
Promise PDC20271 IDERAID Controller User's Guide

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Promise PDC20271 IDE RAID Controller

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Chapter 1

Introduction

Promise designed its SBFastTrak133 Lite to provide a cost-effective, high performance RAID solution that adds performance and/or reliability to PC desktops and/or servers using Ultra ATA/133, Ultra ATA/100, Ultra ATA/66.

SBFastTrak133 Lite supports striping (RAID 0) or mirroring (RAID 1) for master only.

With striping, identical drives can read and write data in parallel to increase performance. Mirroring increases read performance through load balancing and elevator sorting while creating a complete backup of your files.

A SBFastTrak133 Lite striped array can double the sustained data transfer rate of Ultra ATA/133 drives. SBFastTrak133 Lite fully supports Ultra ATA/133 specification of up to 133 MB/sec per drive, depending on individual drive specifications.

SBFastTrak133 Lite also offers fault tolerant, data redundancy for entry-level network file servers or simply for desktop PC users wanting to continually protect valuable data on their PC. SBFastTrak133 Lite offers RAID 1 mirroring (for two drives) to protect data. Should a drive that is part of a mirrored array fail, SBFastTrak133 Lite uses the mirrored drive (which contains identical data) to assume all data handling. When a new replacement drive is later installed, SBFastTrak133 Lite rebuilds data to the new drive from the mirrored drive to restore fault tolerance.

SBFastTrak133 Lite's bootable BIOS supports individual drives larger than 128GB. With FAT32 and NTFS partitioning, the array can be addressed as one large *single* volume.

These 2 channels (it might be channel 3, 4 on MB) that PDC20276 support only connect HDD. MBFasttrak133Lite don't support ATAPI device. Please move your ATAPI device to onboard IDE channel. However, if there is no set up through RAID then these 2 channels will act as individual IDE HDD.

Keys Features and Benefits

The following information offers an overview of the major features of your new Promise SBFastTrak133 Lite. It is divided into two areas: Advanced Hardware Design, and Compatibility.

Advanced Hardware Design	
Features	Benefits
Supports data striping (RAID 0) or mirroring (RAID 1)	Provides dramatic increase in drive performance and/or fault tolerant options. Offers performance customization and data rebuilds from the BIOS menu.
Supports Ultra DMA 6/5/4/3/2/1/0, DMA 2/1/0	Burst data transfer rates up to 133MB/sec from Ultra ATA/133 drives to boost overall system performance.
PCI Plug-n-Play, PCI Interrupt sharing and <i>coexists</i> with motherboard IDE controllers	Easy to install; support four ATA drives on the SBFastTrak133 Lite while still supporting 4 devices on motherboard ATA controller.
Supports concurrent dual IDE channel operation	Drive workload is distributed in parallel between members of the array.
Supports IDE bus master operation	Allows multitasking during disk transfers which increase CPU efficiency. The CPU is free to process tasks during IDE data transfers through the PCI Bus to/from system memory.
Utilizes FastBuild™ auto-menu from the SBFastTrak133 Lite BIOS	Offers pre-set application specific settings which can be optimized for Desktop, Server, or A/V Editing. Has "Auto Setup" option for quick and easy

	array builds.
Displays status and error checking messages during boot-up	Notifies user of possible errors and allows for recovery of mirrored drive arrays directly from FastBuild™.
Mirroring supports automatic background rebuilds	Fault tolerance can be restored automatically without rebooting

Compatibility	
Features	Benefits
Tested compatibility to coexist with motherboards that have integrated IDE controllers	Improves system performance of new and existing installations including motherboard with Intel chipsets.
Compatible with Ultra ATA/133, Ultra ATA/100, Ultra ATA/66, Ultra ATA/33	Works with newest and current IDE drive specifications. Promise engineers experienced with IDE devices perform verification testing with major drive manufacturers and development partners.
Features 48-bit LBA and Extended Interrupt13 drive translation in controller onboard BIOS	Breaks capacity barriers for support of drives greater than 128GB in capacity. Offers flexible storage options for space demanding applications.

Creating Your Disk Array

You will now use the FastBuild BIOS utility to create your array using the attached drives. There are three different scenarios in creating this array. You can create an array for performance, you can create a Security array using new hard drives (recommended), or you can create a Security array using an existing hard drive and a new hard drive.



WARNING

If creating a Security array using an existing hard drive, backup any necessary data. Failure to follow this accepted PC practice could result in data loss.

1. Boot your system. If this is the first time you have booted with the SBFastTrak133 Lite and drives installed, the Promise onboard BIOS will display the following screen.

```
SBFastTrak133 Lite (tm) BIOS Version 2.00.0.XX
(c) 1995-2000 Promise Technology, Inc. All Rights Reserved.

No array defined . . .

Press <Ctrl-F> to enter FastBuild (tm) Utility
Or press <ESC> key to continue booting the system.
```

2. Press <Ctrl-F> keys to display the FastBuild (tm) Utility Main Menu
3. Press "1" to display the Auto Setup Menu below. This is the fastest and easiest method to creating your first array.

```
FastBuild (tm) Utility 1.xx (c) 1995-2000 Promise Technology,
Inc.

[Auto Setup Options Menu]

.....

Optimize Array for:      Performance
Typical Application usage:  A/V Editing

[ Auto Setup Configuration ]

Mode ..... Stripe
Drives used in Array ..... 2
Array Disk Capacity ..... 16126

[ Keys Available ]

[↑] Up [↓] Down  [←, →, Space] Change Option  [ESC] Exit  >trl-Y] Save
```

Creating a Security Array With New Drives



NOTE

SBFastTrak133 Lite permit only two drives to be used for a single Mirrored array in Auto Setup.

To create an array for data protection using new hard drives, follow these steps:

1. Using the Spacebar, choose "Security" under the **Optimize Array for** section.
2. Press <Ctrl-Y> keys to Save your selection.

The window below will appear.

```
Do you want the disk image to be duplicated to another? (Yes/No)
Y - Create and Duplicate
N - Create Only
```

3. Press "N" for the Create Only option.

A window will appear almost immediately confirming that your Security array has been created. Press any key to reboot the system

```
Array has been created.
<Press Any Key to Reboot>
```

4. Proceed with normal FDISK and format procedures as if you had just installed a new hard drive.

Once the arrayed drives have been formatted, proceed to the **Installing Driver** chapter to install your operating system and/or SBFastTrak133 Lite driver.

Using FastBuild™ Configuration Utility

The FastBuild™ Configuration Utility offers several menu choices to create and manage the drive array on the Promise SBFastTrak133 Lite. For purposes of this manual, it is assumed you have already created an array in the previous chapter and now wish to make a change to the array or view other options.

Viewing SBFastTrak133 Lite BIOS Screen

When you boot your system with the SBFastTrak133 Lite and drives installed, the Promise onboard BIOS will detect the drives attached and show the following screen.

```
SBFastTrak133 Lite (tm) BIOS Version 2.00.0.XX
(c) 1995-2000 Promise Technology, Inc. All Rights Reserved.

Scanning IDE drives . . . . .
```

If an array exists already, the BIOS will display the following screen showing the BIOS version and status of the array.

```
SBFastTrak133 Lite (tm) BIOS Version 2.00.0.xx
(c) 1995-2000 Promise Technology, Inc. All Rights Reserved.

  ID      MODE  SIZE TRACK-MAPPING  STATUS
  1 *    2+0 Stripe 16126M      611/128/32      Functional

Press <Ctrl-F> to enter FastBuild (tm) Utility....
```

The array status consists of three possible conditions: *Functional*, *Critical*, *Offline*.

Functional - The array is operational.

Critical - A mirrored array contains a drive that has failed or disconnected. The remaining drive member in the array is functional. However, the array has temporarily lost its ability to provide fault tolerance. The user should identify the failed drive through the FastBuild™ Setup utility, and then replace the problem drive.

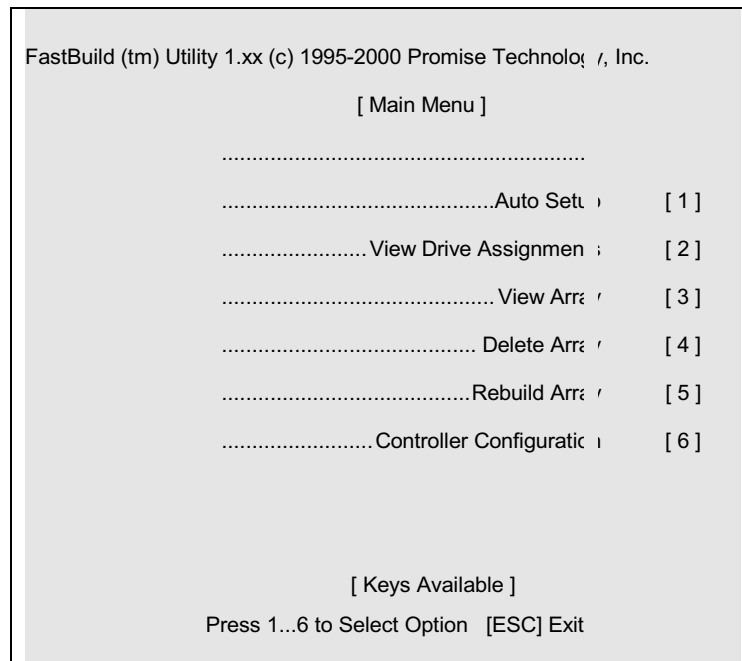
Offline - A striped array has 1 drive that has failed or been disconnected. When the array condition is “offline,” the user must replace the failed drive(s), then restore data from a backup source.

Navigating the FastBuild™ Setup Menu

When using the menus, these are some of the basic navigation tips: Arrow keys highlights through choices; [Space] bar key allows to cycle through options; [Enter] key selects an option; [ESC] key is used to abort or exit the current menu.

Using the Main Menu

This is the first option screen when entering the FastBuild™ Setup.



NOTE

After configuring an array using FastBuild™, you should FDISK and format the arrayed drive(s) if you are using new, blank drives. Depending on the type of array you are using.

Creating Arrays Automatically

The Auto Setup <1> selection from the Main Menu can intuitively help create your disk array. It will assign all available drives appropriate for the disk array you are creating. After making all selections, use Ctrl-Y to Save selections. FastBuild™ will automatically build the array.

```
FastBuild (tm) Utility 1.xx (c) 1995-2000 Promise Tec nology, Inc.
                                [Auto Setup Options Menu]
                                .....
Optimize Array for:      Performance
Typical Application usage:  A/V Editing

                                [ Auto Setup Configuration ]

Mode..... Stripe
Spare Drive Count..... 1
Drives used in Array..... 2
Array Disk Capacity..... 16126

                                [ Keys Available ]

[↑] Up [↓] Down  [←, →, Space] Change Option  [ESC] Exit  Ctrl-Y] Save
```

Optimize Array For

Select whether you want Performance (RAID 0), Security (RAID 1) under the "Optimize Array for" setting.

Performance (RAID 0 Striping)

Supports the maximum performance. The storage capacity equals the number of drives times the capacity of the smallest drive in the disk array.



NOTE

SBFastTrak133 Lite permits striped arrays using 1, 2 drive attached in Auto Setup mode.

Security (RAID 1 Mirroring)

Creates a mirrored (or fault tolerant) array for data security.



NOTE

Under the Security setting, SBFastTrak133 Lite permits two drives to be used for a single Mirrored array only.

Defining Typical Application Usage

Allows the user to choose the type of PC usage that will be performed in order to optimize how SBFastTrak133 Lite handles data blocks to enhance performance. Your choice will determine the block size used. You may choose from: A/V Editing (for audio/video applications, or any similar application that requires large file transfers), Server (for numerous small file transfers), or Desktop (a combination of large and small file sizes).



NOTE

If you wish to customize the settings of individual disk arrays (such as block size), you must manually create disk arrays with the Define Array <3> option from the Main Menu.

Viewing Drive Assignments

The View Drive Assignments <2> option in the Main Menu displays whether drives are assigned to a disk arrays or are unassigned.

The menu also displays the data transfer mode that relates to speed used by each drive (U6 refers to 133MB/sec transfers, U5 refers to 100MB/sec transfers, U4 refers to 66MB/sec transfers, etc...)

```
FastBuild (tm) Utility 1.xx (c) 1995-2000 Promise Technology, Inc.
[ View Drive Assignments ]

Channel:ID Drive Model Capacity(MB) Assignment Mode
1 : Master QUANTUMCR8.4A 8063 Array 1 U6
2 : Master QUANTUMCR8.4A 8063 Array 1 U6

[ Keys Available ]

[↑] Up [↓] Down [ESC] Exit Mode (U=UDMA, P=PIO, I=DMA)
```

Deleting An Array

The Delete Array <4> Menu option allows for deletion of disk array assignments. This is not the same as deleting data from the drives themselves. If you delete an array by accident (and before it has been used again), the array can normally be recovered by defining the array identically as the deleted array.



WARNING

Deleting an existing disk array could result in its data loss. Make sure to record all array information including the array type, the disk members, and stripe block size in case you wish to undo a deletion.

```
FastBuild (tm) Utility 1.xx (c) 1995-2000 Promise Technology, Inc.
[ Delete Array Menu ]

Array No  RAID Mode  Total Drv  Capacity(MB)  Status
Array 1      Stripe           2           16126          Functional
Array 2      _____
Array 3      _____
Array 4      _____

[ Keys Available ]

[↑] Up [↓] Down  [ESC] Exit  [Del] Delete
```

1. To delete an array, highlight the Array you wish to delete and press the [Del] key.
2. The View Array Definition menu will appear (see below) showing which drives are assigned to this array.

```

FastBuild (tm) Utility 1.xx (c) 1995-2000 Promise Technology, Inc.
[ Define Array Menu ]

Array No  RAID Mode Total Drv  Capacity(MB)  tatus
Array 1   _____

Stripe Block: 64 KB
[ Drive Assignments ]

Channel:ID  Drive Model      Capacity (MB)  Assignment
1 : Master  QUANTUMCR8.4A    8063          Y
2 : Master  QUANTUMCR8.4A    8063          Y

```

3. Confirm yes to the following warning message with the <Ctrl-Y> key to continue array deletion:

```

Are you sure you want to delete this array?
Press Ctrl-Y to Delete, others to Abort

```

4. After deleting the array, you should create a new array using Auto Setup or the Define Array menu from the FastBuild Main Menu.

Rebuilding A Mirrored Array

The Rebuild Array <5> Menu option is necessary to recover from an error in a mirrored disk array. You will receive an error message when booting your system from the FastTrak BIOS.

 **NOTE**

Drives MUST be replaced if they contain any physical errors.

Follow these steps BEFORE using the Rebuild Array menu option:

1. On bootup, the SBFastTrak133 Lite Startup BIOS will display an error message identifying which drive has failed.
2. Press <Ctrl-F> keys to enter FastBuild Main Menu.
3. Select submenu Define Array <3>.
4. Select the failed array and identify the Channel and ID of the failed drive.
5. Power off and physically remove the failed drive.
6. Replace the drive with an identical model.
7. Reboot the system and enter the FastBuild Main Menu.

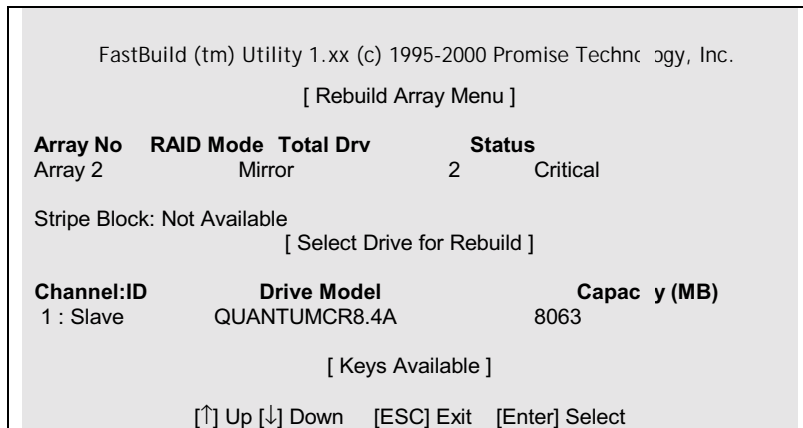
Select the <5> Rebuild Array option. The following screen will appear.

Array No	RAID Mode	Total Drv	Capacity(MB)	Status
Array 1	Mirror	2	16126	Critical
Array 2	---	---	---	---
Array 3	---	---	---	---
Array 4	---	---	---	---

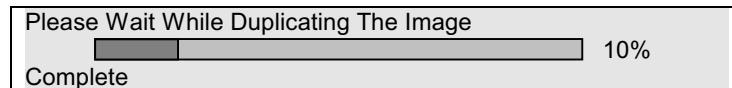
[Keys Available]

[↑] Up [↓] Down [ESC] Exit [Enter] Selec

8. Highlight the array whose Status is "Critical".
9. Press [Enter]. The following screen will then appear.



10. Under [Select Drive for Rebuild], highlight the replacement drive.
11. Press [Enter] and confirm that the data will be copied on to the selected drive. All data on the replacement drive will be written over with mirrored information from the array drive. A progress bar will appear as below.



12. Once the rebuild process is complete, the user will be asked to reboot the system.

Viewing Controller Settings

The Controller Configuration <6> menu selection allows you to enable or disable the SBFastTrak133 Lite BIOS from halting (the default) if it detects an error on boot up. You may also view the system resources (Interrupt and I/O port address) of FastTrak's data channels.

```
FastBuild (tm) Utility 1.xx (c) 1995-2000 Promise Technology, Inc.  
[ Adapter Configuration - Options ]  
Halt On Error:      Enable  
[ System Resources Configuration ]  
Channel 1 (IDE1)    Interrupt : A I/O Port : FFF0  
Channel 2 (IDE2)    Interrupt : A I/O Port : FFA8  
[ Keys Available ]  
[←, →, Space] Change Option [ESC] Exit
```

Chapter 2

Installing Drivers

This section details the SBFastTrak133 Lite driver installation when used with various operating systems. The software includes the driver necessary to identify SBFastTrak133 Lite to the operating system.

Windows 2000

Installing Driver During New Windows 2000 Installation

- 1a. Floppy Install: Boot the computer with the Windows 2000 installation diskettes.
- 1b. Floppyless Install: Boot from floppy and type "WINNT". After files have been copied, the system will reboot. On the reboot, press <F6> after the message "Setup is inspecting your computer's hardware configuration..." appears.
- 1c. CD-ROM Install: Boot from the CD-ROM. Press <F6> after the message "Press F6 if you need to install third party SCSI or RAID driver" appears.
2. When the "Windows 2000 Setup" window is generated, press "S" to Specify an Additional Device(s)
3. Press "O" to select "Other" and press the "Enter" key.
4. Insert the Promise Technology® driver diskette into drive A: and press "Enter" key.
5. Choose "Win2000 Promise SBFastTrak133 Lite Controller" from the list that appears on screen, then press the "Enter" key.
6. The Windows 2000 Setup screen will appear again saying "Setup will load support for the following mass storage devices." The list will include "Win2000 Promise SBFastTrak133 Lite controller".
7. From the Windows 2000 Setup screen, press the Enter key. Setup will now load all device files and then continue the Windows 2000 installation.

Installing Driver in Existing Windows 2000 System



WARNING

If you will be moving the boot drive containing the existing Windows 2000 operating system to a mirrored RAID 1 array on the SBFastTrak133 Lite, the SBFastTrak133 Lite driver **MUST** be loaded to the hard drive while it is still attached to your existing hard drive controller. Do not attach this drive or any other hard drive to the SBFastTrak133 Lite controller before completing this step.

After installing the SBFastTrak133 Lite and rebooting your system, Windows 2000 setup will show a "New Hardware Found" dialog box. Under Windows 2000, the "PCI RAID Controller" will be displayed.

1. In the dialog box, choose "Driver from disk provided by hardware manufacturer" button.
2. In the A: drive, insert the SBFastTrak133 Lite driver diskette.
3. Type "A:\WIN2000" in the text box. Press "Enter".
4. Choose "Win2000 Promise SBFastTrak133 Lite Controller" from the list that appears on screen, then press the "Enter" key.
5. The Windows 2000 Setup screen will appear again saying "Setup will load support for the following mass storage devices – Win2000 Promise SBFastTrak133 Lite controller". The SBFastTrak133 Lite driver will now be copied on to the system and entered into the Windows 2000 driver database.
6. When the "System Settings Change" dialog box appears, remove the floppy diskette and click on "Yes" to restart the system. Windows 2000 will then restart for the driver installation to take effect.
7. Power off your system, then attach your hard drives to the SBFastTrak133 Lite controller card.

Confirming Windows 2000 Installation

1. From Windows 2000, open the Control Panel from "My Computer" followed by the System icon.
2. Choose the "Hardware" tab, then click the "Device Manager" tab.
3. Click the "+" in front of "SCSI & RAID Controllers hardware type." The driver "Win2000 Promise FastTrak/SBFastTrak133 Lite Controller" should appear.

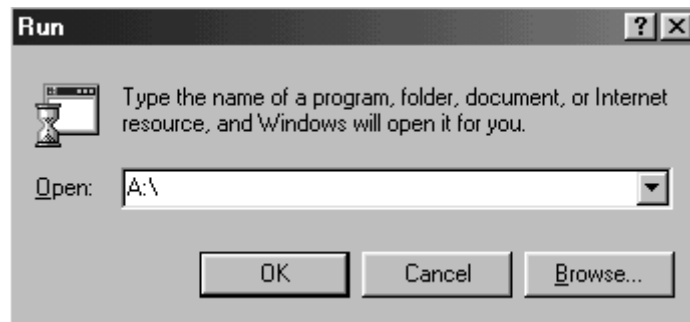
Using The FastCheck™ Monitoring Utility

You can monitor the operating status of all arrays and drives configured on the SBFastTrak133 Lite using the supplied FastCheck monitoring utility for Windows-based operating systems. FastCheck generates visual and audible messages alerting you of possible problems with the disk array or controller.

FastCheck visually identifies the physical location of attached drives on the SBFastTrak133 Lite by IDE channel (1 or 2) and setting (Master/Slave/Cable-Select). It also displays which drives are included as part of individual arrays. Administrators can customize FastCheck to maintain operating logs and event notification, set Password access to the utility, and schedule maintenance on Mirrored (RAID 1) or a Striped/Mirrored (RAID 0/1) arrays.

Installing FastCheck

1. From the Start Button on the Windows Taskbar, choose Run.
2. Insert Promise FastCheck Utility Diskette.
3. In the Run dialog box, type in "A:\\" and click OK.



-
4. Follow the directions from the setup program.
 5. During installation, click YES when prompted to run the utility on every startup. If NO is selected, FastCheck will not initialize during startup. You may manually execute the utility via the Start button.



NOTE

Promise recommends to have FastCheck load during Startup. This insures you that it will be ready to post alerts on errors.

Running FastCheck

As described in the Installation section, the default option for FastCheck is to load during startup of 2000. It appears minimized on the taskbar under Win 2000 (see below).



To start FastCheck, double-click on the FastCheck icon on the taskbar (above) or you may also use the Taskbar Start/Promise/FastTrak/FastCheck menus shown below.



Closing FastCheck

Once FastCheck is opened (either automatically on startup or manually), the monitoring utility remains running in the background even if the user “closes” the FastCheck window.

To completely shut down FastCheck, perform the following steps.

1. Right-click the FastCheck icon on the Taskbar.
2. Select Exit from the pop-up window.
3. FastCheck will no longer be running and will no longer be monitoring the array.

Synchronizing An Array

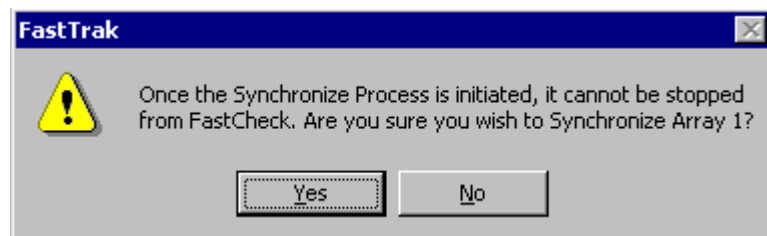
Synchronization is a periodic maintenance procedure for Mirroring arrays to maintain data consistency on all mirrored drives. In operation, array synchronization compares data on the mirrored drives for any differences. If there are differences detected, data from the primary drive(s) is automatically copied to the secondary drive(s). This assures that all mirrored drives will contain the exact information.



NOTE

You may instead choose to schedule array synchronization automatically under the Options Tab view versus manually initiating synchronization .

1. To synchronize, choose the Array Tab View
2. Right-click on the array you wish to synchronize and choose “Synchronize” from the context menu.
3. Click “Yes” to initiate Synchronization (see below) when the Confirmation window appears. To cancel this option, click the No button.

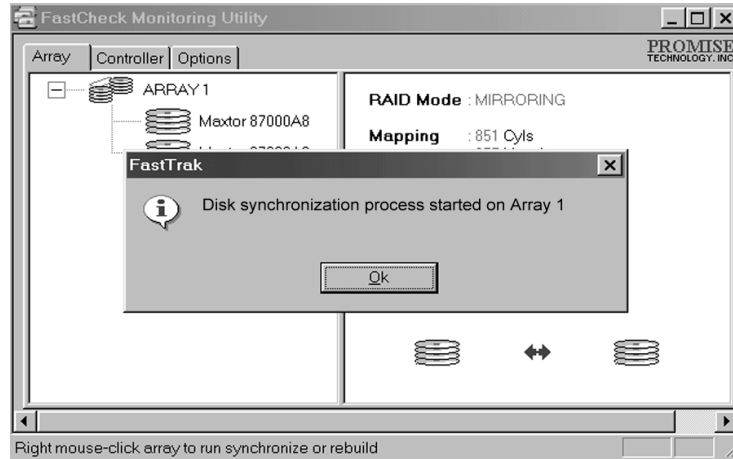




WARNING

Once initiated, synchronization can NOT be halted in order to prevent data errors.

4. Once Synchronization is confirmed, the following information screen appears. Click OK button or close the window to proceed.



NOTE

During Array Synchronization, users may continue to access the working array and perform normal PC functions. However, system performance will be slightly degraded and the process will take longer.

5. A progress bar will appear at the bottom of the FastCheck Monitoring window showing synchronization in progress and the percentage that has been completed.



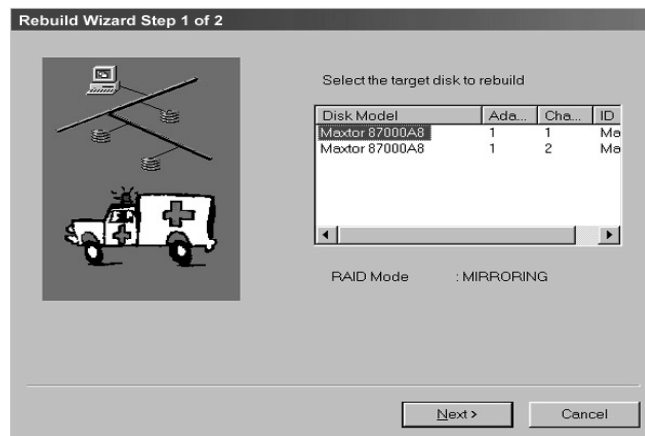
Rebuilding An Array

This command effectively copies or overwrites data from an existing data drive in the array on to a blank drive. The operation will be typically used when a failed drive has been replaced with a new drive as part of a mirrored array.

1. To perform a Rebuild, choose the Array Tab View.
2. Right click the array number and choose Rebuild from the context menu.
3. Once Rebuild is selected, you will be asked to "Initialize Rebuild process on Array #" by clicking OK.

Using Rebuild Wizard

1. Initiating rebuild array will open the Rebuild Wizard Step 1 screen shown below.
2. Select the Target drive which will receive data. Make sure you select the blank new or replacement drive. The unselected drive will contain "good" data. It will be the remaining working drive of an array, or a system drive containing existing data that you wish to mirror.





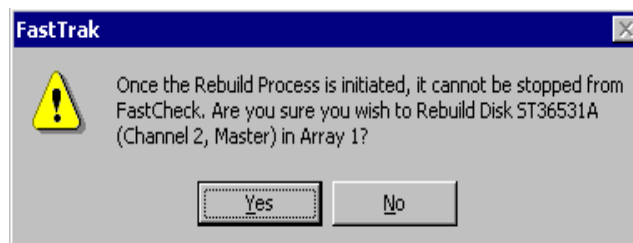
WARNING

Make absolutely sure and double-check which drive is which. If data exists on the target drive, it will be over-written.

3. Click the Next button to proceed to Rebuild Wizard Step 2 or Cancel button to stop.



4. Rebuild Wizard Step 2 confirms the Target or "Rebuild" disk by Array # and drive ID.
5. Click Finish button to initiate physical Rebuild, Back button to review Step 2, or Cancel button to Stop. A final confirmation window appears as below:



-
6. Click "Yes" to initiate Rebuild. To cancel this option, click the No button.



WARNING

Once initiated, Array Rebuild can NOT be halted in order to prevent data errors.



NOTE

During Array Rebuild, users may continue to access the array and perform normal PC functions however the array will NOT provide data redundancy until Rebuild is completed. If you choose to continue using the PC during rebuild, system performance will be slightly degraded and the process will take longer.

7. Once Array Rebuild has begun, users are returned to the FastCheck Monitoring window. A progress bar showing the rebuild progress in percentage will appear at the bottom of the FastCheck Monitoring window.

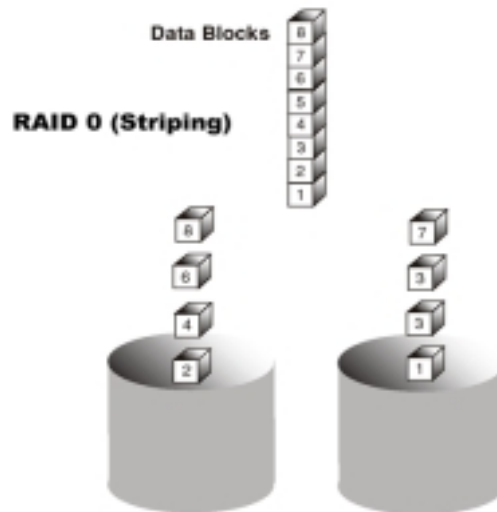


About RAID Levels

Striping (RAID 0)

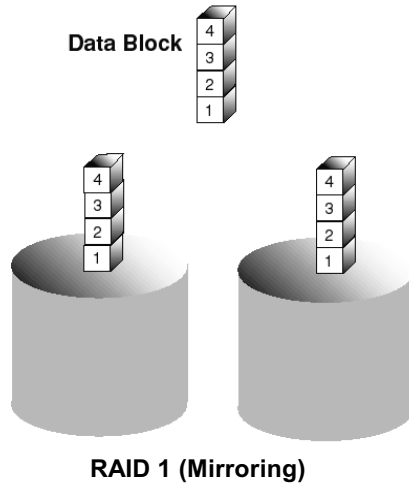
Reads and writes sectors of data interleaved between multiple drives. When any disk member fails, it affects the entire array. Performance is better than a single drive since the workload is balanced between the array members. This array type is for high performance systems. Identical drives are recommended for performance as well as data storage efficiency. The disk array data capacity is equal to the number of drive members times the smallest member capacity. For example, one 1GB and three 1.2GB drives will form a 4GB (4 x 1GB) disk array.

Stripe Size - a value can be set from 1KB to 1024KB sector size. The size can directly affect performance. In the FastBuild BIOS, the "Desktop" default is 8KB while "Server" and "A/V Editing" are 64KB.



Mirroring (RAID 1)

Writes duplicate data on to a pair of drives while reads are performed in parallel. ATA RAID 1 is fault tolerant because each drive of a mirrored pair is installed on separate IDE channels. If one of the mirrored drives suffers a mechanical failure (e.g. spindle failure) or does not respond, the remaining drive will continue to function. This is called **Fault Tolerance**. If one drive has a physical sector error, the mirrored drive will continue to function.



On the next reboot, the FastBuild™ utility will display an error in the array and recommend to replace the failed drive. Users may choose to continue using their PC, however Promise recommends replacing the failed drive as soon as possible. See Chapter 4 for a functional description.

Due to redundancy, the drive capacity of the array is half the total drive capacity. For example, two 1GB drives that have a combined capacity of 2GB would have 1GB of usable storage. With drives of different capacities, there may be unused capacity on the larger drive.

Chapter 3

Troubleshooting

This section is used to assist with troubleshooting conflicts and SBFastTrak133 Lite installation problems. Also refer to the "README.TXT" file on the SBFastTrak133 Lite driver and utility diskette for more recent information as well as the **PromiseOnline™** services.

The section is divided into the following categories: Motherboard Issues, System CMOS Issues, Drive Errors, Operating System Errors, and Audio/Video Editing Tips.

➤ *System CMOS Issues*

Set Mainboard CMOS Boot sequence to boot to SBFastTrak133 Lite

On some Mainboard BIOS, it is necessary to set the Boot sequence to "SCSI, A:, C:" since the Promise card is identified as a SCSI card.

Using an Onboard IDE Card with SBFastTrak133 Lite

If an onboard IDE controller is installed with hard disks, enable support in the Mainboard Standard CMOS Setup for the drives. Note that the onboard IDE hard drives will then be the bootable hard disk unless the system BIOS has a boot sequence setting with a "SCSI, A:, C:" option.

➤ *Drive-Related Errors*

Critical Array Status Error Reported during Boot

If a critical status error message appears on the FastTrak133 BIOS startup screen for a mirrored array (see below), there is a drive in the array which has failed or is not responding. SBFastTrak133 Lite will identify the failed drive by channel number and Master/Slave designation (if 2 drives exist on the same cable). The mirrored array has lost its fault tolerance, but will still perform normal drive reads and writes.

```
Operation aborted because FastBuild encountered an error as follows:

Location: Channel 2 - Master Drive
Array Status: Critical

Please retry using FastCheck utility to recover all data. Reboot the system by pressing the ENTER key.
```

Try powering the system off and on to reset the drive. Also confirm that cables are properly attached and the drive is receiving power.

Drive cannot be formed into an array

Drives must support Ultra DMA or Multi-word DMA and be free of media defects to be added into an array. Promise recommends using new identical drives for each array. Re-secure data and power cabling while checking for proper alignment. Typically, Pin 1 of the drive is closest to the power connector.

Possible Master/Slave problems

Master/slave problems may exist between two ATA or IDE drives of different brands attached to a single cable. For both compatibility and better performance, choose drives of the same model/brand and install them on separate cables. Refer to the Drive Setup by Connector chart for more recommended drive placements.

System CMOS displays C: or D: drive failure during Startup

Do not reference C: or D: in the Mainboard Standard CMOS for drives attached to the SBFastTrak133 Lite controller. Only enter drive information in the Mainboard CMOS for drives attached to a conventional add-on or onboard IDE controller.

FDISK reports a much lower drive capacity if a single physical drive or a striped array exceeds 64GB

Due to a limitation with FDISK, the utility reports only the storage capacity that exceeds 64GB. This is a cosmetic, not actual, limitation. Simply create a single DOS drive partition, reboot, then format the partition. The Format command will recognize the total capacity of the partition accurately. Windows NT/2000/98 will now recognize the total capacity of your array.

Unable to partition or format array

The Reserve Sector of one of the drives has become corrupt or bad. Removing the Reserve Sector will remedy any issue related directly to a Bad Reserve Sector.



WARNING

Before removing the Reserve Sector of the drive(s), backup any existing data. Removal of the reserve sector of any drive permanently deletes all existing data on the hard drive. For Mirrored arrays (RAID 1), you should remove the Reserve Sector from the "mirrored" drive first (this will appear during Step 3 below) then rebuild the mirrored array. Remove the Sector on the Master Drive only as a last resort. For Striped arrays (RAID 0), removing the Reserve Sector from any of the drives that are striped will destroy the arrayed data.

To remove the Reserve Sector, follow these steps:

1. When the SBFastTrak133 Lite BIOS comes up, press Ctrl-F to enter the FastBuild™.
2. Press 2 to "View Drive Assignments".
3. Using the arrow keys, highlight the drive where you wish to remove the reserve sector.
4. Press ALT-F1. The highlighted drive will start blinking on the screen.

-
5. Press CTRL-TAB. A message will appear that says the reserved sector (which is where array information is kept) on the disk will be wiped.
 6. Press "Y" to confirm.
 7. For a mirrored arrays, hit the "ESC" key twice to reboot and skip to step 10.
 8. For striped arrays, repeat this process for each member of the particular array that is having a problem.
 9. When finished, hit the "ESC" key twice to reboot.
 10. After rebooting, use FastBuild to re-create the array. For mirrored arrays, rebuild the mirrored array. For striped arrays, use FDISK and FORMAT after setting up the array.

➤ *Operating System-Related Errors*

The Operating System no longer boots after creating a Mirrored Array using your existing boot drive using Windows 2000

This is due to Drive Geometry issues. You can verify this if you move the original drive back to the onboard controller and it boots. Each controller can view a drive differently. This can be an issue for a new controller, which loads the original Master Boot Record (MBR) and then has a problem translating it or the Operating System boot record.

Promise Windows driver does not appear Device Manager

Windows may already be listing the controller under "Other Devices" instead of "Hard disk controllers" section. In Device Manager under "Other Devices" to see if it lists a "PCI Card", or "RAID Controller". If so, highlight this listing and click on the "Properties" button, and then click on the "Driver" tab. Depending on your version of Windows, choose either "Change Driver" or "Update Driver". Then follow the on-screen prompts to complete installation of the driver. If Windows asks if you want to test if the device can be removed safely click on "CANCEL". Reboot the system to complete installation of the driver.

“Inaccessible Boot Device” Message Appears During Floppyless Install of Windows 2000

The "F6" key was not pressed at the appropriate time. Reboot the system, and press the "F6" key when the message "Press F6 if you need to install third party RAID driver" appears in Windows 2000.

“No Hard Drives Found” Message Appears During CD-ROM Install of Windows 2000

The "F6" key was not pressed at the appropriate time. Reboot the system, and press the "F6" key when the message "Press F6 if you need to install third party RAID driver" appears in Windows 2000.

Performance Tips

Here are some tips that may optimize performance in a RAID 0 striped array. If you are using an audio/video editing card, we also recommend to review your card's documentation for additional information.

Use SBFastTrak133 Lite as D: or other non-bootable drive in a Striped Array For A/V editing, keep the original system boot drive on the standard IDE controller as C: drive. Partitioning software such as FDISK will see the array as one physical drive, D: drive (or later). This will prevent file fragmentation and provide better accessibility to the array.

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