive Name Size (HB) Pri/DD HDS722540VLAT2D 39266 Channel ID Drive Name Size (HB) Sec/DD IBH-DTTA-350840 8063 Do you like monitoring the reconstruction status till it completes? Y - Yes / N - Escape Size (HB) Pri/DD HDS722540VLAT2D 39266 Sec/DD IBH-DTTA-350840 8063 * :Capacity (GB)	IT8212 Setup	Utility (C)Copyright 2002–2004 ITE, Inc.	
Channel ID Drive Name Size (HB) Sec/DO IBH-DTTA-350840 8063 Do you like monitoring the reconstruction status till it completes? Y - Yes / N - Escape Size (HB) Pri/DO HDS722540VLAT2O 39266 Sec/DO IBH-DTTA-350840 8063			
Channel ID       Drive       reconstruction status till it completes? Y - Yes / N - Escape       Size (HB)         Pri/D0       HDS722540VLAT20       39266         Sec/D0       IBH-DTTR-350840       8063         * :Capacity (GB)       *		Drive Name	
Sec/DD IBH-DTTA-35084D 8063	Channel ID	reconstruction status till it	Size (MB)
≍:Capacity (GB)	Pri/DO	HDS722540VLAT20	39266
	Sec/DD	IBH-DTTA-350840	8063
	≭:Capacity ( [↑1 Un	GB) [↓] Down [Enter] Select	[ESC] Exit

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

IT8212 Setup l	Jtility (C)Copyright 200		
Channel ID Pri/DD	Drive Name HDS722540VLAT20		Size (MB) 39266
Channel ID Sec/DD	E Target Drive Name IBH-DTTA-350840		Size (MB) 8D63
Channel ID	Please µait µhile dupli	cating image 49% Completed	 ze (HB)
Pri/DD Sec/DD	HD8722540VLAT20 IBH-DTTA-350840		39266 8063
×:Capacity ((	(↓) Down	[Enter] Select	(ESC) Exit

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

#### finished.

IT8212 Setup	Utility (C)Copyright 2002–2004 ITE, In E Source Drive J	ς.
Channel ID Pri/DO	Drive Name HDS722540VLAT20	Size (MB) 39266
Channel ID Sec/DD	E Target Drive ] Drive Name IBH-DTTA-350840	Size (MB) 8063
Channel ID	Array has been recoverd D Press ANY KEY to continue.	Size (HB)
Pri/DO Sec/DO	HD\$722540VLAT20 IBH-DTTA-350840	39266 8063
⊯ :Capacity ( [↑] Up	GB) [4] Doum [Enter] Selo	ect [ESC] Exit

Then you leave and go back to the **<u>Rebuild RAID Menu</u>** on page 30.

## **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 2002-20	
Auto-Rebuild: En	able
[RAID Card R	esource ]
Channel Ø Interrupt: 5 I	/P Port: 0000CC00
Channel 1 Interrupt: 5 I	/P Port: 0000C800
Channel ID Drive Name Pri/DD HDS722540VLAT20	aus ] Size Drive (HB) Array No Mode 39266 Array 2 US
Sec/DO IBH-DTTA-350840	8063 Array 2 U2
≍ :Capacity (GB) Dri [→,∢,Space] Change Option	ve Hode: P = PIO, D = DHA, U = UDHA [ESC] Exit

When Auto-Rebuild enables, the RAIDExpress 133 card can rebuild your mirrored array automatically. If a failed mirrored drive is replaced without shutting down your PC, the RAIDExpress 133 card 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 76) or from <u>Rebuild RAID</u>. <u>Menu</u> (Please refer to page 30).

Note: You need to install removable docking case to support hard drive hot-plug.

On the **RAID Card Resource** section, you can see the PCI slot interrupt and I/O port address used by the RAIDExpress 133 card. 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 22. 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 IDE drive. 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 RAIDExpress 133 ATA RAID Controller driver under the following various operating systems. Before starting to install this driver, please make sure that RAIDExpress 133 ATA RAID Controller has already been properly setup in the system.

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

## 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.

- I Boot from floppy with Windows installation diskette.
- I Boot from floppy with un-installable diskette.
- I 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 RAIDExpress 133 ATA RAID Controller Driver diskette into the floppy disk drive then press the <Enter> key to continue.
- Select RAIDExpress 133 ATA RAID Controller (Windows 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.
   RAIDExpress 133 ATA RAID Controller (Windows 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 RAIDExpress 133 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? O Install the software automatically (Recommended) Install from a list or specific location (Advanced)
Contraction of the local division of the loc	Click Next to continue.
	< Back Next > Cancel

3. Insert the RAIDExpress 133 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:\WINXP 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 9	Settings Change 🛛 🕅
?	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.

- 1. 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 RAIDExpress 133 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 ? before the RAIDExpress 133 ATA RAID Controller device as shown below, it indicates that the driver has not been correctly installed. Users should remove the device and reinstall.

🖳 Device Manager	
File Action View Help	
🗄 🥛 Computer	
🗄 🥪 Disk drives	
🕀 😼 Display adapters	
🕀 🥝 DVD/CD-ROM drives	
🗄 🚭 Floppy disk controllers	
🗄 🔳 Floppy disk drives	
😟 🗃 IDE ATA/ATAPI controllers	
😟 🦢 Keyboards	
😟 🕥 Mice and other pointing devices	
🗄 😼 Monitors	
主 🎬 Network adapters	
🗄 🝠 Ports (COM & LPT)	
主 🐲 Processors	
🖻 🍘 SCSI and RAID controllers	
RAID Controller	
主 🧐 Sound, video and game controllers	
🖅 🦁 System devices	
🗄 🙀 Universal Serial Bus controllers	
	1
	1

## 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.

- n Boot from floppy with Windows installation diskette.
- n Boot from floppy with un-installable diskette.
- **n** 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 RAIDExpress 133 ATA RAID Controller Driver diskette into the floppy disk drive then press the <Enter> key to continue.
- Select RAIDExpress 133 ATA RAID Controller (Windows 2000) 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.
   RAIDExpress 133 ATA RAID Controller (Windows 2000) 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 RAIDExpress 133 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.

Install Hardware Device Driver A device driver is a software pro an operating system.	rs ogram that enables a hardware device to work with
This wizard will complete the ins	tallation for this device:
RAID Controller	
	gram that makes a hardware device work. Windows evice. To locate driver files and complete the
What do you want the wizard to	do?
Search for a suitable driv	er for my device (recommended)
<ul> <li>Display a list of the know driver</li> </ul>	n drivers for this device so that I can choose a specific

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 files?
Search for driver files for the following hardware device:
RAID Controller
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:
Floppy disk drives
CD-ROM drives
Specify a location
Microsoft Windows Update
< Back Next > Cancel

 Insert the RAIDExpress 133 ATA Raid Controller Driver diskette into the floppy disk drive then type A:\WIN2K on the field designating the file's location. Press "Next" to continue to setup.

Found Nev	v Hardware Wizard	×
_	Insert the manufacturer's installation disk into the drive selected, and then click OK.	OK Cancel
	Copy manufacturer's files from: A:\WIN2K_XF	Browse

## 5. The driver for RAIDExpress 133 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.



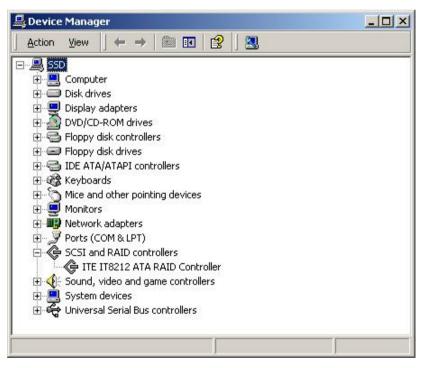
7. Follow the instruction to restart the computer then the driver will take effect.

System S	ettings Change				×
?	To finish setting up your new ha Do you want to restart your con	g up your new hardware, you must restart your computer. ) restart your computer now?			
	Yes	<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.

- 1. 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 RAIDExpress 133 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 ? in front of the RAIDExpress 133 ATA RAID
 Controller device, it indicates that the driver has not been correctly installed.
 Users should remove the device and reinstall.

## Windows 98SE/ME

#### Install the driver

- 1. Start Windows.
- When Windows detects RAIDExpress 133 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.



Insert the RAIDExpress 133 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		
	<ul> <li>Windows will search for new drivers in its driver database on your hard drive, and in any of the following selected</li> <li>Search for the best driver for your device. (Recommended).</li> <li>Removable Media (Floppy, CD-ROM)</li> <li>Specify a location: <ul> <li>A:\WIN98_ME</li> <li>Browse</li> </ul> </li> <li>Display a list of all the drivers in a specific location, so you can select the driver you want.</li> </ul>	
	< <u>B</u> ack Next > Cancel	

4. The driver for **RAIDExpress 133 ATA RAID Controller** is found. Press "Next" to continue to setup.



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



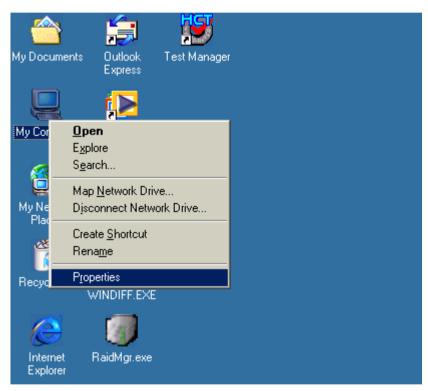
6. Follow the instruction to restart the computer then the driver will take effect.



## **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.

1. 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 RAIDExpress 133 ATA RAID Controller device is shown below 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>Keyboard</li> <li>Monitors</li> <li>Monitors</li> <li>Network adapters</li> <li>Ports (COM &amp; LPT)</li> <li>SCSI controllers</li> <li>ITE IT8212 ATA RAID Controller</li> <li>System devices</li> <li>Universal Serial Bus controllers</li> </ul>	
Properties Refresh Remove Print	
OK Cance	9

3. If there is a marking ! or ? in front of the RAIDExpress 133 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>Network adapters</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.



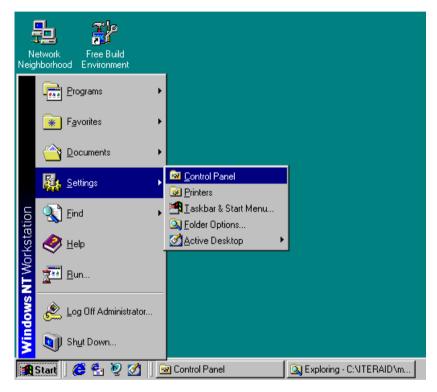
Warning: Because of the different selections of the following installation methods, the time when step2 starts will be different.

- **n** Boot from floppy with Windows installation diskette.
- **n** Boot from floppy with un-installable diskette.
- n 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.
- Insert RAIDExpress 133 ATA RAID Controller Driver diskette into the floppy disk drive then press the <Enter> key to continue.
- Select RAIDExpress 133 ATA RAID Controller (Windows NT) from the device list shown on the window then press the <Enter> key to continue.
- 7. The devices that are going to be installed will be listed on the next window. RAIDExpress 133 ATA RAID Controller (Windows NT) 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.

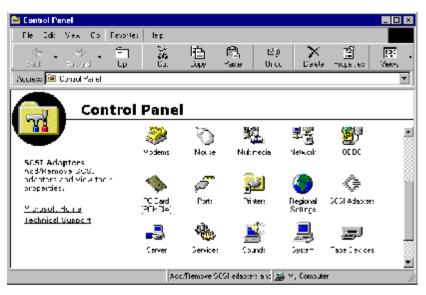
#### Install the driver under existing Windows NT

- 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)
Add <u>R</u> emove	
ОК	Cancel

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

Install Driver	×
	ant to install, and then click OK. tion disk for a driver that is not in the list, click Have
<u>M</u> anufacturers:	SCSI Adapter
[Standard mass storage co ▲ Adaptec Advanced Micro Devices ( AMI BusLogic Compaq ◀	IDE CD-ROM (ATAPI 1.2)/Dual-channel PCI IDE Cor
	Have Disk
	OK Cancel

 Insert the RAIDExpress 133 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 From Disk		
_	Insert the manufacturer's installation disk into the drive selected, and then click OK.	OK Cancel
	Copy manufacturer's files from:           A:WINNT	Browse

7. Select RAIDExpress 133 ATA RAID Controller from the window then click

"OK" to continue.

Install Di	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	
ITE ITE	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.
- 2. If the **RAIDExpress 133 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>	
P <u>r</u> operties	
OK Cancel	

## Linux

## Mandrake Installation Guide and Release Notes

1.	Component Name(s) and Version #:		
	Components	: For Mandrake 9.0	
	Kernels Tested	: 2.4.19-16mdk	
	Driver Version	: v1.0	
	Release Date	: Jan 16, 2003	
2.	Files Listing (in linux directory)		
	redhat.txt	This file	
	mandrake.txt	Mandrake installation guide	
	driver		
	+- md90	Mandrake 9.0 directory	
	- iteraid.o	Driver module for Mandrake 9.0	
	+- rh73	RedHat 7.3 directory	
	- modinfo	Module info file	
	- modules.	cgz Compressed driver modules	
	- modules.	dep Module dependence file	
	- pcitable	IT8212 pci info	
	- rhdd-6.1	Driver disk label	
	- iteraid.o	Driver module for RedHat 9.0	
3.	Installation Proc	edures	

#### Installation Procedures З.

- Install IT8212 Linux Driver into an EXISTING SYSTEM 3.1
  - 3.1.1 Boot Linux system and login as root.

- 3.1.2 Copy the IT8212 driver module (/linux/driver/md90/iteraid.o) to any directory you want, and then go to that directory.
- 3.1.3 You can test out the module to ensure that it works by the following commands:

# insmod scsi\_mod

# insmod sd\_mod

# insmod iteraid.o

To ensure the modules have been loaded successfully, you can check the driver status by using the "dmesg" command.

# dmesg

Then you will see the following messages.

····

Attached scsi disk sda at scsi0, channel 0, id 0, lun 0 SCSI device sda: 120103200 512-byte hdwr sectors (61493 MB)

•••

••

3.1.4 The following commands are only for your reference.

You can create the partition when the IT8212 driver module is ready.

# fdisk /dev/sda

If you create two partitions on /dev/sda such as /dev/sda1 and /dev/sda2, you can use the mkfs to make the filesystem.

# mkfs /dev/sda1 <-- Make /dev/sda1 ext2 filesystem
# mkfs -j /dev/sda2 <-- Make /dev/sda2 ext3 filesystem</pre>

After this you can create two directories for mount point. For example:

# mkdir /mnt/hd0

# mkdir /mnt/hd1

# mount -t ext2 /dev/sda1 /mnt/hd0/

# mount -t ext3 /dev/sda2 /mnt/hd1/

#### Red Hat Installation Guide and Release Notes 1. Component Name(s) and Version #: Components : For Redhat Linux 7.3 Kernels Tested : 2.4.18-3 Driver Version : v1.1 Release Date : Feb 7, 2003 2. Files Listing (in linux directory) redhat.txt This file mandrake.txt Mandrake installation guide driver driver directory T +- md90 Mandrake 9.0 directory Driver module for Mandrake 9.0 I- iteraid.o +- rh73 RedHat 7.3 directory l- modinfo Module info file - modules.cgz Compressed driver modules - modules.dep Module dependence file - pcitable IT8212 pci info - rhdd-6.1 Driver disk label Driver module for RedHat 9.0 l- iteraid.o

#### 3. Installation Procedures

- 3.1 Installing IT8212 Linux Driver into an EXISTING SYSTEM
  - 3.1.1 Boot Linux system and login as root.
  - 3.1.2 Copy iteraid.o to any directory you want, and then go to that

directory.

3.1.3 You can test out the module to ensure that it works by the following commands:

# insmod scsi\_mod

- # insmod sd\_mod
- # insmod iteraid.o

To ensure the modules have been loaded successfully, you can check the driver status by using the "dmesg" command.

# dmesg

Then you will see the following messages.

- ...
- ...

Attached scsi disk sda at scsi0, channel 0, id 0, lun 0 SCSI device sda: 120103200 512-byte hdwr sectors (61493 MB)

- ••
- ••
- 3.1.4 Most likely, you will not want to type in "insmod iteraid.o" each time you boot up the system. Therefore you must install the module and tell the system about it. To install the module, type in the following commands (first change directory to where the proper iteraid.o can be loacted):

On Red Hat 7.3, use # install -d /lib/modules/2.4.18-3/kernel/drivers/scsi # install -c iteraid.o /lib/modules/2.4.18-3/kernel/drivers/scsi

Then you should inform the system when to load the module. You can add the driver to the existing RAM disk image (In RedHat 7.3, it will be /boot/initrd-2.4.18-3.img). Use the following commands: # gzip -dc /boot/initrd-2.4.18-3.img > /tmp/initrd.ext2 # mkdir /mnt/initrd-2.4.18-3.img > /tmp/initrd.ext2 # mkdir /mnt/initrd # mount -o loop /tmp/initrd.ext2 /mnt/initrd # cp iteraid.o /mnt/initrd/lib/ # cp /lib/modules/2.4.18-3/kernel/drivers/scsi/scsi\_mod.o /mnt/initrd/lib/ # cp /lib/modules/2.4.18-3/kernel/drivers/scsi/sd\_mod.o

Now, add the following lines to the file /mnt/initrd/linuxrc and you can use the editor that you are familiar with like vi. Example of linuxrc:

\_\_\_\_\_

# vi /mnt/initrd/linuxrc

/mnt/initrd/lib/

#!/bin/sh	
echo "Loading scsi_mod module"	< new insert line
insmod /lib/scsi_mod.o	< new insert line
echo "Loading sd_mod module"	< new insert line
insmod /lib/sd_mod.o	< new insert line
echo "Loading IT8212 module"	< new insert line

insmod /lib/iteraid.o <-- new insert line . . . \_\_\_\_\_ # umount /mnt/initrd # gzip -c /tmp/initrd.ext2 > /boot/initrd-2.4.18-3.img If you are using Lilo to boot your system, you also need to run lilo: # lilo Then reboot your system and the driver will be loaded. 3.1.5 Configure system to mount volumes during startup. Now you can inform the system to automatically mount the array by modifying the file /etc/fstab. E.g. You can add the following line to tell the system to mount /dev/sda1 to location /mnt/raid after startup: /dev/sda1 /mnt/raid ext2 defaults 0.0 3.2 Installing Red Hat Linux on IT8212 Controller. 3.2.1 Prepare your hardware for installation. After attaching your hard disks to IT8212 controller, you can use IT8212 BIOS to configure your hard disks as RAID 0, RAID 1, RAID 0/1 or JBOD arrays, or just use them as single disks. Remember to set the BOOT disk in the IT8212 BIOS configuration menu.

Before installation, you must remove all the disk drives, which

are not physically attached to IT8212 controller, from your system.

3.2.2 Check system BIOS setting.

In your system bios setup menu, change Boot Sequence in such a way that system will first boot from CDROM, and then from SCSI. Refer to your BIOS manual to see how to set boot sequence.

- 3.2.3 Prepare the driver diskette.Copy all the files under /linux/driver/rh73/ directory to a new dos formatted disk.
- 3.2.4 Install Red Hat 7.3.
  - I Start installing Red Hat 7.3 by booting with the CDROM.
  - I On "welcome to Red Hat Linux 7.3!" installation screen, a prompted label "boot:" will appear at the bottom of the screen. Then type in "expert" and press enter.
  - I Then you will be asked "Do you have a driver disk?". Select "Yes".
  - I When "Insert your driver disk and press "OK" to continue" is prompted, insert the driver disk in the floppy driver and then select "OK". Then the IT8212 driver will be loaded.
  - I Continue the installation as normal. You can refer to the Red Hat Linux installation guide.

# Application

# Installation

- 1. Run iteraid.exe to install the device driver and the application.
- 2. Click "Next" to start the installation.



3. Review the License Agreement. If you accept the License Agreement, click

"Yes" to continue the installation.

tallShield Wizard		
icense Agreement Please read the following license agreeme	nt carefully.	
Press the PAGE DOWN key to see the re-	st of the agreement.	
END-USER LICENSE AGREEMENT ("EI IMPORTANT- READ CAREFULLY: This legal agreement between you (either an ir ("Vendor") with respect to the special pur dedicated SYSTEM ("SOFTWARE"). Thi associated media, printed materials, and a exercising installation, copying or otherwis all terms of this EULA. If you do not agree the SOFTWARE, and you should promptly co	s End <sup>2</sup> User License Agreement idividual or a single entity) and 1 pose software product(s) to be e SOFTWARE includes compu- any "online" or electronic docur se use of the SOFTWARE, you to the terms of this EULA, then lition, you may not use or copy initiact Vendor or its agents for in	the Vendor installed on a ter software, the nentation. By have agreed to e is no license of any of the nstructions on
Do you accept all the terms of the precedi setup will close. To install ITE IT8212 AT/		
	< Back Yes	No

4. Click "Finish" to reboot the computer.



# **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.

#Stat 🕜 🖉 🗭 🕨	RaidMgr	<b>11</b> 134M
---------------	---------	----------------

#### **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.

	ATA RAID	
. 🥏	<b>a</b> .	<b>I</b>
Device Properties:		
Array ID	0	
Array ID Array Name	Array 0	
Array ID Array Name Capacity	Array 0 57259 Megabytes	
Array ID Array Name Capacity Stripe Size	Array 0 57259 Megabytes 64 Kilobytes	
Array ID Array Name Capacity Stripe Size Raid Type	Array 0 57259 Megabytes 64 Kilobytes RAID 0	
Array ID Array Name Capacity Stripe Size	Array 0 57259 Megabytes 64 Kilobytes	
Array ID Array Name Capacity Stripe Size Raid Type Actual Disk Count	Array 0 57259 Megabytes 64 Kilobytes RAID 0 2	
Array ID Array Name Capacity Stripe Size Raid Type Actual Disk Count Total Disk Count	Array 0 57259 Megabytes 64 Kilobytes RAID 0 2 2	
Array ID Array Name Capacity Stripe Size Raid Type Actual Disk Count Total Disk Count Disk ID	Array 0 57259 Megabytes 64 Kilobytes RAID 0 2 2 1/3/	
Array ID Array Name Capacity Stripe Size Raid Type Actual Disk Count Total Disk Count Disk ID Auto Rebuild	Array 0 57259 Megabytes 64 Kilobytes RAID 0 2 2 1/3/ Yes	Reset Adapter
Array ID Array Name Capacity Stripe Size Raid Type Actual Disk Count Total Disk Count Disk ID Auto Rebuild Boot Disk	Array 0 57259 Megabytes 64 Kilobytes RAID 0 2 2 1/3/ Yes No	Reset Adapter
Array ID Array Name Capacity Stripe Size Raid Type Actual Disk Count Total Disk Count Disk ID Auto Rebuild Boot Disk	Array 0 57259 Megabytes 64 Kilobytes RAID 0 2 2 1/3/ Yes No	Reset Adapter

- I If the disk arrays exist, they will be listed at the first row.
- I If the physical disks exist, they will be listed at the second row.
- I Click the disk array or physical disk icons to list the device properties.
- I Reset Adapter: Check to reset adapter.
- I Click "Refresh" to refresh system information.
- I Remarks:
  - n If only slave disks are hot swapped, make sure that "Reset Adapter" is checked to get system information correctly.

## 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.

	ATA R	AID	
Available Disks: Disk1 - IBM-DTLA-307030 Disk3 - QUANTUM FIREBALLP AS		Disks:	Existing Arrays: Array 0
Array Name: Array Type: RAID 0 Stripe Size: 64K Bytes Mattio Rebuild Boot Disk Frase Partition Source:	Device Properties: Disk ID Model Number Capacity Raid ID Raid Type Auto Rebuild Boot Disk State	Primary IDE, Slave Devic Disk1 - IBM-DTLA-30703 29314 Megabytes Not In Array Not In Array Yes No Active	
Source:			

- Array Type: RAID 0, RAID 1, RAID 0+1, JBOD.
- I Array Name: Assigned by RAID Manager.
- I Block Size: Virtual block size for RAID 0 or RAID 0+1.
- I Auto Rebuild: Check to rebuild by hardware automatically.
- I Boot Disk: Check to boot from this array.
- I Erase Partition: Check to erase partition table.
- I Source: Source disk.

- I Existing Arrays: Existing arrays list.
- I Available Disks: Disks can be used to create an array.
- I Selected Disks: Disks will be put in an array.
- I Click "Create" to create a disk array.
- I Remarks:
  - **n** Stripe Size is valid when Array Type is RAID 0 or RAID 0+1.
  - **n** Auto Rebuild is valid when Array Type is RAID 1 or RAID 0+1.
  - **n** 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.
  - n 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.

iidMgr			
and the second second	AT	A RAID	
Available Array	s:	Selected Arrays:	
Array 0 Array 1	-	<b>→</b>	page and the set
		<b>—</b>	
1.053			
Erase Partition	Device Properties: Array ID		an in an
Linger and on	Array Name	o Array 0	10000
	Capacity	57259 Megabytes	Sector 1
	Stripe Size	64 Kilobytes	
and the second of the second sec	Raid Type	RAIDO	
	Actual Disk Count	2	1000
	Total Disk Count	2	
	Disk ID	1/3/	
	Auto Rebuild	Yes	
1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	Boot Disk	No	
	State	Active	
In the second			
-			
Delete Disk Array 🔹 💌	Delete	GIOSE RAID A	dapter 0 💌 🖌

- I Available Arrays: List existing arrays.
- I Selected Arrays: Arrays will be deleted.
- I Erase Partition: Check to erase partition table.
- I 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.

	-	ATA RAID	-	
Rebuild Array:	Array 0	•	📕 Resume Previo	
Source Disk:	Disk0 - IBM-D	TTA-350840 💌	Status Timer:	30 Sec.
Destination Disk:	Disk2 - Maxto	r 52049H3 💌		
Device Prope	erties:			
Array ID Array Name Capacity Stripe Size Raid Type Actual Disk Total Disk ID Jisk ID Auto Rebuil Boot Disk State	Count ount	0 Array 0 8063 Megabytes N/A RAID 1 2 2 0/2/ Yes No Active		
		0 %		
uild Disk Array	Peh	uild Cl		ID Adapter 0 💌

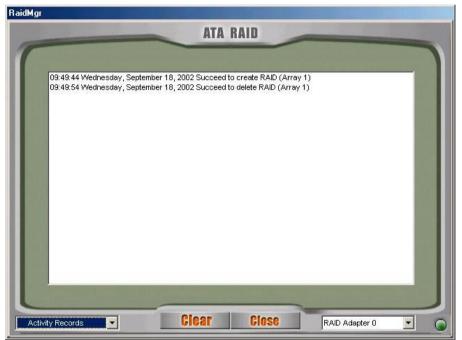
- I Rebuild Array: List arrays that can be rebuilt.
- I Source Disk: The source for rebuilding the array.
- I Destination Disk: The destination for rebuilding the array.
- I Resume Previous Rebuild Process: Check to resume the last rebuild process.
- I Status Timer: Time interval for polling rebuild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

aidMgr	
	ATA RAID
Enable	Email Notification
Event Timer	r: 600 Sec.
Email Addre	ess: iteraid@test.com
Pleas	se Select Email Notification Type:
	Default Windows Messenger (ex. Outlook)
	SMTP SMTP Server: techarea.org
The South States Income	Email Address: hello@test.com
	Test
Email Notification	Set Glose RAID Adapter 0 💌 😱

- **I** Event Timer: Self error detection time interval.
- I Enable Email Notification: Check to enable email notification.
- I Email Address: If email notification is enabled, a warning message will be sent to this email box.
- I Select default mail tool or using SMTP protocol to send the mail. If SMTP protocol is selected, user must provide SMTP server and the email address of the sender.

- I Click "Test" to send a test email to the above email address.
- I 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.

aidMgr
ATA RAID
<ul> <li>Single Machine</li> <li>Client</li> <li>Server</li> </ul>
Server Name:
Remote Access Set Close RAID Adapter 0 -

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

# 6. Miscellaneous

## Icon list



represents disk array is inactive.



represents disk array is active.



represents physical disk is inactive.



represents physical disk is active.

# How to Create Disk Array?

## 1. Create RAID 0

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

#### 2. Create RAID 1

- I Open RAID Manager.
- I Change the control panel to "Create Disks Array".
- I 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.
- I If "Erase Partition" is unchecked, the "Source" must be assigned.
- I Select exactly two disks (These two disks must be "primary master and secondary master" or "primary slave and secondary slave").
- I Click "Create".

#### 3. Create RAID 0+1

- I Open RAID Manager.
- I Change the control panel to "Create Disks Array".
- I 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.
- I If "Erase Partition" is unchecked, the "Source" must be assigned.
- I Select exactly four disks.
- I Click "Create".

#### 4. Create JBOD

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

4. 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.
- 6. **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.

# **Technology Support**

If you have any technical problems, please look for the support from the nearby supplier.