Table of Contents

Configuring SATA Hard Drive(s) (Controller: Silicon Image SiI3512)

To set up SATA hard drive(s), you have to follow the steps below:

(1) Install SATA hard drive(s) in your computer.

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

(3)* Configuring 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 (If there are more than one SATA controller on your motherboard, you may check the name of the SATA connector, which helps you identify the SATA controller for the connector. For example, **SATA0_SII** is controlled by the Silicon Image SiI3512 SATA controller). Then connect the power connector from your power supply to the hard drive.

"*" Skip this step if you do not plan 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 the Del key to enter BIOS Setup during POST (Power-On Self Test). If you want to create RAID, select **Serial ATA Function** under the **Integrated Peripherals** menu (Figure 1) and set this item to **RAID** (RAID by default). Set **Serial ATA Function** to **BASE** if you do not want to create RAID.

```
             CMOS Setup Utility-Copyright (C) 1984-2004 Award Software
                             Integrated Peripherals

     IDE Function Setup              [Press Enter]        ▲  Item Help
     On-Chip Primary PCI IDE         [Enabled]               Menu Level ▶
     On-Chip Secondary PCI IDE       [Enabled]
     USB Host Controller             [V1.1+V2.0]
     USB Keyboard Support            [Disabled]
     USB Mouse Support               [Disabled]
     Serial-ATA 2(Internal PHY)      [Enabled]
     AC97 Audio                      [Auto]
     On-Chip LAN(nVIDIA)             [Auto]
     Onboard Serial ATA              [Disabled]
     Serial ATA Function             [RAID]
     Onboard 1394                    [Enabled]
     Onboard LAN Control             [Enabled]
     Onboard LAN Boot ROM            [Disabled]
     Onboard Serial Port 1           [3F8/IRQ4]
     Onboard Serial Port 2           [2F8/IRQ3]
     Onboard Parallel Port           [378/IRQ7]
     Parallel Port Mode              [SPP]
   x ECP Mode Use DMA                3                    ▼

   ↑↓→←: Move    Enter: Select    +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help
          F5: Previous Values      F6: Fail-Safe Defaults       F7: Optimized Defaults
```
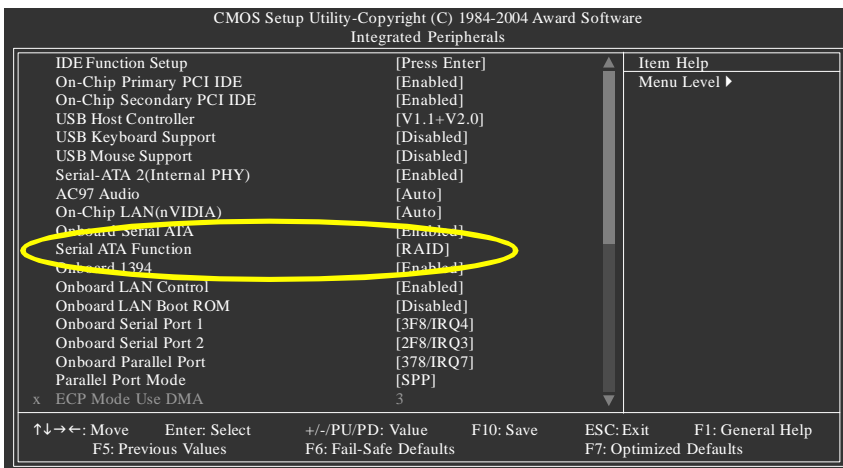
Figure 1

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:
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).

```
                CMOS Setup Utility-Copyright (C) 1984-2004 Award Software
                              Hard Disk Boot Priority

  1. SCSI-0    :  02:68-0 ST3120026AS                      Item Help
  2. Bootable Add-in Cards                                 Menu Level ▶▶


                                                           Use <↑> or <↓> to
                                                           select a device, then
                                                           press <+> to move it
                                                           up, or <-> to move it
                                                           down the list. Press
                                                           <ESC> to exit this
                                                           menu.




  ↑↓: Move        PU/PD/+/-: Change Priority      F10: Save        ESC: Exit
```
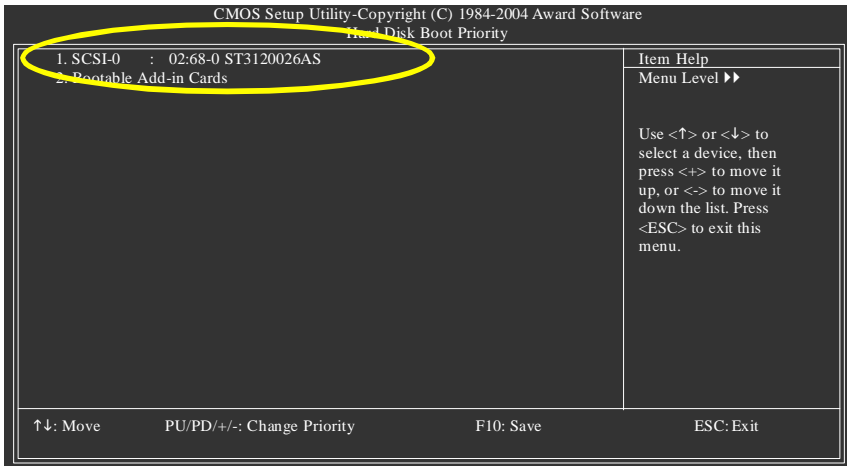
Figure 2

Step 3:
Set **First Boot Device** under the **Advanced BIOS Features** menu to **CDROM** to boot from CD-ROM after system restarts (Figure 3).
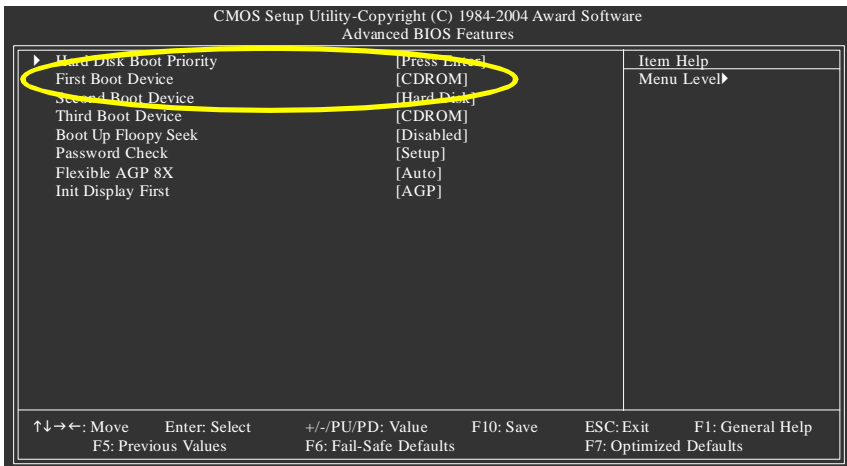
```
                CMOS Setup Utility-Copyright (C) 1984-2004 Award Software
                              Advanced BIOS Features

  ▶ Hard Disk Boot Priority              [Press Enter]    Item Help
    First Boot Device                    [CDROM]          Menu Level▶
    Second Boot Device                   [Hard Disk]
    Third Boot Device                    [CDROM]
    Boot Up Floopy Seek                  [Disabled]
    Password Check                       [Setup]
    Flexible AGP 8X                      [Auto]
    Init Display First                   [AGP]








  ↑↓→←: Move     Enter: Select     +/-/PU/PD: Value   F10: Save    ESC: Exit     F1: General Help
       F5: Previous Values        F6: Fail-Safe Defaults          F7: Optimized Defaults
```

Figure 3

Step 4:
Save and exit BIOS Setup.

SATA Hard Drive Configurations (Sil3512)   - 4 -

(3) Configuring RAID set in RAID BIOS

To create a RAID array on the SATA controller, you have to enter the RAID setup utility to select RAID level. Skip this step and proceed to Section 4 on page 8 if you do not want to create RAID.

Step 1:
After the Power-On Self-Test (POST) memory test begins and before the operating system boot begins, look for a message which says "Press <Ctrl+S> or F4 to enter RAID utility" (Figure 4). Press CTRL+S or the F4 key to enter the RAID setup utility.

```
SiI 3512A SATARaid BIOS Version 4.3.47
Copyright (C) 1997-2004 Silicon Image, Inc.

Press <Ctrl+S> or F4 to enter RAID utility_
```
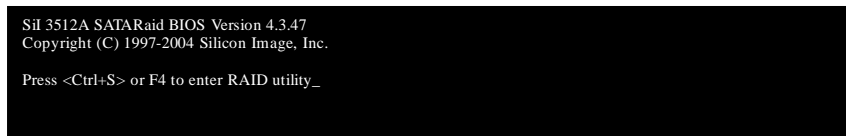
Figure 4

Step 2:
After pressing CTRL+S or F4, the **RAID Configuration Utility** screen similar to that below will appear (Figure 5). You can press UP or DOWN ARROW keys to move the selection bar and highlight the item that you want to execute.
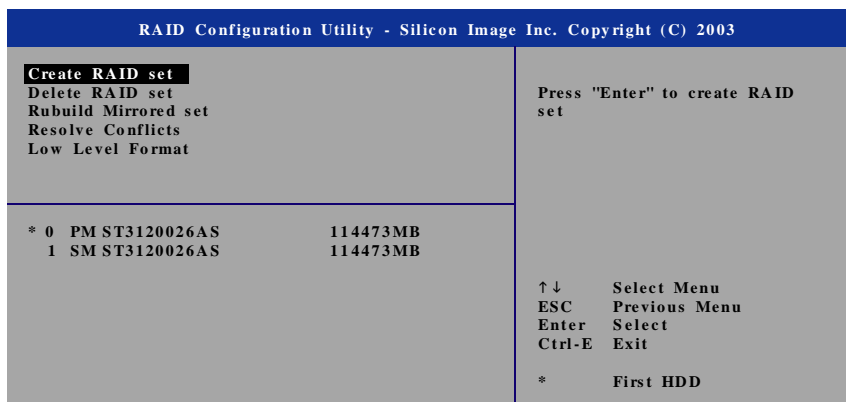
```
RAID Configuration Utility - Silicon Image Inc. Copyright (C) 2003

Create RAID set                              Press "Enter" to create RAID
Delete RAID set                              set
Rubuild Mirrored set
Resolve Conflicts
Low Level Format


* 0  PM ST3120026AS          114473MB
  1  SM ST3120026AS          114473MB

                                             ↑↓      Select Menu
                                             ESC     Previous Menu
                                             Enter   Select
                                             Ctrl-E  Exit

                                             *       First HDD
```

Figure 5

Step 3:

Create RAID set:

Press ENTER to select **Create RAID set**, and then the RAID type selection menu will appear (Figure 6). Use UP or DOWN ARROW key to select a RAID type that you want to create. The options include **Striped** (RAID 0) and **Mirrored** (RAID 1).

```
RAID Configuration Utility - Silicon Image Inc. Copyright (C) 2003

 Create RAID set
 Delete RAID set
 Rubuild Mirrored s   Striped        Striped = RAID 0
 Resolve Conflicts    Mirrored
 Low Level Format


 * 0  PM ST3120026AS       114473MB
   1  SM ST3120026AS       114473MB
                                      ↑↓      Select Menu
                                      ESC     Previous Menu
                                      Enter   Select
                                      Ctrl-E  Exit

                                      *       First HDD
```
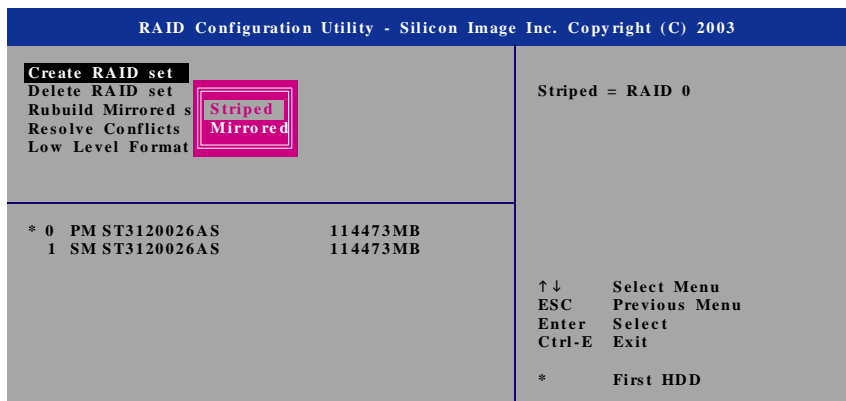
Figure 6

Step 4:

After the selection of a RAID type, press ENTER to select **Auto configuration** or **Manual configuration** (Figure 7). If you choose **Auto configuration**, BIOS will automatically set the Striped size to 16KB, first drive to Drive 0, and the second drive to Drive 1. If you choose **Manual configuration**, you can manually change the chunk size (from 4K to 128K) and the drive sequence.

```
RAID Configuration Utility - Silicon Image Inc. Copyright (C) 2003

 Auto configuration
 Manual configuration                Press "Enter" to automatically
                                      create a striped
                                      (RAID 0) set

                                      Striped size is 16K
                                      First drive is drive 0
                                      Second drive is drive 1

 * 0  PM ST3120026AS       114473MB
   1  SM ST3120026AS       114473MB
                                      ↑↓      Select Menu
                                      ESC     Previous Menu
                                      Enter   Select
                                      Ctrl-E  Exit

                                      *       First HDD
```
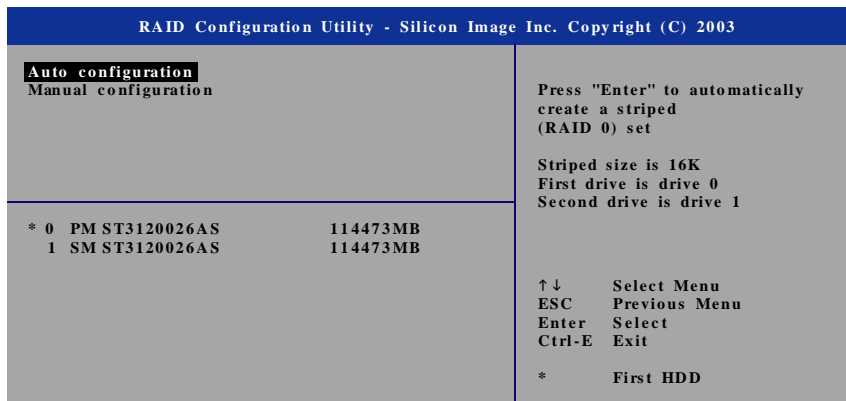
Figure 7

Step 5:

After finishing all the settings of a RAID set and press ENTER, you should see a dialog box which says "Are You Sure?" Press Y to proceed with the RAID set creation and then configuration is completed. The lower-left screen lists the detailed RAID set information, such as: RAID type, chunk size, RAID volume name, and volume size (Figure 8).

```
RAID Configuration Utility - Silicon Image Inc. Copyright (C) 2003

Create RAID set
Delete RAID set                              Striped = RAID 0
Rubuild Mirrored set
Resolve Conflicts
Low Level Format


 * 0  PM ST3120026AS         114473MB
   1  SM ST3120026AS         114473MB

 * Set0 SiI Striped Set      <PM>   228943MB      ↑↓      Select Menu
      0 ST3120026AS          Chunk size 16K       ESC     Previous Menu
      1 ST3120026AS          Chunk size 16K       Enter   Select
                                                  Ctrl-E  Exit

                                                  *       First HDD
```
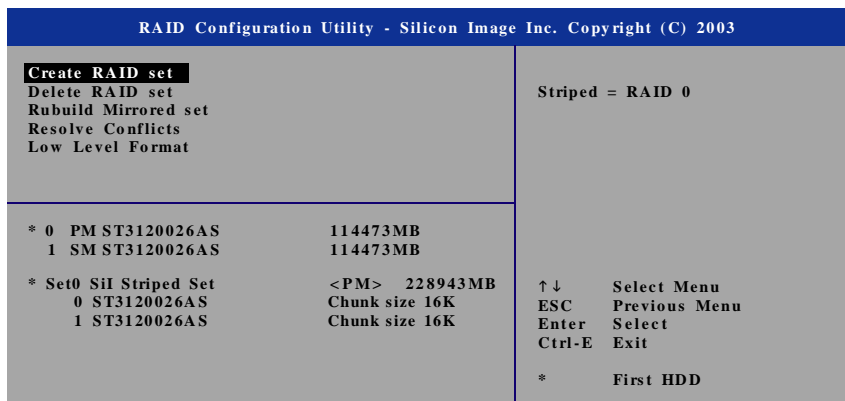
Figure 8

If you want to remove one or more RAID sets, select **Delete RAID set** item (Figure 9) in main menu. Press ENTER and follow the on-screen instructions to delete the RAID set.

```
RAID Configuration Utility - Silicon Image Inc. Copyright (C) 2003

Create RAID set
Delete RAID set                              Press "Enter" to delete a
Rubuild Mirrored set                         RAID set
Resolve Conflicts
Low Level Format


 * 0  PM ST3120026AS         114473MB
   1  SM ST3120026AS         114473MB

 * Set0 SiI Striped Set      <PM>   228943MB      ↑↓      Select Menu
      0 ST3120026AS          Chunk size 16K       ESC     Previous Menu
      1 ST3120026AS          Chunk size 16K       Enter   Select
                                                  Ctrl-E  Exit

                                                  *       First HDD
```
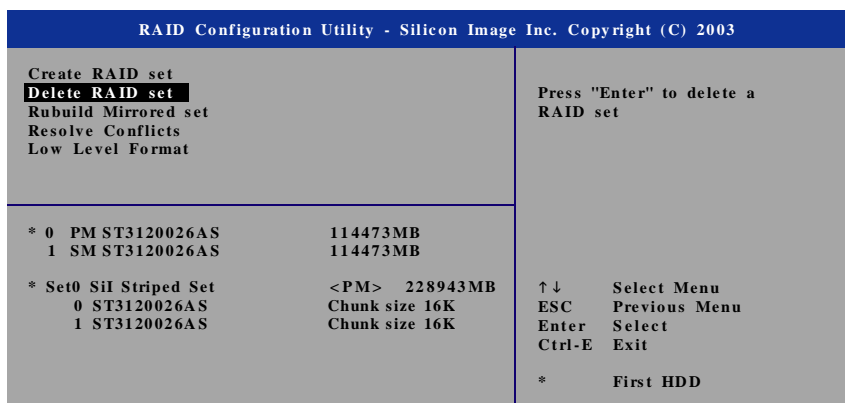
Figure 9

While the configuration is completed, press CTRL+E to exit the RAID Configuration Utility.
Then, you can proceed to the installation of the SATA driver and operating system.

(4) Making a SATA controller driver disk

To install Windows 2000/XP onto a Serial ATA hard disk on the Sil3512 controller successfully, you need to install required driver for the SATA RAID controller on your motherboard during OS installation. Without the driver, the hard disk may not be recognized during the Windows setup process.

First of all, you have 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 icon (this procedure assumes Drive D) and select **Open** (Figure 10).
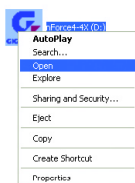

Figure 10

Then you should see folders and files contained in the driver CD. Go to the **BootDrv** folder and look for a file named MENU.*exe* (Figure 11).
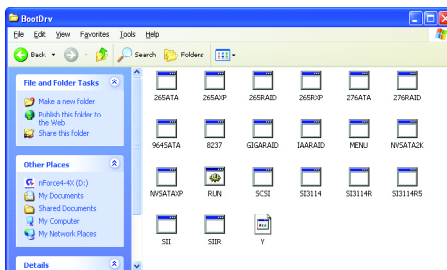

Figure 11

Step 3:
Double-click MENU.*exe.* An MS-DOS prompt screen similar to Figure 12 will appear.

Figure 12

Step 4:
Insert an empty floppy disk. If you do not want to create RAID array, press 3 to select the **SiIBASE** item. If you want to create RAID array(s), press 4 to select the **SiIRAID** 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 completed (Figure 13). You have copied the SATA driver successfully.

Figure 13

(5) Installing SATA controller driver during OS installation

Now that you have prepared a floppy disk with the SATA driver and adjusted BIOS settings, you can begin to install Windows 2000/XP onto your SATA hard disk with the SATA driver. This procedure assumes 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 a message which says "Press F6 if you need to install a 3rd party SCSI or RAID driver." After pressing the F6 key, there will be a few moments of some files being loaded before you see the next screen for you to specify the SATA controller on your motherboard.

Windows Setup

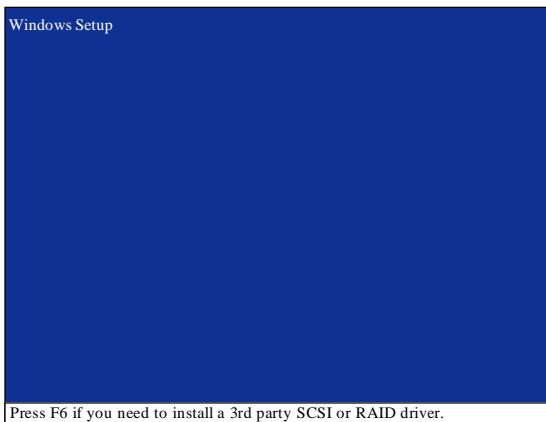Press F6 if you need to install a 3rd party SCSI or RAID driver.

Figure 14

Step 2:
When a screen similar to that below appears, insert the floppy disk containing the SATA driver and press S to specify the SATA controller (Figure 15). Then you will be asked to select the SATA controller on your motherboard.
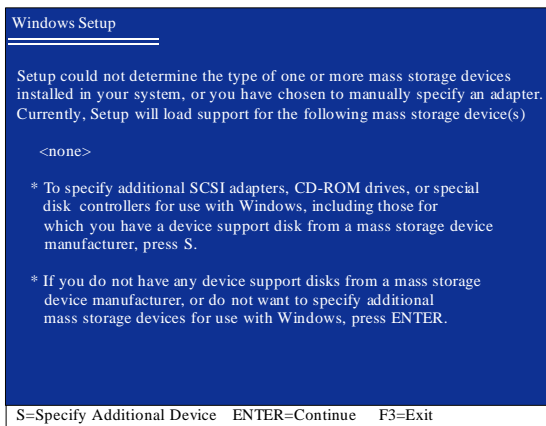
Windows Setup

Setup could not determine the type of one or more mass storage devices installed in your system, or you have chosen to manually specify an adapter. Currently, Setup will load support for the following mass storage device(s)

    <none>

  * To specify additional SCSI adapters, CD-ROM drives, or special
    disk controllers for use with Windows, including those for
    which you have a device support disk from a mass storage device
    manufacturer, press S.

  * If you do not have any device support disks from a mass storage
    device manufacturer, or do not want to specify additional
    mass storage devices for use with Windows, press ENTER.

S=Specify Additional Device   ENTER=Continue   F3=Exit

Figure 15

Step 3:

If you want to create RAID array(s), use the arrow keys to select **Silicon Image Sil 3x12 SATARaid Controller for Windows XP*** (Figure 16) and press ENTER. Then system will begin to load the SATA driver from the floppy disk.

```
Windows Setup
──────────────────

  You have chosen to configure a SCSI Adapter for use with Windows,
  using a device support disk provided by an adapter manufacturer.

  Select the SCSI Adapter you want from the following list, or press ESC
  to return to the previous screen.

  Silicon Image SiI 3x12 SATARaid Controller for Windows XP
  Silicon Image SiI 3x12 SATARaid Controller for Windows NT 4.0 and 2000




  ENTER=Select   F3=Exit
```
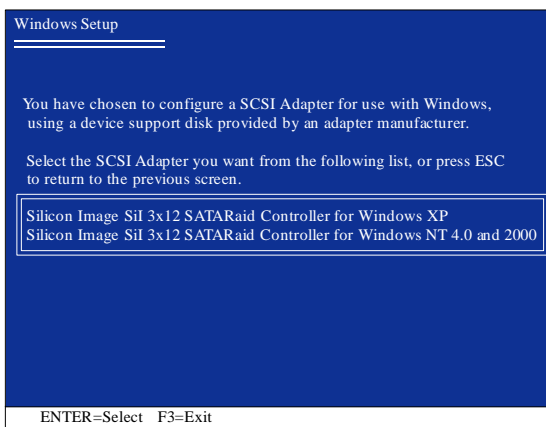
Figure 16

If you do not want to create RAID, use arrow keys to select **Silicon Image Sil 3x12 SATALink Controller for Windows XP/Server 2003*** (Figure 17) and press ENTER. Then system will begin to load the SATA driver from the floppy disk.

```
Windows Setup
──────────────────

  You have chosen to configure a SCSI Adapter for use with Windows,
  using a device support disk provided by an adapter manufacturer.

  Select the SCSI Adapter you want from the following list, or press ESC
  to return to the previous screen.

  Silicon Image SiI 3x12 SATALink Controller for Windows XP/Server 2003
  Silicon Image SiI 3x12 SATALink Controller for Windows NT 4.0 and 2000




  ENTER=Select   F3=Exit
```
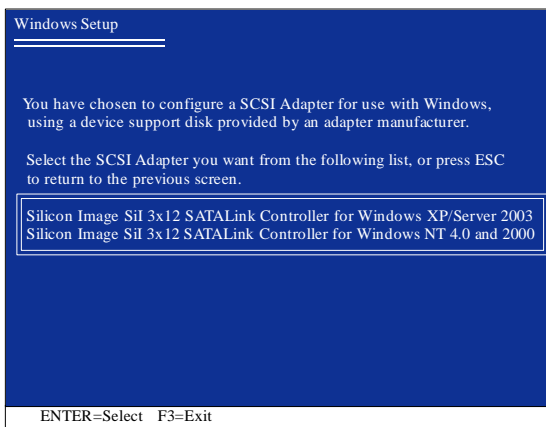
Figure 17

⚠ **CAUTION** 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.

"*" Select the driver according to which of the following operating systems you want to install: Windows 2003, Windows XP, Windows 2000, or Windows NT4.

Step 4:

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

```
Windows Setup

   Setup will load support for the following mass storage device(s):

   Silicon Image SiI 3x12 SATARaid Controller for Windows XP

   * To specify additional SCSI adapters, CD-ROM drives, or special
     disk  controllers for use with Windows, including those for
     which you have a device support disk from a mass storage device
     manufacturer, press S.

   * If you do not have any device support disks from a mass storage
     device manufacturer, or do not want to specify additional
     mass storage devices for use with Windows, press ENTER.




   S=Specify Additional Device Enter=Continue   F3=Exit
```
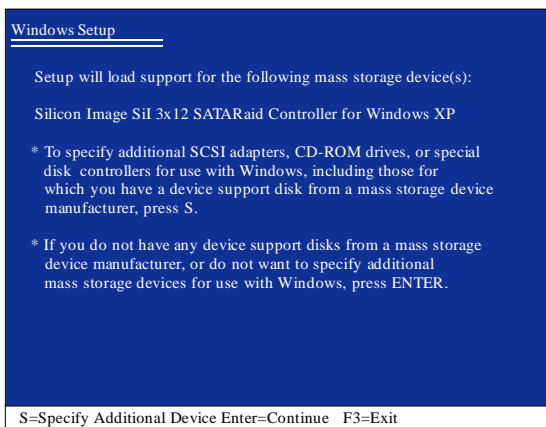
Figure 18

After the SATA controller driver installation is completed, you should see a screen similar to Figure 19 below. It indicates that you have installed the SATA controller driver successfully. You can proceed with the Windows 2000/XP installation.

```
WindowsXP Professional  Setup

  Welcome to Setup.
  This port of the Setup program prepares Microsoft(R)
  Windows (R) XP  to run on your computer.

       To set up Windows XP now, press ENTER.

       To repair a Windows XP installation using
       Recovery Console, press R.

       To quit Setup without installing Windows XP, press F3.




  Enter= Continue     R=Repair        F3=Exit
```
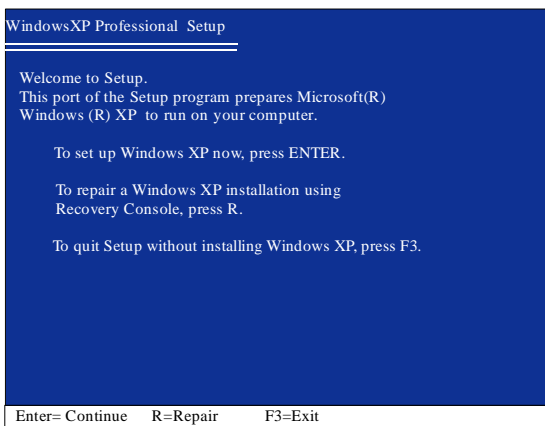
Figure 19

(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.)

SATA Hard Drive Configurations (SiI3512)   - 12 -