

RAID installation guide for Silicon Image 3112A

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1 Introduction

1.1 About this Guide

This document provides a brief step-by-step guide for beginners in how to set up a RAID drive using the onboard **Sil 3112** controller, operating under the **Windows XP** environment. This guide was designed to only cover the basic operations in setting up RAID.

1.2 The Basics

1.2.1 What is RAID?

A RAID (Redundant Array of Independent Disks) controller lets you combine multiple hard disks to simulate a single drive. The drive created will properties different to that of the individual drives.

1.2.2 Advantages of RAID

The obvious advantage of using a RAID configuration is the ability to create drives with larger capacity. However, since multiple drives are used, data can be stored in such a way that it spans over many disks, thus the information can be accessed by the disks simultaneously, significantly improving data access times.

1.2.3 Disadvantages of RAID

Using many drives has a disadvantage. The probability of a single drive failing out of many drives is much higher than that of one failing out of only one. This results in a greater chance of losing the information on your disks. There are ways however, to minimize this effect, even making it more reliable than using single disks.

1.3 Different Types of RAID Configurations

There are many different ways in which RAID can be configured, each with its set of advantages and disadvantages. The **Silicon Image**® controller supports the RAID 0 and RAID 1 configurations.

1.3.1 RAID 0 (Striped)

RAID 0 works by breaking down data and spreading it over multiple disk drives. RAID 0 does not protect data from failure, and due to the way it stores data, a fault on one drive would result in failure of the entire array. It does however, have vast improvements in both reading and writing speeds, with the theoretical speed proportional to the number of disks used in the array. It is also fairly efficient in using disk space, with its size is equal to the size of the smallest disk multiplied by the number of disks.

1.3.2 RAID 1 (Mirrored)

RAID 1 works by maintaining an identical copy of the data of one drive on another. If either of these drives should fail, no information is lost as the second drive will always contain an identical copy of the other. A RAID 1 system can be recovered by simply replacing the damaged disk and mirroring the data on the new drive. This method should cause a

decrease in writing speeds, and results in a disk capacity equivalent to that of the smaller disk.

2 Drivers

A driver is required for your operating system (OS) to recognize your RAID drives. If you are planning to install **Windows 2000** or **XP** on a RAID drive, you will need a copy of the drivers on a floppy disk during installation (refer to *2.1 Creating a Driver Disk*). If the RAID drive is to be installed onto a system with an existing OS, please ensure the drivers are correctly installed for your OS to recognize the newly constructed RAID system (refer to *2.2 Installing Drivers*).

2.1 Creating a Driver Disk

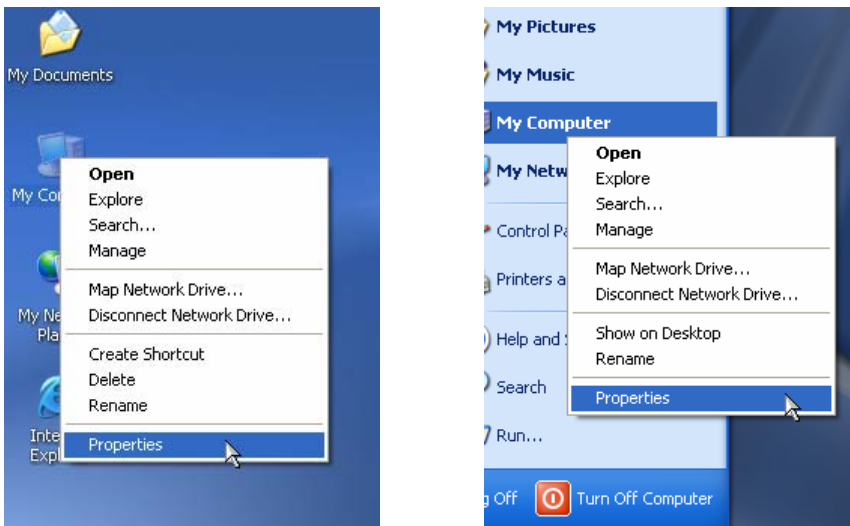
****This most likely will need to be done on a second computer unless you are reinstalling your OS onto a RAID drive.****

- 1) Insert your motherboard's **Support CD** into your CD-ROM drive. A menu should automatically pop up if Autorun is enabled.
- 2) Click on **Browse CD** if the option is available and locate the folder `\Drivers\SATA\`. If not, go to **My Computer** and then your CD-ROM drive to find the folder. **Please note that the directory structure may vary between different Support CDs.**
- 3) Copy the files `Si3112r.mpd`, `TxtSetup.oem`, `Si3112r.inf`, `Si3112r.sys` and `SIISUPP.VXD` to a floppy.

2.2 Installing Drivers

The drivers for the **Sil[®]** RAID controller should be already installed if you have followed your motherboard's manual after installing your OS. However, it is still best to check.

- 1) Under **Windows XP**, right click on **My Computer** and go to properties.



- 2) Click on the **Hardware** tab and then click on **Device Manager**.
- 3) Open **SCSI and RAID controllers** and check if Silicon Image Sil 3112 SATA RAID Controller is there.

- 4) If it is, then you should be ready to install your RAID drive. If not, follow the remaining steps to install the driver.
- 5) Insert your motherboard's **Support CD** into your CD-ROM drive. A menu should automatically pop up if Autorun is enabled.
- 6) Click on the **Drivers** tab and then on **Silicon Image Serial ATA driver**. This will open a text file. Likewise, if Autorun isn't enabled, open the file [\Drivers\SATA\readme.txt](#). The file will contain instructions on how to install the driver.

3 Installing Hard Disks

The **SiI 3112A** RAID controller supports up to 2 serial ATA connectors, both of these are needed to create a RAID array.

When installing hard disks for a RAID array, it is preferable to use disks that are similar. For best results, use identical disks.

Connect 2 SATA hard drives to the SATA connectors, referring to your motherboard's manual for help if necessary.

4 Creating a RAID Array

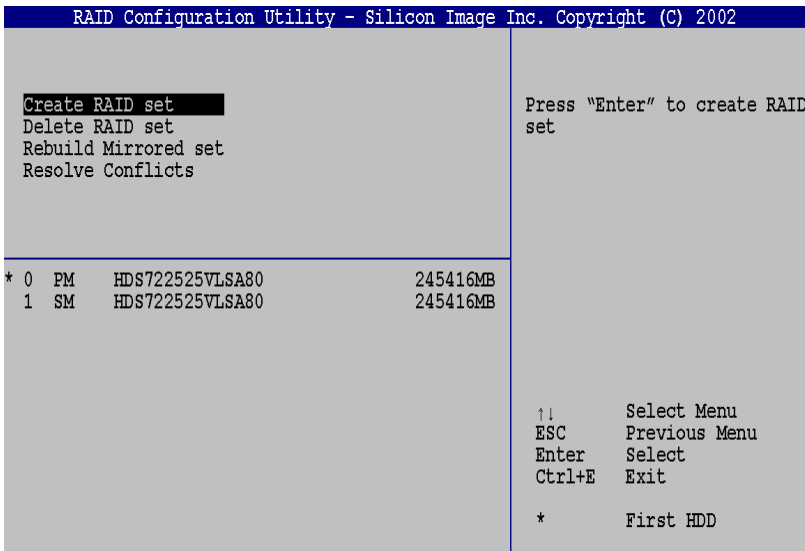
4.1 Using the RAID Configuration Utility

Enter the RAID configuration utility by pressing **<Ctrl+S>** or **<F4>** when it prompts you to do so during boot.

```
SiI 3112A SATAraid Controller BIOS Version 4.1.50
Copyright (C) 1997-2002 Silicon Image, Inc.

Press <Ctrl+S> or F4 to enter RAID utility
Primary Channel:   HDS722525VLSA80           245416 MB
Secondary Channel: HDS722525VLSA80           245416 MB
```

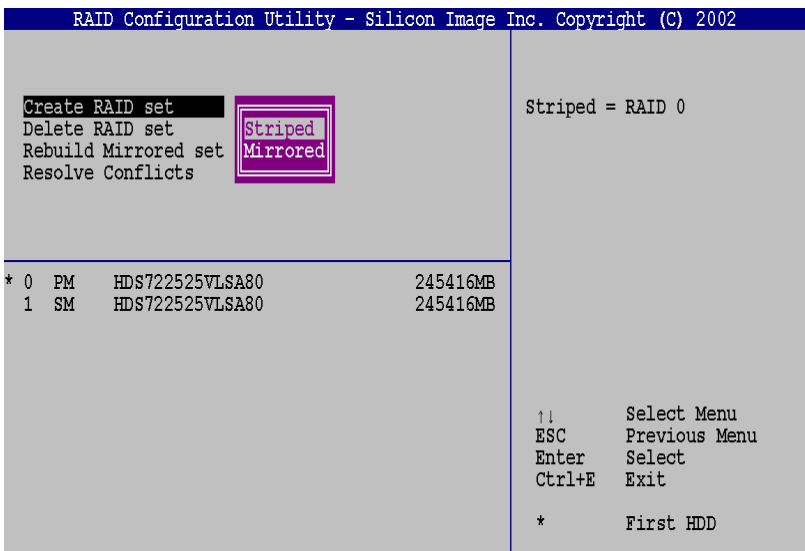
The main menu of the utility allows you to access the functions used to create and manage your RAID arrays.



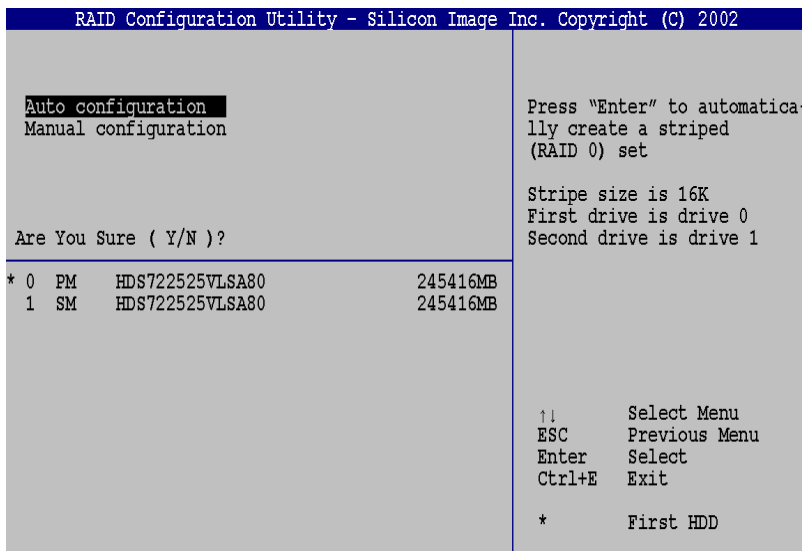
4.2 Creating Arrays Automatically

This method allows you to quickly create a RAID array using default settings (Please make you have already back up your data in hard drive before you create arrays).

- 1) Enter the configuration utility and select **Create RAID set**.
- 2) Select the RAID configuration you want.



- 3) Select **Auto configuration**.
- 4) Press **<Y>**. Your RAID array is now ready.

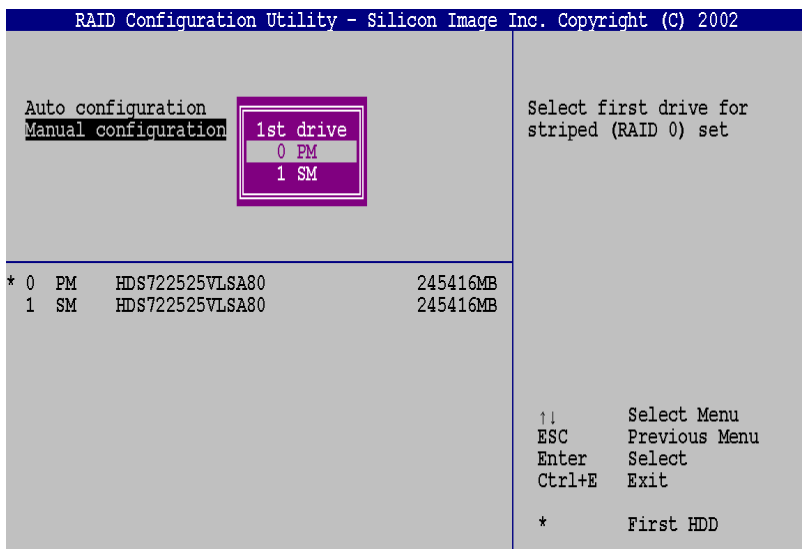


4.3 Creating Arrays Manually

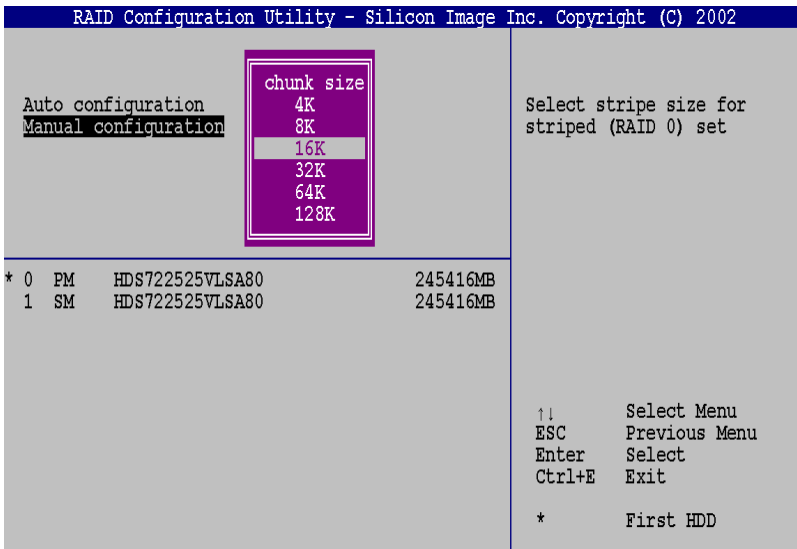
This method allows you to manually create RAID arrays (Please make you have already back up your data in hard drive before you create arrays), allowing better flexibility over what was offered when setting up automatically (*4.2 Creating Arrays Automatically*).

4.3.1 Creating RAID 0

- 1) Enter the configuration utility and select **Create RAID set**.
- 2) Select **Striped**.
- 3) Select **Manual configuration**.
- 4) Select a drive as the first drive in the array. Just select the top one.



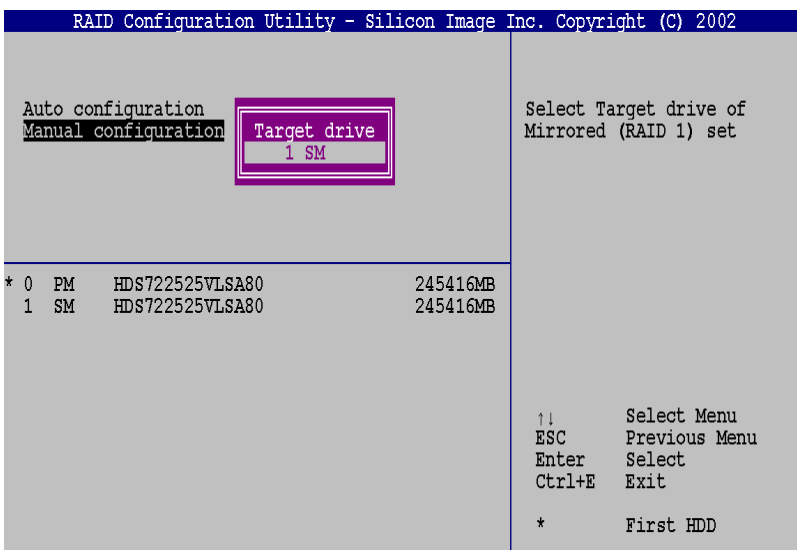
- 5) Select the remaining drive as the second drive.
- 6) Select the stripe size. The default setting in **16K**.



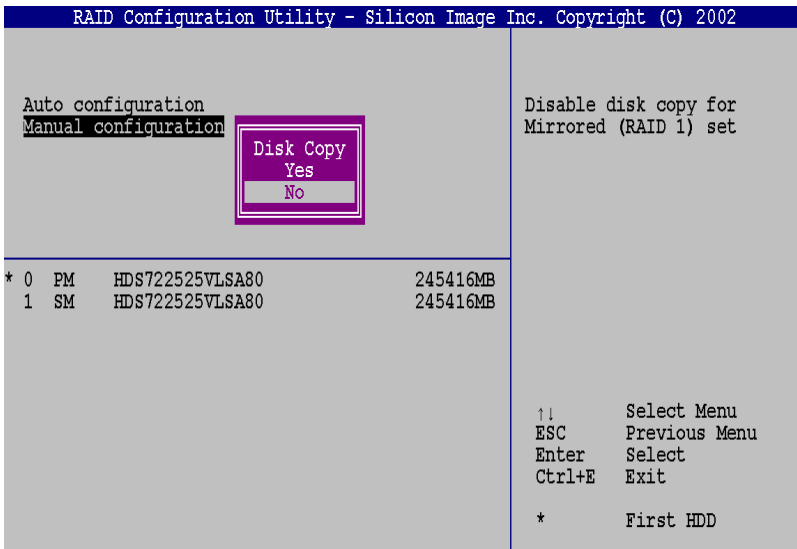
Press <Y>. Your RAID 0 array is now ready.

4.3.2 Creating RAID 1

- 1) Enter the configuration utility and select **Create RAID set**.
- 2) Select **Mirrored**.
- 3) Select **Manual configuration**.
- 4) Select a disk as your source drive.
- 5) Select the remaining drive as your mirroring drive.



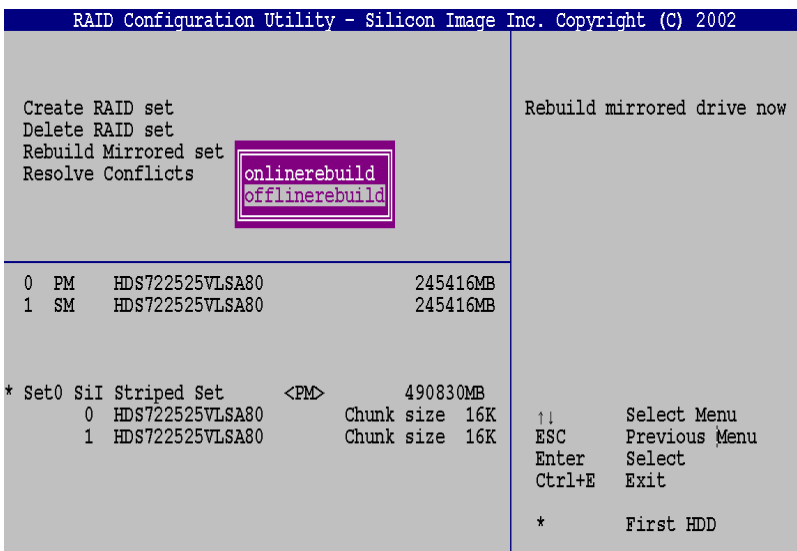
- 6) Select **No** to create a blank RAID 1 array.



7) Press <Y>. Your RAID 1 array is now ready.

4.4 Rebuilding a RAID 1 Array

- 1) Enter the configuration utility and select **Rebuild Mirrored set**.
- 2) Select **offlinebuild**.



3) Press <Y>.

You can also select **onlinebuild** instead of **offlinebuild**. This will allow the array to be slowly rebuilt in the background while you use the computer.

4.5 Deleting Arrays

Should you no longer wish to use your raid drive, you can delete it.

- 1) Enter the configuration utility and select **Delete RAID set**.
- 2) Select the array you wish to delete. There should only be one and it will be listed as **Set0**.

```

RAID Configuration Utility - Silicon Image Inc. Copyright (C) 2002

Create RAID set
Delete RAID set
Rebuild Mirrored set
Resolve Conflicts

Set0

Press "Enter" to create RAID set

0 PM HDS722525VLSA80 245416MB
1 SM HDS722525VLSA80 245416MB

* Set0 SiI Striped Set <PM> 490830MB
  0 HDS722525VLSA80 Chunk size 16K
  1 HDS722525VLSA80 Chunk size 16K

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

* First HDD

```

3) Press <Y> to delete the array.

5 Using your RAID Drive

Once you created your RAID drive, it will act like any other newly installed disk drive; it will be unpartitioned and unformatted. You will have to partition and format the drive in order to properly use it. If you are installing **Windows**, the setup program will allow you to partition and format the drive during installation.

5.1 Partitioning and Formatting Under Windows XP

The **Disk Management** utility is used to partition and format disks under **Windows XP**.

- 4) Right click on **My Computer** and select **manage**.
- 5) Select **Disk Management** under **Storage**.

For further information on how to use this utility, consult your Windows manual or click on **Help**.

5.2 Installing an OS on a RAID Drive

Installing an operating system on a RAID drive is the same as installing it on a standard drive except that a RAID driver needs to be installed during the installation of the OS.

5.2.1 Installing Windows 98/ME

A driver disk is not need to install **Windows 98** and **ME** onto your RAID drive. However, it is recommended that the drivers on your **Support CD** be used instead of the ones already provided.

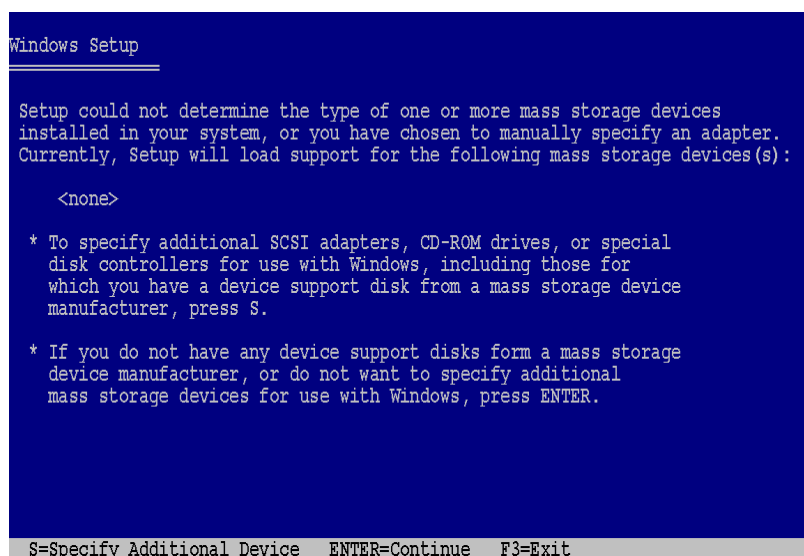
5.2.2 Installing Windows 2000/XP

- 1) Remove any floppy disks from their drives.
- 2) Insert your **Windows** installation CD into your CD-ROM drive and restart your computer.

- 3) Enter **CMOS** setup screen, and follow instructions in your user's manual to set your desired optical drive (the one with the **Windows** installation CD inside) as the first boot device, then save and exit the **CMOS** setup screen.
- 4) Press any key in boot from the CD when prompted (in some motherboards, booting from a CD is automatic and no keys are needed to be pressed).
- 5) Press **<F6>** when Windows asks if you need to install a third party SCSI or RAID driver.



- 6) When **Windows** finishes an examination of your system, you will be asked to specify additional devices or to ignore it. Press **<S>** to specify your **VIA® VT6410 IDE RAID** controller.



- 7) Insert the floppy containing the RAID drivers created in *2.1 Creating a Driver Disk* and then press **<Enter>**.

```
Windows Setup
-----

Please insert the disk labeled
Manufacture-supplied hardware support disk
into Drive A:
* Press ENTER when ready.

ENTER=Continue ESC=Cancel F3=Exit
```

8) Select **Silicon Image SiI 3112 SATAraid Controller**.

```
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 3112 SATAraid Controller

ENTER=Select F3=Exit
```

```
Windows Setup
-----

Welcome to Setup.

This portion 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
```

9) The RAID driver is now loaded, continue the installation of Windows as you normally would.

6 Using Hard Drives as Non-RAID

Drives connected to the **Silicon Image**[®] RAID connectors do not support non-RAID function.