Rosewill

SATA150 RAID 2 Port PCI Host RC201
User Manual

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Important Message:

1. Before controller card installation, we recommend to study the PDF file of SATA Raid manual at enclosed CD folder \ SATA Raid_2Port \ SiI3x12 \ Win98_me_2000_xp_nt4.0 \ Gui first. This Raid manual has more information on Raid architecture, Raid features, Raid installation, Raid setting and Management software for Raid GUI (Graphical User Interface).
2. After driver installation, if you like, you can install SATARaid GUI for Raid management. Before SATARaid GUI installation, you must remove all the existing SATARaid GUI (or Java SATARaid GUI) to ensure your new SATARaid GUI can work properly.
   i.e. : (\ Start \ Control Panel \ Add or Remove Programs \ Select all SATARaid \ Remove)
3. For the creating and management of Raid sets, you can either use BIOS utility setting before Windows operation or use GUI setting under Windows.
   Backup all your data in HD before setting any RAID.
4. New HD connecting to RC-201 is recommended to “initial” and “format” before setting a RAID. Otherwise, PC might find nothing in the system.
5. Please read the PDF file of “SATARAID5-UserGuide_v1.40” for basic RAID knowledge. You can download this document from Rosewill website.
6. If you have trouble booting from correct HD either from motherboard HD or RC-201 HD, please change the selection from BIOS “booting sequence”.
7. Although SATA HD is a “hot swap” design, it is strongly recommended that all users turn off the power before you add any HD to PC.

1. Introduction

This SATA RAID 2 Port PCI Host Adapter is a PCI to dual Serial ATA host controller board. It provides a 32bit, 33/66 MHz PCI interface on the host side and dual, fully compliant Serial ATA ports on the device side to access SATA storage devices.

The board can be used to upgrade your desktop computer to have dual Serial ATA Channels and support RAID 0 and RAID 1 features. It accepts host commands through the PCI bus, processes them and transfers data between the host and Serial ATA devices. The board should be connected to SATA target device and will take the data, serialize it and output it for transmission over the SATA interface. The board can control two independent Serial ATA channels. Each channel has its own Serial ATA bus and will support one Serial ATA device.

The board supports Serial ATA Generation 1 transfer rate of 1.5 Gb/s (150 MB/s). It comes completely with drivers for Windows 98, Windows Millennium, Windows NT 4.0, Windows 2000 and XP.

RAID, Redundant Array of Independent Disks, greatly enhances two main areas of data storage: performance and data integrity. By using RAID 0, also known as Striping, performance of sustained data transfer rates is greatly enhanced by simultaneously writing data to 2, 3 or 4 drives. The second benefit of RAID is data redundancy. RAID 1, Mirroring, writes identical data on two drives or sets of drives, thus protecting the data from a disk failure. If, for any reason, one drive were to fail, your data is secure and available from the mirrored second drive.

1.1. Features

1.1.1. PCI Interface

- Compliant with PCI Specification, revision 2.2.
- Integrated PCI DMA engines.
- 32 bit, 33/66MHz fully compliant PCI host interface.
- Sufficient power current 1.5A5V and 2A12V to supply External Device

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1.1.2. High Speed Serial ATA Interface

- Two special shielded and durable SATA1 connectors for plugging more than 1,000 times
- Dual high speed Serial ATA interface ports, each supporting 1st generation Serial ATA data rates (1.5Gb/s).
- Provides RAID 0 (Stripping) to greatly increase the performance of data transfer by simultaneously writing data to 2 drives.
- Provides RAID 1 (Mirroring) to protect the data from a disk failure by writing identical data on 2 drives.
- Fully compliant with Serial ATA 1.0 specifications.
- Supports Spread Spectrum in receiver.
- Independent 256-byte FIFOs (32 bit * 64 deep) per Serial ATA channel for host reads and writes.

1.2. Package Contents

- SATA RAID 2 Port PCI Host Adapter
- Users Manual
- Driver CD
- Low profile bracket

2. What Is RAID

RAID or un-RAID function
RC-201 is designed for two functions- a RAID card with RAID 0/1 or an extending card for two SATA devices with un-RAID. The un-RAID installation is the same as the RAID installation as below. The only different is that you won't need to enter the RAID BIOS to set a RAID structure.
If you want to use RC-201 as a un-RAID card, please do not enter the RAID BIOS and set any RAID set at the beginning of booting. You can jump to P5 directly to complete the driver installation. The only different is ignoring the step of RAID setting and the driver setting is the same as a RAID card.

RAID - Redundant Array of Independent Disks
RAID technology manages multiple disk drives to enhance I/O performance and provide redundancy in order to withstand the failure of any individual member, without loss of data. This card provides two RAID Set types, Striped (RAID 0) and Mirrored (RAID 1).

Disk Striping (RAID 0)
Striping is a performance-oriented, non-redundant data mapping technology. While Striping is discussed as a RAID Set type, it is actually does not provide fault tolerance. With modern SATA bus mastering technology, multiple I/O operations can be done in parallel, enhancing performance. Striping arrays use multiple disks to form a larger virtual disk.

Disk Mirroring (RAID 1)
Disk mirroring creates an identical twin for a selected disk by having the data simultaneously written to two disks. This redundancy provides instantaneous protection from a single disk failure. If a read failure occurs on one drive, the system reads the data from the other drive.

3. BIOS Installation (RAID Setting)

Creating and deleting RAID sets is a function found in the BIOS. During boot up, the RAID setting message will appear and pause for a few moments to allow the user to choose what to do. This board will act as normal NON-RAID card when BIOS not configured for RAID. Just proceed to Software Installation section directly. If you use traditional parallel ATA HDD, make sure your hard drives be set up as master mode before the RAID setting.

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3.1. Creating Striped Sets (RAID 0)

This RAID array to be used on **New/Blank** hard drives. Striping will **"destroy"** all existing data on the original hard drive. **Auto Configuration** is recommended. For applications that require custom chunk size, **Manual Configuration** is offered.

1. As the BIOS boots, Press **CTRL+S** or **F4** to enter the raid bios utility.
2. Select **Create RAID set.** Press **Enter**.
3. Select **Stripe** (RAID 0) then press **Enter**.
4. Select **Auto configuration**. Press **Enter**.
5. Press **Y** to save your settings.
6. Press **CTRL+E** and then press **Y** to exit the setup.
7. Continue with conventional Fdisk and Format steps as if you are installing a conventional hard drive.
8. Your RAID configuration is complete. Please proceed to software installation section.

3.2. Creating Mirrored Sets (RAID 1)

For New/Blank Hard Drive

(Recommended for all fresh HD without data)

1. As the BIOS boots, Press **CTRL+S** or **F4** to enter the raid bios utility.
2. Select **Create RAID set.** Press **Enter**.
3. Select **Mirrored** (RAID 1) then press **Enter**.
4. Select **Auto configuration**. Press **Enter**.
5. Press **Y** to save your settings.
6. Press **CTRL+E** and then press **Y** to exit the setup.
7. Continue with conventional Fdisk and Format steps as if you are installing a conventional hard drive.
8. Your RAID configuration is complete. Please proceed to software installation section.

For Existing Hard Drives with Data

(Recommended for one/two original HD with data to mirror with one/two fresh empty HD)

1. As the BIOS boots, Press **CTRL+S** or **F4** to enter the raid bios utility.
2. Select **Create RAID set.** Press **Enter**.
3. Select **Mirrored** (RAID1) then press **Enter**.
4. Select **Manual configuration**. Press **Enter**.
5. Select the **Source** drive, press **Enter**.
6. Select the **Target** drive, press **Enter**.
7. Select **Create with data copy (disk copy)**, then press **Enter**.
8. Select **online copy**, then press **Enter**.

Note: Selcting **Online Copy** builds the mirror while in Windows. Selecting **Offline Copy** builds the mirror before exiting the RAID BIOS.

9. Input the RAID size, press **Enter**.
10. Press **Ctrl+E** to exit the BIOS.
11. 11.When asked **Are you sure to exit(Y/N)?**, press **Y** to exit and reboot.
12. 12.Your RAID configuration is complete. Please proceed to software installation section.

Note: If during boot the RAID BIOS reports an **RAID1 set is in Rebuild status, The rebuild will continue after boot sequence is complete**, disregard the message, continue booting, and let the Mirror rebuild.

3.3. Deleting RAID Sets

1. As the BIOS boots, Press CTRL+S or F4 to enter the raid bios utility.
2. Select **Delete RAID set.** Press **Enter**.
3. Answer **Y** to remove the RAID set. **"If the RAID set being deleted is a Striped set, then all of the data will be lost. If the set being deleted is a Mirrored set, then the data will remain intact and accessible on both drives."**

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3.4. Rebuilding Mirrored Sets

This function is used when any HD in mirror is failure. Your data is still safety. System will notice and help you rebuild mirror by replacing new HD to the broken part.
When a failure to one member occurs, you will be notified either by the **RAID BIOS** during boot or by the **SATARaid GUI** while in Windows. The steps below will guide you in rebuilding a failed mirror set.

1. After replacing the failed hard drives boot the BIOS, Press CTRL+S or F4 to enter the raid bios utility.
2. Select **rebuilding Mirrored set.** Press **Enter**.
3. Select **Online rebuild** or **Offline rebuild**.
4. Answer **Y** to rebuild the Mirrored set of hard drive.

3.5. Resolving Conflict

When a RAID set is created, the metadata written to the disk includes drive connection information (Primary and Secondary). If, after a disk failure, the replacement disk was previously part of a RAID set (or used in another system), it may have conflicting metadata, specifically in reference to the drive connection information. If so, this will prohibit the RAID set from being either created or rebuilt, In order for the RAID set to function properly, this old metadata must be first overwritten with the new metadata. To resolve this, select **Resolve Conflicts**, and the correct metadata, including the correct drive connection information, will be written to the replacement disk.

4. Software Installation

This section provides the information on how to install the drivers of SATA RAID 2 Port PCI Host Adapter for the operating systems:
New & Existing Windows 98/98 SE
New & Existing Windows ME
New & Existing Windows NT 4.0
New & Existing Windows 2000
New & Existing Windows XP

Quick guide:

There are three modes for RC-201 and you can select one of them for your PC installation.

1. If you want to add RC-201 to an existing OS, set up RC-201 into a PCI slot. Enter the OS and install RC-201 with driver disk. In this case, PC is booting up by an existing HD connecting to motherboard. After RC-201 is installed complete, you can add HD and set the RAID by RAID BIOS.
2. If you want to add RC-201 to a new PC without any OS, you need to boot the OS from HD connecting to RC-201 instead of motherboard. Please follow below steps (a~f) to complete the installation.
   a. Put the driver (the driver must fit the OS you want to install to the HD) **into a floppy disk and keep it in the floppy drive.**
   b. Plug the HD. Turn on PC and press **F4** to complete the RAID set. After you complete, save and left the setting.
   c. Insert Windows installation disk and start the windows installation.

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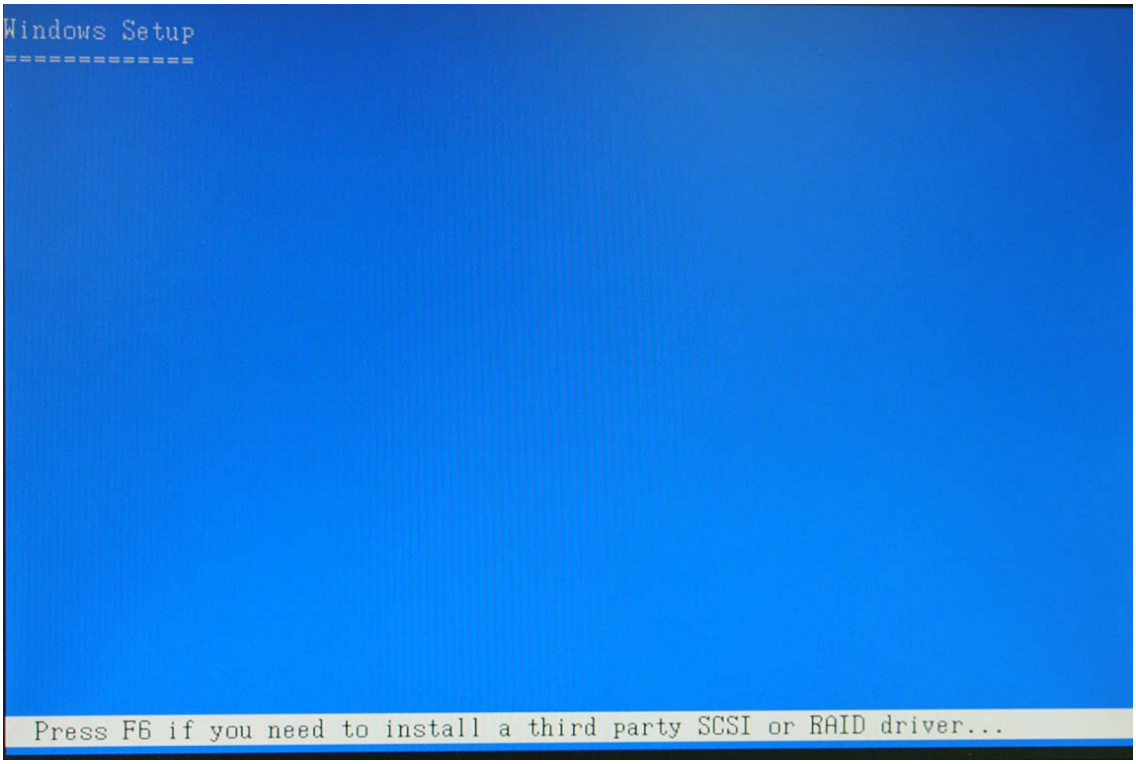
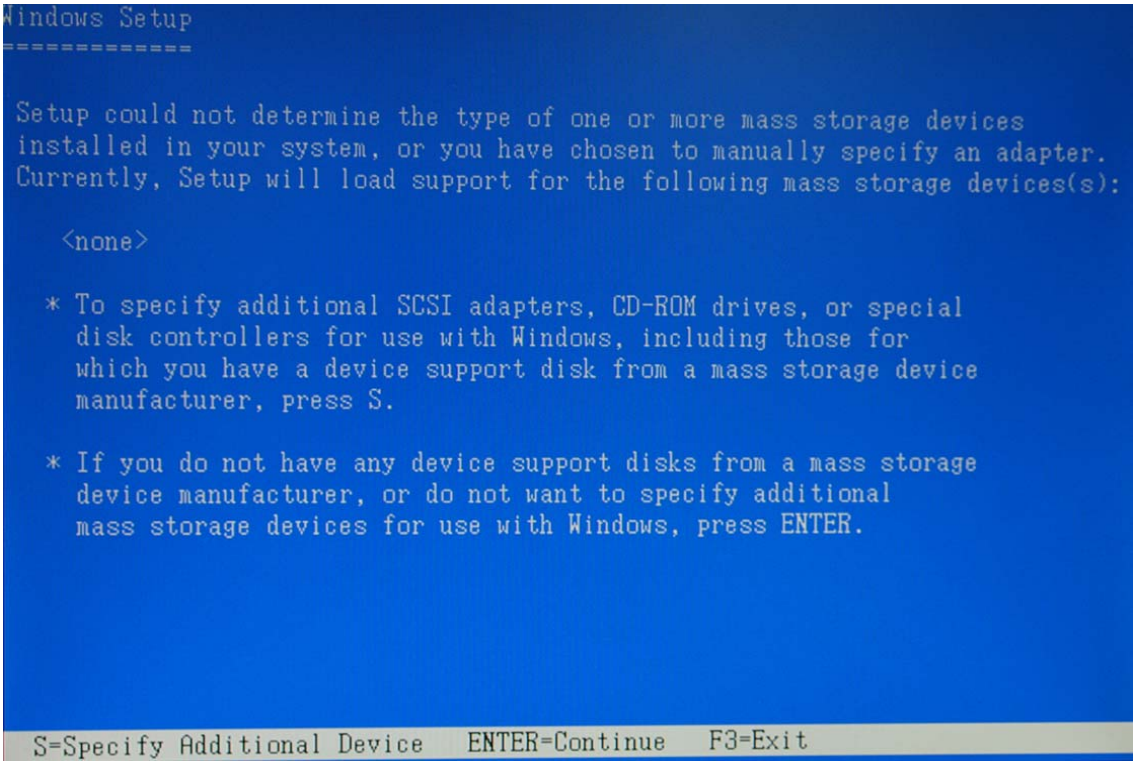
d. Press **F6** at the beginning as the blue screen scanning.



This will let PC boot from a HD controller instead of motherboard HD.

e. Keep the floppy in floppy drive and follow the installation. Press "**S**" when the screen shows as the following picture.



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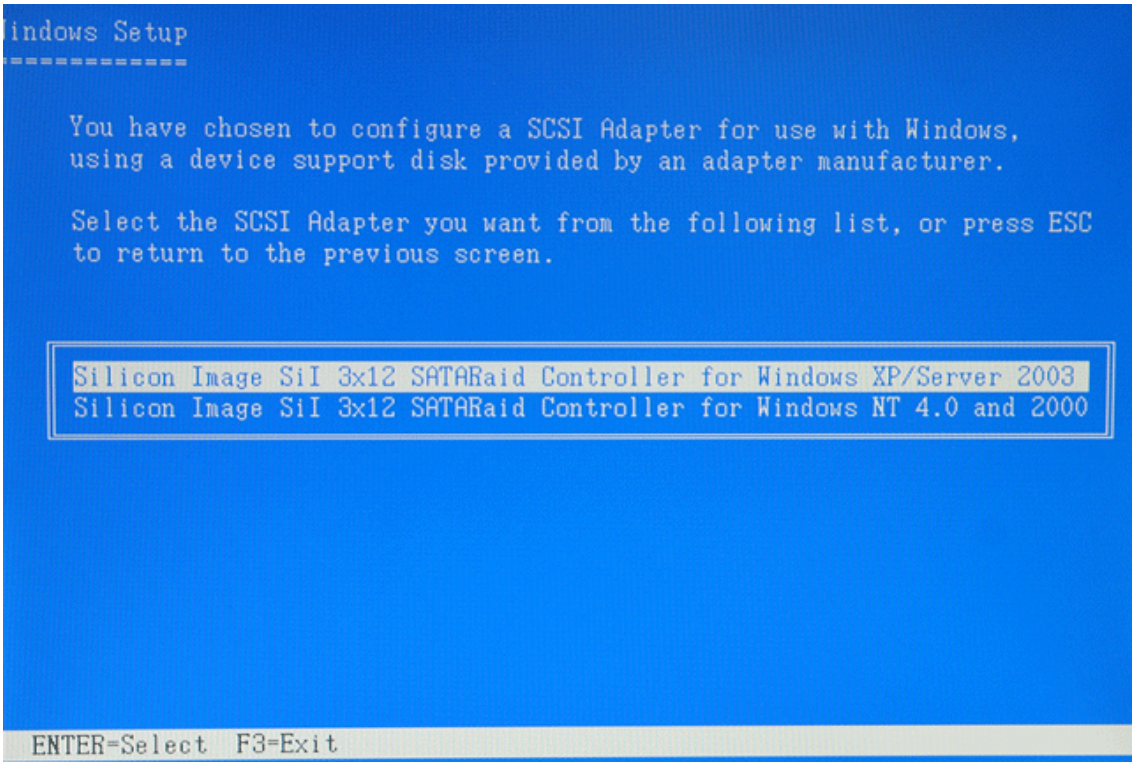
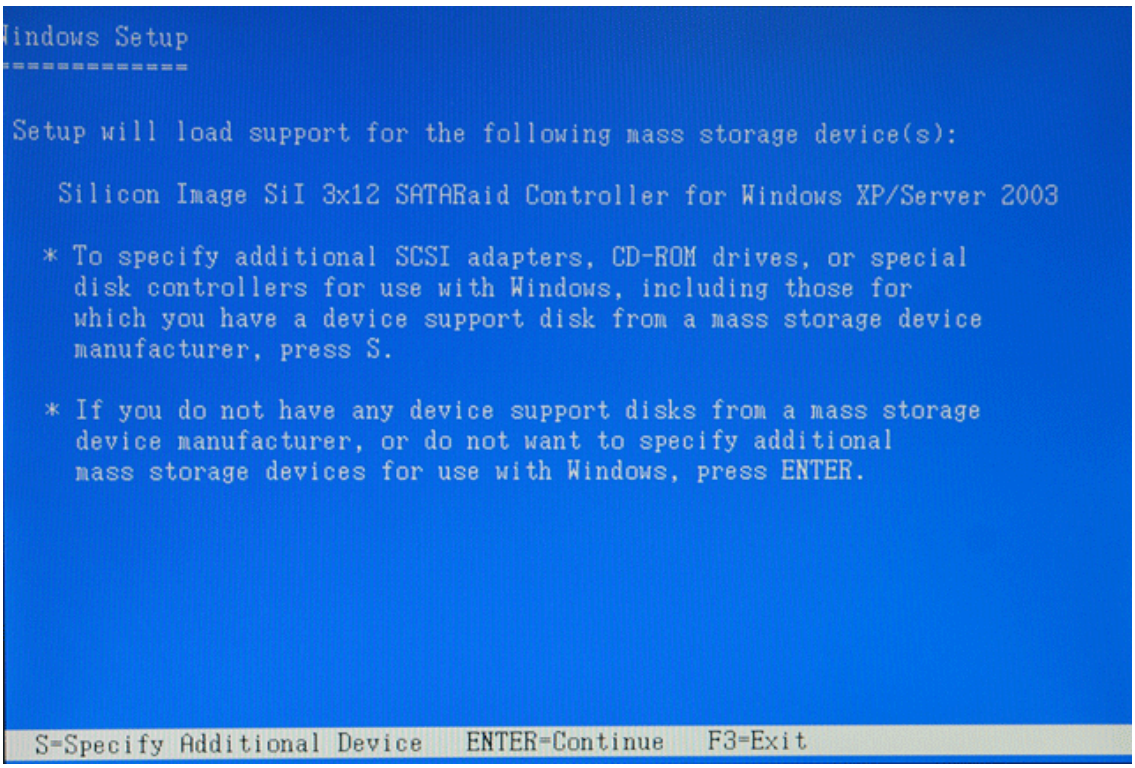
Choose the correct OS for your future system.



Keep the floppy disk in floppy drive. PC will notice you as below if you take them off from the drive.
The installation of RC-201 by floppy drive will be completed and the system will detect the HD which now plug on the card.
After you install RC-201 successfully by floppy disk, installation will lead you back to the same screen as below and then press "**enter**" to left the setting.



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f. Once the system can find the HD connecting to RC-201, you can follow the normal steps to complete the Windows installation.

3. If you want to create a mirror with a HD with existing OS and a fresh HD, the data on existing HD will copy to fresh HD and boot as RAID 1. In addition, based on the above situation, if a bootable HD on the RC201 is desired. It means in this case you will boot our computer from RC201 instead of motherboard. Please follow the following instructions.
   a. Install RC-201 to an existing OS HD connecting to motherboard.
   b. After RC-201 install complete, turn off PC. Take the original HD off from motherboard and connect to RC-201. Take another fresh HD to connect to RC-201 for setting mirror.
   c. Turn on PC and enter RAID BIOS to set mirror. Choose "**Manual**" and then select the original HD as the data source to complete mirror. The copy will take a long time depending on your HD capability. After data copy complete, save and left RAID BIOS.
   Important message: If you choose the wrong HD source at the step of "manual", all your data will be lost.
   d. Reboot your PC and now you can enter your OS with RAID 1.

Detail guide:

4.1. Windows 98/98SE Driver Installation

For New Windows 98/98 SE Systems

1. After the *SATA RAID PCI Host Adapter* and attached drives are configured, follow Microsoft procedures to install Windows accordingly.
2. Once Windows has been installed, double click **My Computer/Control Panel/System**, then click **Device Manager**.
3. Double click **Other Devices** then **PCI RAID Controller**.
4. Click **Driver** tab, then **Update Driver**.
5. Insert the Driver diskette and click **Next**.
6. Select **Search for a better driver than the one** ...option and click **Next**.
7. Check **Specify a location,** uncheck the other boxes, type in **E:** (If your CD-ROM/DVD is **E**:\) and click **Browse**.
8. Points specify a location, example **E**:**SATA Raid_2Port\ Sil3x12\ Win98_me _*2000*_xp_nt4.0 \ Driver**, click **OK** and then **Next**.
9. Click **Next** and then **Finish**.
10. Remove the Driver CD and click **Yes** to restart Windows to complete driver installation.

For Existing Windows 98/98 SE Systems

1. After the *SATA RAID PCI Host Adapter* and attached drives are configured, boot up Windows.
2. At the **Add New Hardware Wizard**, click **Next**.
3. Select **Search for the best driver for your device** option and then click **Next**.
4. Insert the Driver CD, check **Specify a location,** uncheck the other boxes, and click **Browse**.
5. Points specify a location, example **E**:**SATA Raid_2Port\ Sil3x12\ Win98_me _*2000*_xp_nt4.0 \ Driver**, click **OK** and then **Next**.(If your CD-ROM/DVD is **E**:\)
6. Click **Next** and then **Finish** respectively.

4.2. Windows ME Driver Installation

For New Windows ME Systems

1. After the *SATA RAID PCI Host Adapter* and attached drives are configured, follow Microsoft

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procedures to install Windows accordingly.
2. Once Windows has been installed, click **My Computer**, then click **Properties**. Click **Device Manager** tab.
3. Double click **Other Devices** then **PCI RAID Controller**.
4. Click **Driver** tab, then **Update Driver**.
5. Insert the Driver CD, check **Specify the location of the driver (Advanced)** and click **Next**.
6. Select **Search for the better driver** option, check **Specify a location**, uncheck **Removable Media**, type in **E:** (If your CD-ROM/DVD is **E**:\), and click **Browse**.
7. Points specify a location, example **E**:**\SATA Raid_2Port\ Sil3x12\ Win98_me _*2000*_xp_nt4.0 \ Driver**, click **OK** and then **Next.**
8. Click **Next** and then **Finish**.
9. Remove the Driver diskette and click **Yes** to restart Windows to complete driver installation.

For Existing Windows ME Systems

1. After the *SATA RAID PCI Host Adapter* and attached drives are configured, boot up Windows.
2. At the **Add New Hardware Wizard**, check **Specify the location of the driver (advanced),** and click **Next**.
3. Insert the Driver CD, check **Specify a location,** uncheck the other boxes, and click **Browse**.
4. Points specify a location, example **E**:**\SATA Raid_2Port\ Sil3x12\ Win98_me _*2000*_xp_nt4.0 \ Driver**, click **OK** and then **Next**.(If your CD-ROM/DVD is **E**:\)
5. Click **Next** and then **Finish**.

Verification of the Proper Installation for Windows 98/98SE/ME

1. Double click **My Computer/Control Panel/System**. Click **Device Manager** tab.
2. Double click **SCSI Controllers**, **Silicon Image Sil-3x12 SATA Raid Controller** should be listed.
3. Highlight **Silicon Image Sil-3x12 SATA Raid Controller** and click **Properties**. A message ***This device is working properly*** is displayed in the dialog box, the driver has been correctly installed. If any error message is displayed, remove **Silicon Image Sil-3x12 SATA Raid Controller** and restart your system.

4.3. Windows NT 4.0 Driver Installation

For New Windows NT 4.0 System

1. Before installation, copy all the files under directory E:\SATA Raid_2Port\ Sil3x12\ Win98_me _*2000*_xp_nt4.0\ driver\ *.* to a blank floppy disk
2. After the SATA RAID PCI Host Adapter and attached drives are configured, follow Microsoft procedures to install Windows accordingly.
3. At the **Windows Set-up** screen, press **F6** to specify and add the driver.
4. Press **S**, select **Other**, then press **Enter**.
5. Insert the Driver diskette and press **Enter**.
6. Select **Silicon Image Sil-3x12 SATA Raid Controller Driver** and press **Enter**.
7. Press **Enter** to continue and follow on-screen instructions to complete Windows NT 4.0 installation.

Add Windows NT 4.0 Driver on Original Booting Device

1. After the *SATA RAID PCI Host Adapter* and attached drives are configured, boot up Windows. Double click My Computer/Control Panel/SCSI Adapters, then click the Drivers tab.
2. Click **Add…** then **Have Disk...**.
3. Insert the Driver CD in your CD-ROM/DVD drive and type in **E:** (If your CD-ROM/DVD is **E**:\), then click **Browse**.
4. Points specify a location, example **E**:**\SATA Raid_2Port\ Sil3x12\ Win98_me _*2000*_xp_nt4.0 **

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Driver, click **Open** then **OK**.
5. Highlight **Silicon Image Sil-3x12 SATA Raid Controller** and click **OK**.

Verification of the Proper Installation for Windows NT 4.0

1. Double click **My Computer/Control Panel/SCSI Adapters**.
2. Highlight **Silicon Image Sil-3x12 SATA Raid Controller** and click **Properties**. ***This device is working properly*** is displayed in the dialog box, the driver has been correctly installed.

4.3. Windows 2000 Driver Installation

For New Windows 2000 Systems

1. Before installation, copy all the files under directory E:\SATA Raid_2Port\ Sil3x12\ Win98_me *_2000*_xp_nt4.0\driver\ *.* to a blank floppy disk.
2. After the *SATA RAID PCI Host Adapter* and attached drives are configured, follow Microsoft procedures to install Windows accordingly.
3. At the **Windows Set-up** screen, press **F6** to specify and add the driver.
4. Insert the Driver diskette. Press **S**, then press **Enter**.
5. Select **Silicon Image Sil-3x12 SATA Raid Controller Driver** and press **Enter**.
6. Press **Enter** to continue and follow on-screen instructions to complete installation.

Add Windows 2000 Driver on Original Booting Device

1. After the *SATA RAID PCI Host Adapter* and attached drives are configured, boot up Windows.
2. At the **Found New Hardware Wizard**, click **Next**.
3. Select **Search for a suitable driver for my device (recommended)** and click **Next**.
4. Insert the Driver CD in your CD-ROM/DVD drive, check **Specify a location**, uncheck the other boxes, click **Next,** type in **E:** (If your CD-ROM/DVD is **E**:\). Click **Browse**.
5. Points specify a location, example **E**:**\SATA Raid_2Port\ Sil3x12\ Win98_me *_2000*_xp_nt4.0 \ Driver,** click **Open** then **OK**.
6. If the **Digital Signature Not Found** message appears, click **Yes**. (**Note** If prompted for Windows 2000 CD-ROM, insert the CD and click **OK**. Type in E**:\I386**, click **OK** and **Finish**. (assuming E**:** is your CD-ROM drive))
7. Click **Finish**.

4.5. Windows XP Driver Installation

For New Windows XP Systems

1. Before installation, copy all the files under directory E:\SATA Raid_2Port\ Sil3x12\ Win98_me *_2000*_xp_nt4.0\driver\ *.* to a blank floppy disk
2. After the *SATA RAID PCI Host Adapter* and attached drives are configured, follow Microsoft procedures to install Windows accordingly.
3. At the **Windows Set-up** screen, press **F6** in order to specify and add the driver.
4. Insert the Driver diskette. Press **S** then press **Enter**.
5. Select **Silicon Image Sil-3x12 SATA Raid Controller Driver** and press **Enter**.
6. Press **Enter** to continue and follow on-screen instructions to complete Windows XP installation. **Note:** When the **Software Installation** warning pops up, click **Yes**. And when the **Hardware Installation** warning pops up, click **Yes** again.

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Add Windows XP Driver on Original Booting Device

1. **After the SATA RAID PCI Host Adapter and attached drives are configured, boot up Windows.**
2. At the **Found New Hardware Wizard**, check **Install from a list or specific location (advanced)**, then click **Next**.
3. Insert the Driver CD. Check **Include this location in the search**, uncheck the other box, type in **E:**, and click **Browse**.
4. Points specify a location, example **E**:**\SATA Raid_2Port\ Sil3x12\ Win98_me _*2000*_xp_nt4.0 \ Driver,** click **OK** then **Next**.
5. When a warning message pops up, click **Continue Anyway**, then click **Finish**.

Verification of the Proper Installation for Windows 2000/XP

1. Double click **My Computer/Control Panel/System**.
2. Click **Hardware** then click **Device Manager**.
3. Double click **SCSI and RAID Controllers**, then double click **Silicon Image Sil-3x12 SATA Raid Controller** to display driver properties.
4. A message ***This device is working properly*** is displayed in the dialog box, the driver has been correctly installed.

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