



Installation Guide

RAID5 eSATA 1.5Gbps 4 External port PCI Card

GIC704SR5W6
PART NO. M0560



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Caution

- Before installation of the controller card, we recommend that users study this manual first. This RAID manual has more information on RAID architecture, RAID features, RAID installation, RAID settings and Management software for the RAID5 GUI (Graphical User Interface).
- Windows Device Manager cannot recognize hard drives without the correct RAID settings in place.
- The working data on your existing hard drive may NOT work when you migrate it to a RAID Host Card configuration.
- After driver installation you can install the SATARAID5 GUI for RAID management. Before the SATA RAID5 GUI installation, you must remove all existing SATARAID GUIs (or Java SATARAID GUI) to ensure your new SATARAID5 GUI works without issues.
- RAID sets can be created and managed by either the BIOS utility setting or the SATARAID5 GUI setting under Windows.
- If you're using a used hard drive with the RAID5 card you must perform the "Delete RAID Set" under the BIOS settings. The reason this is necessary is because the used hard drive has system data on it which may cause recognition issues when configuring it for use with the RAID5 card.
- RAID 0 and RAID1 setups require at least 2 drives, with RAID5 requiring 3 drives and RAID10 requiring 4 drives. If only one drive, make sure to have "Concatenate" or "Contiguous" setting.

Introduction

The board offers the ability to upgrade your desktop computer to RAID 5, RAID 0+1, RAID 0, or RAID 1 as well as JBOD. The board can control four 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 rates of 1.5 Gb/s (150 MB/s).

Features

PCI Interface

- Compliant with PCI Specifications, Revision 2.2.
- Integrated PCI DMA engines.
- 32 bit, 33/66MHz fully compliant PCI host interface.

High Speed Serial ATA Interface

- Four high speed Serial ATA interface ports, each supporting 1st generation Serial ATA data rates (1.5Gb/s).
- RAID 5 (Distributed Parity RAID) has Highest Read data transaction rate and Good aggregate transfer rate.
- Provides RAID 0 (Striping) 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.
- RAID 0+1 (Mirrored-Striping) combine both Striping and Mirroring technologies to provide both the performance enhancements that come from Striping and the data availability and integrity that comes from Mirroring.
- JBOD is a virtual disk that combines all disk drives as one entire disk drive.
- 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.

Package Contents

- RAID5 SATA-150 4Ports PCI Host Adapter
- Quick Start Guide
- Driver CD

What Is RAID?

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 drive, without loss of data.

Disk Striping (RAID 0)

Striping is a performance-oriented, non-redundant data mapping technique. While Striping is discussed as a RAID Set type, it actually does not provide fault tolerance. With modern SATA bus 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 simply reads the data from the other drive.

Mirrored-Striping (RAID 0+1 also known as RAID 10)

A Mirrored-Striping Set does just what it says, combining both Striping and Mirroring technologies to provide both the performance enhancements that come from Striping and the data availability and integrity that comes from Mirroring. When data is written to a Mirrored-Striped Set, instead of creating just one virtual disk as Striping would do, a second Mirrored virtual disk is created as well.

Parity RAID (RAID 5)

Parity or RAID 5 adds fault tolerance to Disk Striping by including parity information with the data. Parity RAID dedicates the equivalent of one disk for storing parity stripes. The data and parity information is arranged on the disk array so that parity references are written to different disks. There are at least 3 members to a Parity RAID set.

Parity RAID uses less capacity for protection and is the preferred method to reduce the cost per megabyte for larger installations. Mirroring requires 100% increase in capacity to protect the data whereas the above example only requires a 50% increase. The required capacity decreases as the number of disks in the group increases.



Just a Bunch of Disks (JBOD/Contiguous)

JBOD (also known as Contiguous) means a logical drive that can either be an entire disk drive or a segment of a single disk drive. For this card, the JBOD function only supports one disk. JBOD here is a Contiguous configuration option when using the “Create RAID Group” within the SATARAID5 Manager Utility.

Installation Procedure

1. Power down the computer system.
2. Insert the Host card into an available bus slot.
3. Power on the computer system.
4. Install drivers for the device.
5. Remove all existing SATARAID GUIs (or Java SATARAID GUIs) to ensure your new SATARAID5 GUI installs and functions properly.
6. Install the SATARAID5 GUI.
7. Power down the computer system once again.
8. Connect Hard Drives to the proper SATA Ports.
9. Power on the computer system once again.
10. If you connect any used HDDs to the SATA Ports, Press CTRL+S or F4 and delete any RAID settings that may be on the drives when using the BIOS boot method.



11. Use the SATARAID5 Manager GUI to configure your RAID settings.

If using 1 Disk, please select “Concatenate” or “Contiguous” settings only.

If using 2 Disks, do NOT select “Parity RAID” or “Mirrored Stripe” settings.

If using 3 Disks, do NOT select the “Mirrored Stripe” setting.

12. Open “Task Manager” to make sure the RAID setup is completed. RAID5 can take hours to complete, please be aware of these time requirements.

13. Use Device Manager for hard disk initialization, partition and formatting within Windows.

BIOS (RAID Settings)

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 access to its settings. The board will act as a normal NON-RAID card when the BIOS does not have it configured for RAID. If you're using traditional parallel ATA HDDs, make sure your hard drives are set to master mode before accessing the RAID settings.

Creating Striped Sets (RAID 0)

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 **RAID 0** then press **Enter**.
4. Select the **Number of hard drives**. Press **Enter**.
4. Select **RAID size**. 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 to prepare the hard drives.
8. Your RAID hardware configuration is complete. Proceed to software installation section.



Creating Mirrored Sets (RAID 1)

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 **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 to prepare the hard drives.
8. Your RAID hardware configuration is complete. Proceed to software installation section.



Creating a Mirrored-Striped Set (RAID 10)

1. As the BIOS boots, press CTRL+S or F4 to enter the RAID bios utility.
2. Select **Create RAID set**. Press **F2**.
3. Select **RAID 10** then press **Enter**.
4. Select **Auto configuration**. Press **Enter**.
5. Press **Y** and then press ESC to exit the setup.
7. Continue with conventional Fdisk and Format steps to prepare the hard drives.
8. Your RAID hardware configuration is complete. Proceed to software installation section.

Creating Parity RAID (RAID 5)

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 **RAID 5** then press **Enter**.
4. Select **Auto configuration**. Press **Enter**.
5. Press **Y** to save your settings.



Creating JBOD Sets

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 **JBOD (Single)** then press **Enter**.
4. Select **JBOD Drives**. Press **Enter**.
5. Select **RAID size**. Press **Enter**.
6. Press **Y** to save your settings.

Creating Spare Drive

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 **Spare Drive** then press **Enter**.
4. Select **Spare Drives**. Press **Enter**.
5. Select **RAID size**. Press **Enter**.
6. Press **Y** to save your settings.

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, 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 drive sets.

Rebuilding Mirrored Sets (RAID 1)

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

Software Installation

Windows XP Fresh Installation

1. Power off the system. Insert the controller card into a PCI slot and connect the hard drives to the controller card. Power up the system.
2. Put your Windows XP CD into the CD-ROM/DVD drive.
3. Press F6 for third party SCSI or driver installation. Press **'S'** when setup asks if you want to specify an additional device. Press **'Enter'** and select **'[CD Drive Letter]:\RAID5 SATA_4Port \Sil3114\Win XP_2000_2003\Driver'**.
4. Press **'Enter'** to continue.
5. Follow the setup instructions to select your choice for partitions and the file system.
6. After setup examines your disks, it will copy files to the Windows installation folders and restart the system. The setup program will continue and finish the installation after restart.
7. Wait until Windows finishes installing devices, regional settings, networking settings, and components. Reboot the system if it is stated as a requirement.

Windows XP Existing Installation

1. Power off the system. Insert the controller card into a PCI slot and connect the hard drives to the controller card. Power up the system.
2. During OS boot up, Windows will display the **'Found New Hardware Wizard'**. Click **'Next'**.
3. Select **'Install from a list or specific location (Advanced)'** and Click **'Next'**.

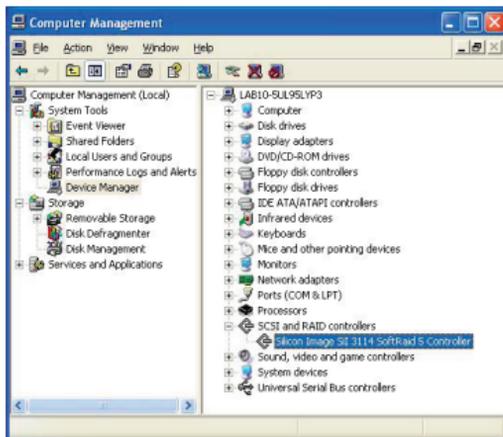


4. Insert the Driver CD in your CD-ROM/DVD drive, check **Specify a location**, uncheck the other boxes, click **Next**, type in your CD-ROM/DVD Drive Letter and Click **Browse**.
5. Specify the following location: [CD Drive Letter]:\RAID5 SATA_4Port\Sil3114\Win XP_2000_2003\Driver. Select **Open** then click **OK**.
6. When the wizard indicates that it found a driver for the device click '**Next**'.
7. The wizard will now copy the required files to the system. After installation the wizard will display a completion dialog, click '**Finish**' to exit the wizard.



Verifying controller installation

1. Right click on the **'My Computer'** icon and select **'Properties'**. Left click on the **'Hardware'** tab then select the **'Device Manager'** button.
2. Double click on **'SCSI and RAID Controllers'**, If there is no yellow **'!**' or **'?'** in front of the **'Silicon Image Sil 3114 SoftRAID5 Controller'**, the driver is functioning properly.



Federal Communications Commission (FCC) Statement

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15.21

You are cautioned that changes or modifications not expressly approved by the part responsible for compliance could void the user's authority to operate the equipment.

15.105(b)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.

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- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
 - Consult the dealer or an experienced radio/TV technician for help.

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

1. this device may not cause interference and
2. this device must accept any interference, including interference that may cause undesired operation of the device.

FCC RF Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

CE Statement

This device has been tested and found to comply with the requirements set up in the council directive on the approximation of the law of member states relating to EMC Directive 89/336/EEC, Low Voltage Directive 73/23/EEC and R&TTE Directive 99/5/EC.

Limited Warranty

The manufacturer, IOGEAR, makes NO warranty or representation, whether express or implied, regarding the contents, use or suitability of this software, disk or documentation. IOGEAR specifically disclaims any and all warranties regarding the quality and performance of this software, disk or documentation including, but not limited to the implied warranty of merchantability and implied warranty of fitness for a particular purpose. IOGEAR shall not be responsible or liable for property damage, loss of use, interruption of business, lost profits, lost data or other consequential, punitive or special damages, however caused and however alleged.

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FUN

IOGEAR offers connectivity solutions that are innovative, fun, and stylish, helping people enjoy daily life using our high technology products.



GREEN

IOGEAR is an environmentally conscious company that emphasizes the importance of conserving natural resources. The use of our technology solutions helps reduce electronic waste.



HEALTH

IOGEAR supports healthy and fit lifestyles. By integrating products with the latest scientific developments, IOGEAR's solutions enhance the life of end-users.