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Configuring SATA Hard Drive(s) (Controller: ULI M1573)

To configure SATA hard drive(s), follow the steps below:

- (1) Install SATA hard drive(s) in your system.
- (2) Configure SATA controller mode and boot sequence in BIOS Setup.
- (3)* Configure RAID set in RAID BIOS.
- (4) Make a floppy disk containing the SATA controller driver.
- (5) Install the SATA controller driver during OS installation.

Before you begin

Please prepare:

- (a) Two SATA hard drives (to ensure optimal performance, it is recommended that you use two hard drives with identical model and capacity). If you do not want to create RAID with the SATA controller, you may prepare only one hard drive.
- (b) An empty formatted floppy disk.
- (c) Windows XP/2000 setup disk.
- (d) Driver CD for your motherboard.

(1) Installing SATA hard drive(s) in your system

Attach one end of the SATA signal cable to the rear of the SATA hard drive and the other end to available SATA port(s) on the motherboard. Then connect the power connector from your power supply to the hard drive.

*** Skip this step if you do not want to create RAID array on the SATA controller.

(2) Configuring SATA controller mode and boot sequence in BIOS Setup

You have to make sure whether the SATA controller is configured correctly in system BIOS Setup and set BIOS boot sequence for the SATA hard drive(s).

Step 1:

Turn on your computer and press **Del** to enter BIOS Setup during POST (Power-On Self Test). In the BIOS Setup menu, go to the **Integrated Peripherals** menu and assure that the **OnChip Serial ATA Controller** is enabled. If you want to create RAID, set **OnChip Serial ATA Controller** to **Enabled** (**Enabled** by default). Set **OnChip Serial ATA Controller** to **Disabled** if you do not want to create RAID.

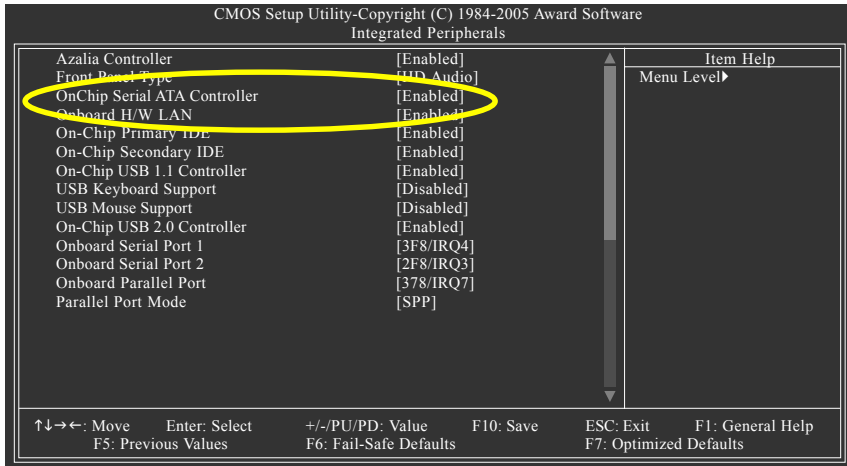


Figure 1



The BIOS Setup menus described in this section may not show the exact settings for your motherboard. The actual BIOS Setup menu options you will see shall depend on the motherboard you have and the BIOS version.

Step 2:

Later, select **Hard Disk Boot Priority** under the **Advanced BIOS Features** menu and then choose the model of the SATA hard drive onto which you want to install Microsoft Windows 2000/XP (Figure 2).

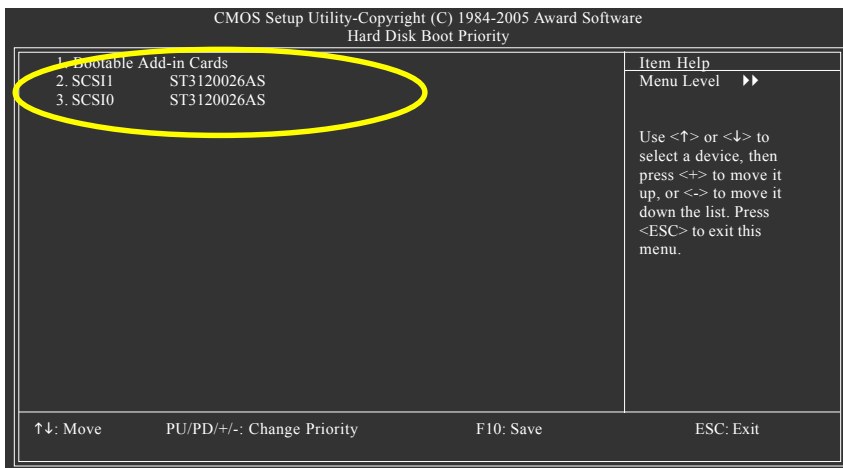


Figure 2

Step 3:

Set **First Boot Device** under the **Advanced BIOS Features** menu to **CDROM** to boot from CD-ROM after system restarts (Figure 3).

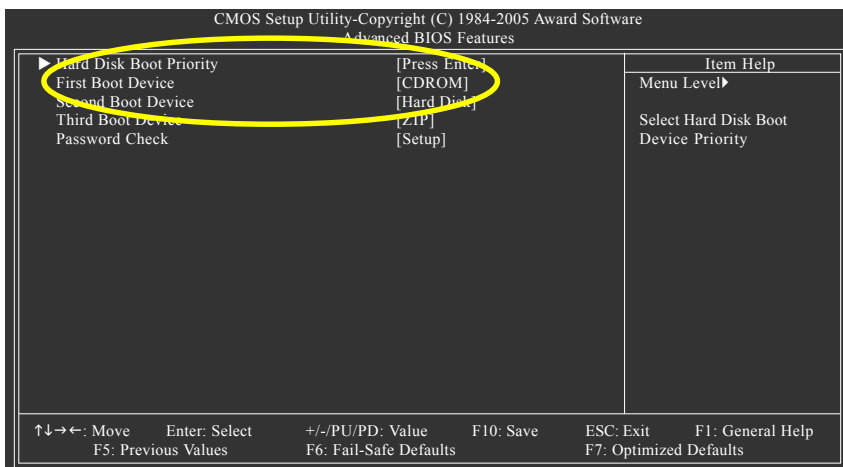


Figure 3

Step 4:

Save and exit BIOS Setup.

(3) Configuring RAID set in RAID BIOS

Enter the RAID BIOS setup utility to configure a RAID array. Skip this step and proceed to Section 4 if you do not want to create RAID.

Step 1:

After the POST memory test begins and before the operating system boot begins, the following information will appear on screen (Figure 4). Press CTRL+A to enter the RAID BIOS setup utility.

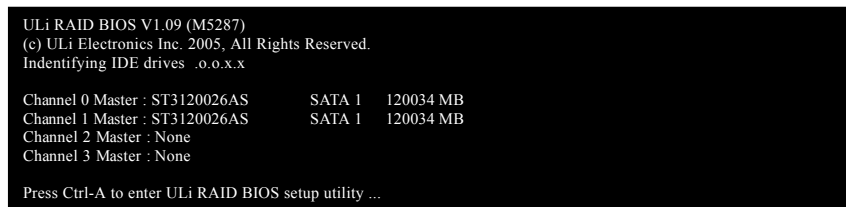


Figure 4

Step 2:

After pressing CTRL+A, the **RAID BIOS Setup Utility** screen will appear (Figure 5). You can press the UP or DOWN ARROW keys to highlight through options and select an item that you want to execute.



Figure 5

There are three major areas in the RAID BIOS setup screen: **Main Menu**, **Drive Select Menu** and **RAID Array List**. (Figure 6)

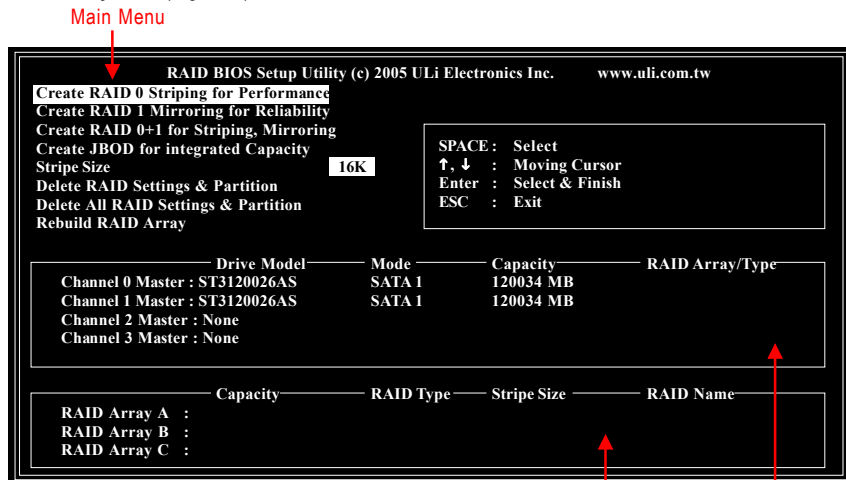


Figure 6

1. Create RAID 0 Striping for Performance

Press ENTER on the **Create RAID 0 Striping for Performance** item. An "S" flash cursor appears at **Drive Select Menu** for the user to choose the first drive for RAID 0. Use SPACEBAR to select the desired drive for RAID 0. Then the flash cursor changes to an "s" flash cursor for the user to choose the second drive for RAID 0. (Figure 7)

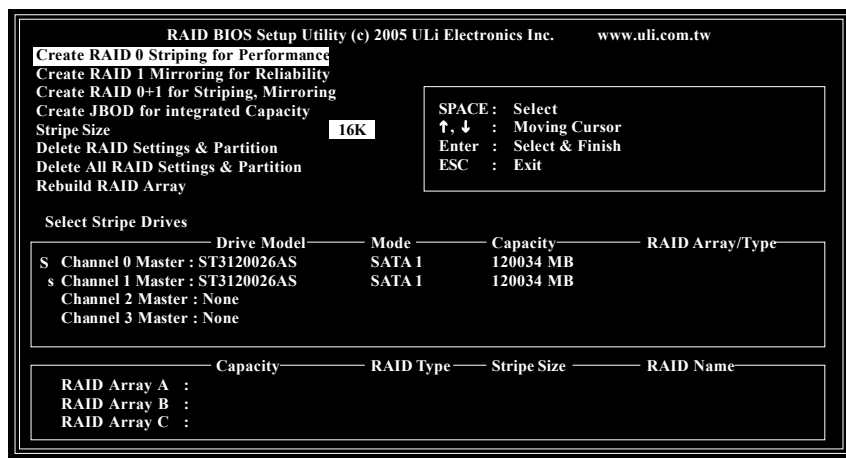


Figure 7

Press SPACEBAR to select the second drive. The prompt "Data on RAID Drives will be deleted (Y/N)?" appears after two drives are properly assigned. Press Y and then some necessary information will be written to the drives, which will destroy the original data in the drives.



Make sure the data in drives is no longer in use before creating RAID 0.

Next, the Array Name input line appears for the user to key in a name for the newly created array. The effective characters for an array name are 0-9, A-Z, a-z, space and underscore. (Figure 8)

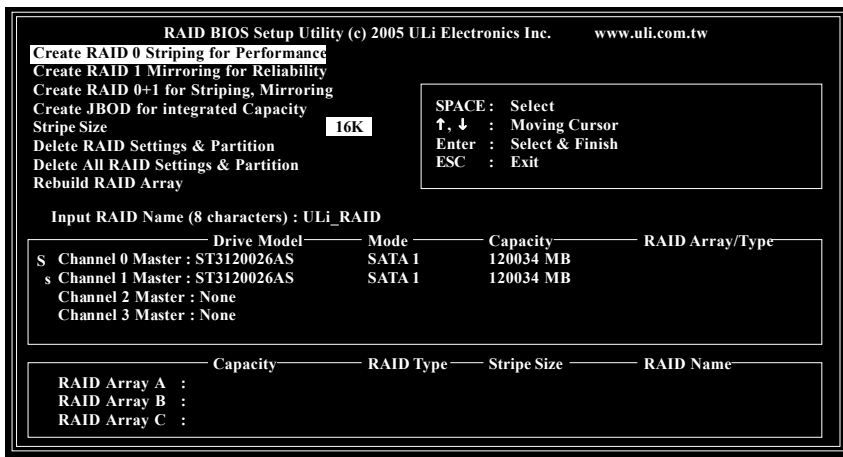


Figure 8

After the RAID array has been created successfully, its information shows up at RAID Array List. (Figure 9)

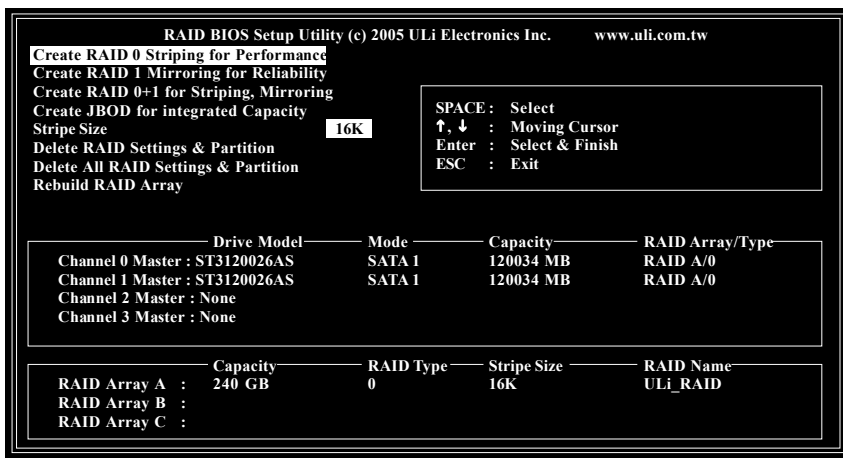


Figure 9



To create a RAID 0 Array, you can select the stripe block size manually. The Stripe Size is effective for RAID 0. You can choose a stripe size from 64KByte, 32KByte, 16KByte(default), 8KByte and 4KByte. If you use RAID 0 for most A/V editing applications or files, 64KByte is recommended.

2. Create RAID 1 Mirroring for Reliability

Press ENTER on the **Create RAID 1 Mirroring for Reliability** item. An "M" flash cursor appears at **Drive Select Menu** for the user to choose the first (source) drive for RAID 1. Use SPACEBAR to select the desired drive for RAID 1. Then the flash cursor changes to an "m" flash cursor for the user to choose the second (target) drive for RAID 1. (Figure 10)

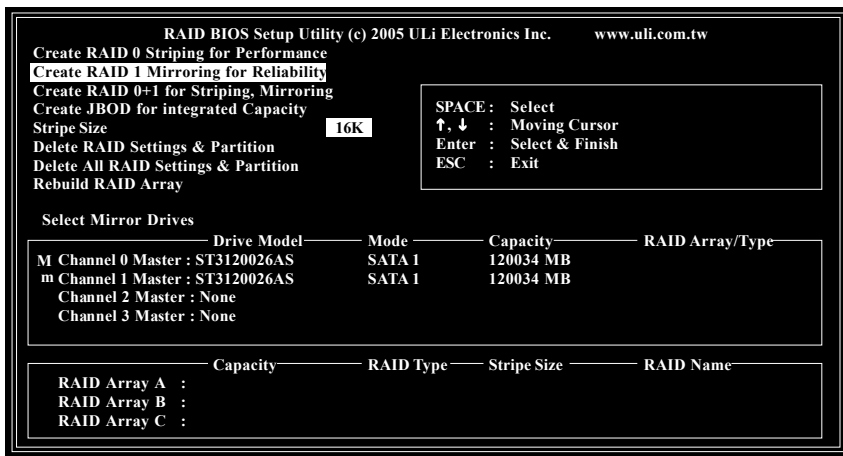


Figure 10

Press SPACEBAR to select the second drive. The prompt "**Create RAID 1 (Y/N)?**" appears after two drives are properly assigned. Press Y, and then some necessary information will be written to the drives, which will destroy the original data in the drives.



It is recommended to use new drives to create RAID 1. If existing drive is to be used, back up all necessary data before creating RAID 1.

Next, the Array Name input line appears for the user to key in a name for the newly created array. The effective characters for an array name are 0-9, A-Z, a-z, space and underscore.

Lastly a prompt message "Duplicate Data from M to m (Y/N)?" asks whether to do drive copy. The source and target drives are indicated by "M" and "m" in **Drive Select Menu** respectively. Pressing Y will duplicate the data in source drive to the target drive. Make sure the source drive is the correct one. If you press N, then the data is inconsistent in two drives. (Figure 11)

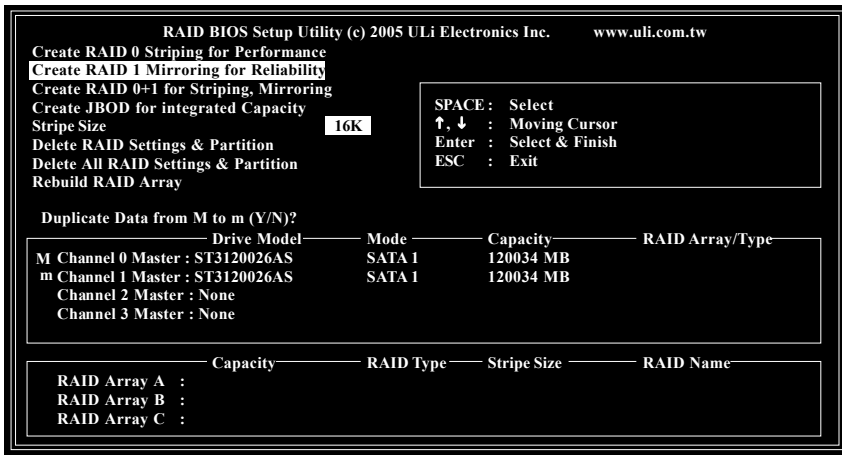


Figure 11

After the RAID array has been created successfully, its information shows up at RAID Array List. (Figure 12)

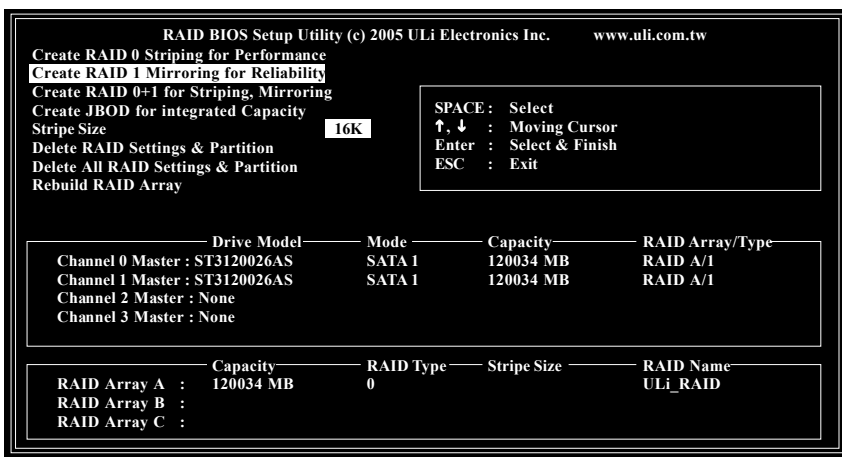


Figure 12

3. Create RAID 0+1 for Striping, Mirroring

Press Enter on **Create RAID 0+1 for Striping, Mirroring** item. The prompt "Data on first 4 drives will be deleted (Y/N)?" appears after four drives are properly assigned. Press Y, and then some necessary information will be written to the drives, which will destroy the original data in the drives. (Figure 13)

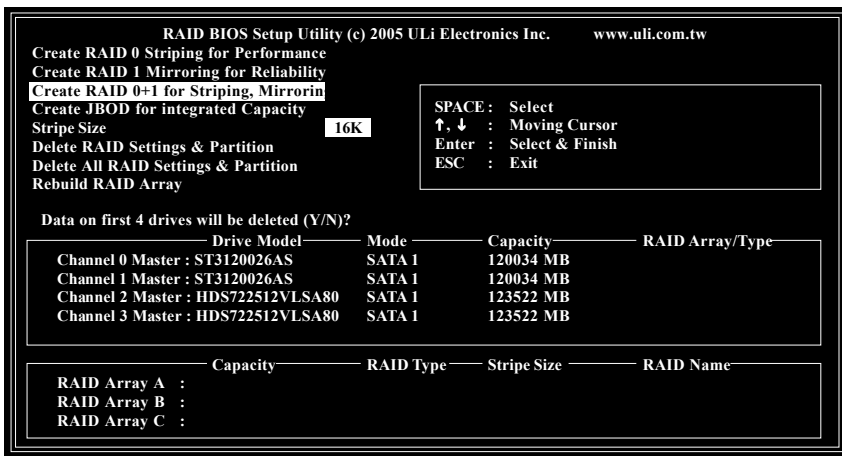


Figure 13



You must use four hard drives to create RAID 0+1 and it is recommended to use new drives. If existing drive is to be used, backup all necessary data before creating RAID 0+1.

Next, the Array Name input line appears for the user to key in a name for the newly created array. The effective characters for an array name is 0-9, A-Z, a-z, space and underscore. (Figure 14)

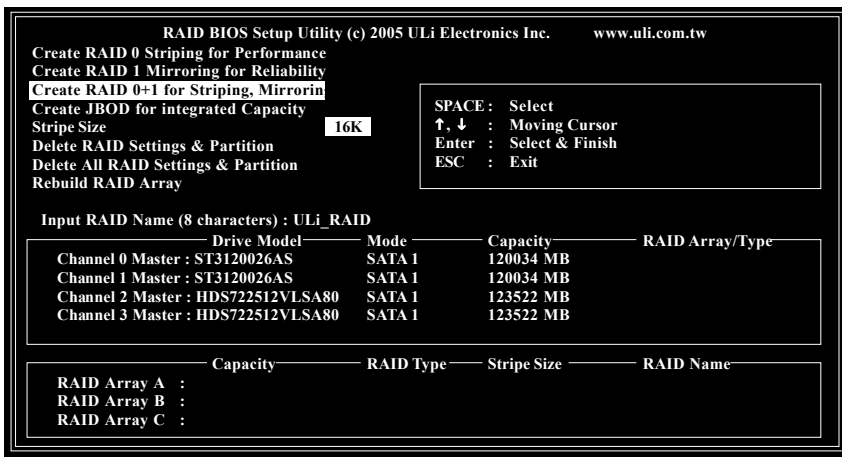


Figure 14

After the RAID array has been created successfully, its information shows up at RAID Array List. (Figure 15)

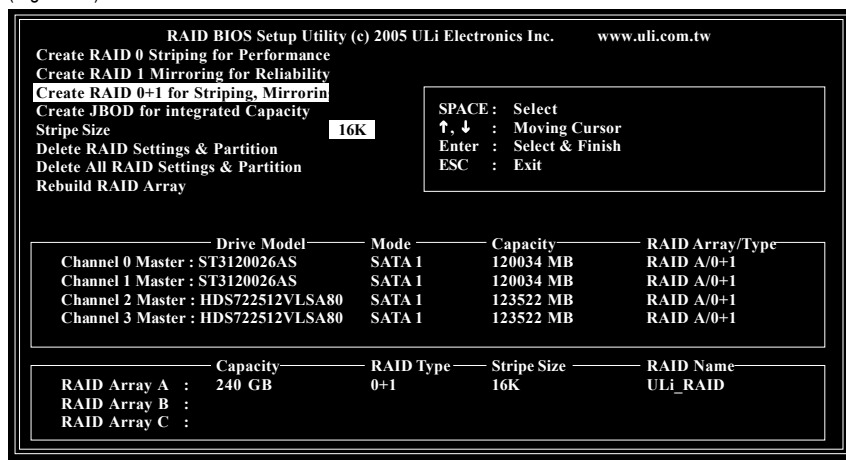


Figure 15

4. Create JBOD for integrated Capacity

Press ENTER on **Create JBOD for integrated Capacity** item. A "J" flash cursor appears at **Drive Select Menu** for the user to choose the first drive for JBOD. Use SAPCEBAR to select the desired drive for JBOD. Press ENTER to finish JBOD drive selection(Figure 16). The maximum number of drives for JBOD array is four and the minimum is two.

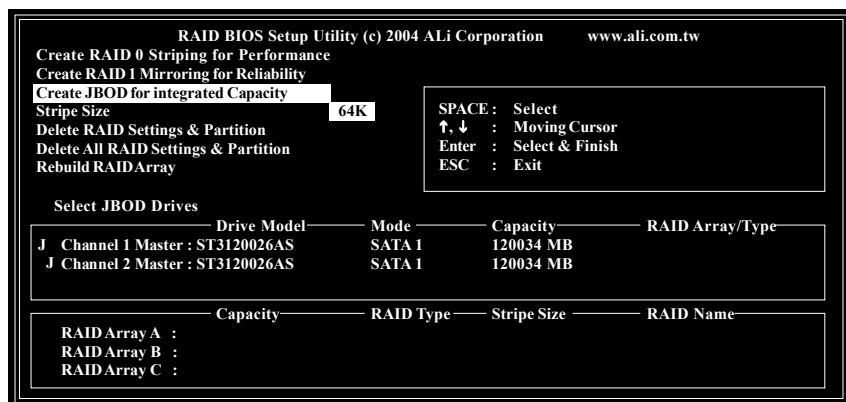


Figure 16

The prompt "**Data on RAID Drives will be deleted (Y/N)?**" appears after two drives are properly assigned. Press Y, and then some necessary information will be written to the drives, which will destroy the original data in the drives. Next, the Array Name input line appears for the user to key in a name for the newly created array. The effective characters for an array name are 0-9, A-Z, a-z, space and underscore. After the RAID array has been created successfully, its information shows up at RAID Array List.



Make sure the data in drives is no longer in use before creating JBOD.

5. Delete RAID Settings & Partition

When RAID BIOS detects a broken RAID, the user can use **Delete RAID Setting & Partition** to delete the broken RAID.

Press ENTER on **Delete RAID Settings & Partition** item. An "E" flash cursor appears at **Drive Select Menu** for the user to choose the defined drive to be deleted. "**Data on RAID drives will be deleted (Y/N)?**" message will appear to confirm the user's selection. Press Y and then the data in drives is destroyed. RAID Array List automatically updates itself.

6. Delete All RAID Settings & Partition

Press ENTER on **Delete All RAID Settings & Partition** item. "**Data on RAID drives will be deleted (Y/N)?**" message will appear to confirm the user's selection. Press Y and then the data in drives is destroyed. RAID Array List automatically updates itself.

7. Rebuild RAID Array

When a drive is replaced or BIOS detects a broken RAID, the user can use **Rebuild RAID Array** to keep data coherency for RAID 1.

Press ENTER on **Rebuild RAID Array** item. An "R" flash cursor appears at the Drive Select Menu for the user to choose the valid drive of previously defined RAID 1 to rebuild. BIOS shows the source (marked with "M") and target (marked with "m") drives.

Lastly a prompt message "**Duplicate Data from M to m (Y/N)?**" asks whether to do drive copy. The source and target drives are indicated by "M" and "m" in **Drive Select Menu** respectively. Press Y to start the rebuild process and data duplication. The process status bar shows up during the duplication process.

(4) Making a SATA controller driver disk

To install Windows 2000/XP onto a SATA hard drive on the ULI M1689 controller successfully, you need to install required driver for the SATA controller during OS installation. Without the driver, the hard drive may not be recognized during the Windows setup process.

First of all, you need to copy the driver for the SATA controller from the motherboard driver CD to a floppy disk. The instructions below explain how to copy the driver.

Step 1: Find an available system and insert the motherboard driver CD into the CD-ROM drive. The installation utility will appear automatically. Quit the installation utility first.

Step 2: Go to **My Computer** and right-click the CD-ROM drive icon and select **Open** (Figure 17).

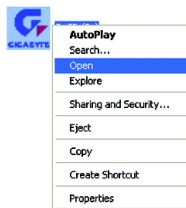


Figure 17

Step 3: Go to the **BootDrv** folder and look for an executable program named MENU.exe (Figure 18).

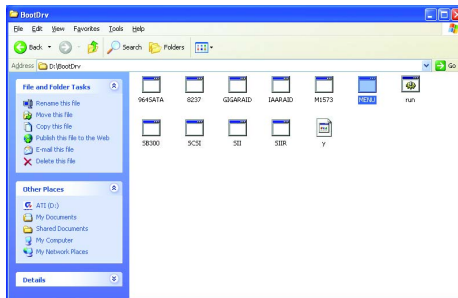
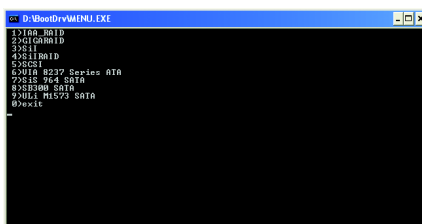


Figure 18

Step 3:

Double-click MENU.exe. An MS-DOS prompt screen similar to Figure 16 below will appear.



```
D:\BootDrv\MENU.EXE
1)RA0 RAID
2)CI0 RAID
3)SI1
4)SI1 RAID
5)SI1 RAID
6)ULI 4227 Series ATA
7)ULI 064 SATA
8)ULI 064 SATA
9)ULI M1573 SATA
0)Exit
```

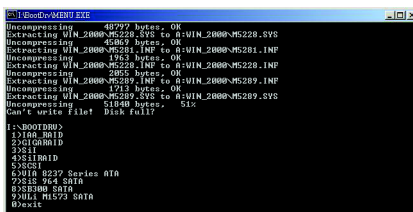
Figure 19

Step 4:

Insert an empty floppy disk. Press 9 to select the **9)ULI SATA** item. Then it will take about one minute to copy the SATA driver from the motherboard driver CD to the floppy disk.

Step 5:

Press 0 to exit when the procedure is complete (Figure 20). You have copied the SATA driver successfully.



```
D:\BootDrv\MENU.EXE
Uncompressing 48777 bytes, OK
Compressing BIN_2000-MS229.SYS to BIN_2000-MS229.SYS
Uncompressing 45869 bytes, OK
Compressing BIN_2000-MS229.INF to BIN_2000-MS229.INF
Uncompressing 1763 bytes, OK
Compressing BIN_2000-MS229.INF to BIN_2000-MS229.INF
Uncompressing 2855 bytes, OK
Compressing BIN_2000-MS229.INF to BIN_2000-MS229.INF
Uncompressing 1713 bytes, OK
Compressing BIN_2000-MS229.SYS to BIN_2000-MS229.SYS
Uncompressing 51840 bytes, 51%
Compressing files, Disk full!
1)RA0 RAID
2)CI0 RAID
3)SI1
4)SI1 RAID
5)SI1
6)ULI 4227 Series ATA
7)ULI 064 SATA
8)ULI 064 SATA
9)ULI M1573 SATA
0)Exit
```

Figure 20

(5) Installing SATA controller driver during OS installation

Now that you have prepared the SATA driver disk and configured BIOS settings, you are ready to install Windows 2000/XP onto your SATA hard drive with the driver. The following is an example of Windows XP installation.

Step 1: Restart your system to boot from the Windows 2000/XP Setup disk and press F6 as soon as you see the "Press F6 if you need to install a 3rd party SCSI or RAID driver" message (Figure 21). After pressing F6, there will be a few moments of some files being loaded before you see the next screen.

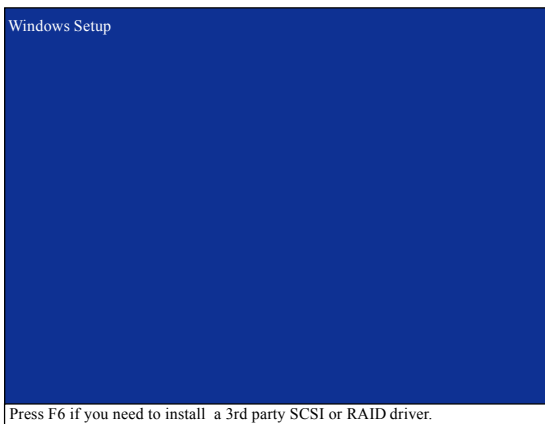


Figure 21

Step 2:

When a screen similar to that below appears (Figure 22), insert the floppy disk containing the SATA driver and press S.

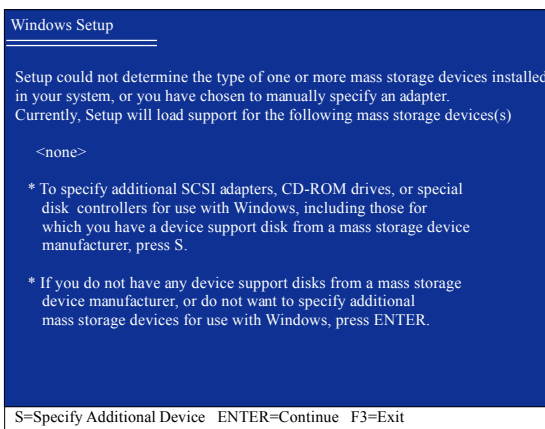


Figure 22

Step 3:

If Setup correctly recognizes the driver in the floppy disk, a controller menu similar to that below will appear. If you want to install Windows XP, use the ARROW keys to select **ALi SATA RAID Controller (M5289, Windows XP/Server 2003)*** (Figure 23) and press ENTER. Then it will begin to load the SATA driver from the floppy disk.

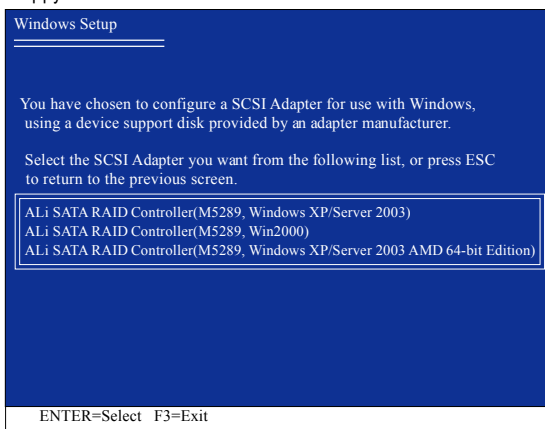


Figure 23

Step 4:

When the screen as shown below appears, press ENTER to continue the SATA driver installation from the floppy disk. The driver installation will be finished in about one minute.



If a message appears saying one or some file(s) cannot be found, please check the floppy disk or copy the correct SATA driver again from the motherboard driver CD.

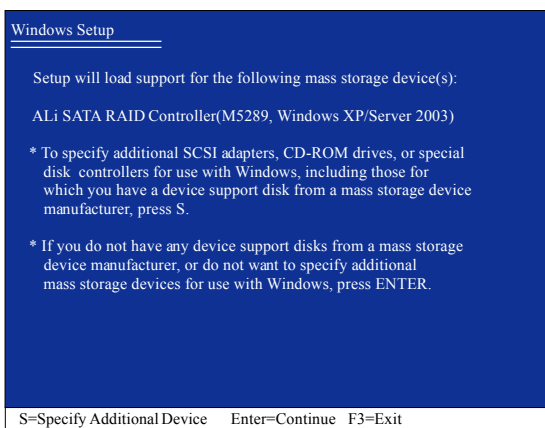


Figure 24

*** Select the driver according to which of the following operating systems you want to install: Windows 2003, Windows XP, Windows 2000, or Windows 2003/XP AMD 64-bit Edition.

After the SATA controller driver installation is completed, you should see a screen as below. It indicates that you have installed the SATA controller driver successfully. You can proceed with the Windows 2000/XP installation.

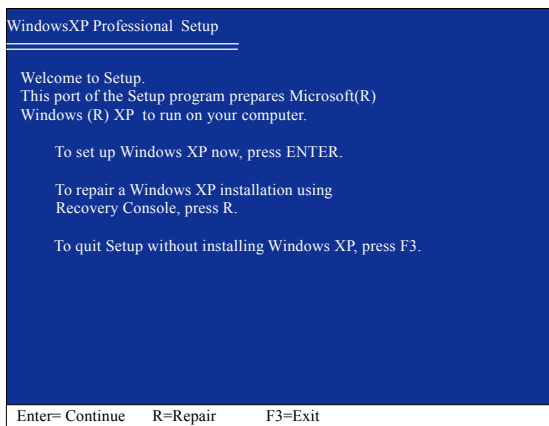


Figure 25

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