Serial-ATA IDE Card

Version 1.0

User Manual

Contents

Introduction

The PCI Serial-ATA IDE Controller Card provides an inexpensive way for users to increase the speed or fault-tolerance of their PC. It can upgrade your desktop computer to have 2 or 4 Serial-ATA channels. It is fully compliant Serial ATA ports on the device side to access Serial ATA storage media such as hard disk drives, external enclosure, CD-ROM / RW and DVD-ROM / RW drives!

1.0 Features

The Serial-ATA PCI card is a true 32-bit PCI-Bus serial ATA card. It supports the following I/O features:

- PCI "Plug and Play" compatibility
- Serial ATA Specifications 1.0 compatible
- Provides 2 or 4 Serial-ATA channels (Depend on product)
- Co-resides with motherboard Serial ATA-devices
- 1.5GB/second maximum burst rate
- Integrated PCI DMA engines
- Supports Spread Spectrum in receiver

2.0 System Requirements

- Available PCI slot.
- Serial ATA drive.
- Serial ATA cables.
- Driver support Windows 98SE / ME / NT4.0 / 2000 / XP.

3.0 Driver Installation

◆ **Windows NT4.0 / 2000 / XP Fresh Installation**

Follow the instructions in this section if you are performing a new installation of Windows NT 4.0/2000/XP. If you wish to set RAID, please set BIOS boot from a device attached to the Serial-ATA card. Otherwise please set BIOS boot from CD-ROM. (About RAID setting, you could read the section 5.0 RAID Explain on page 9)

1. The first please copy all files from CD-ROM driver into the diskette.
   D:\Serial-ATA\2CH\   …………………………………………...………2channels or
   D:\Serial-ATA\4CH\Windows RAID\ ……………………………………..4channels

2. Power off the system. Insert the Serial-ATA card into an available PCI slot.
   Connect Serial-ATA cable(s) between the Serial-ATA card and the Serial-ATA device(s). Power up the system.

3. Put your Windows NT/2000/XP CD into the CD/DVD -ROM drive, and **plug driver diskette into the floppy device**. Set up BIOS booting from the CD-ROM.

4. Press "**F6**" for third party SCSI or driver installation at the beginning of text mode installation. Press "**s**" when setup asks if you want to specify an additional device, and insert the diskette which you had copied. Press "Enter" and select "Silicon Image SiI 311x SATARiad Serial ATA Controller".

5. Press "Enter" again when prompted to continue on with text mode setup.

6. Follow the setup instructions to select your choice for partition and file system.

7. After setup examines your disks, it will copy files from the CD to the hard drive selected above and restart the system. After restart the setup process will resume to finish the installation.

8. Once the operating system installation has completed you can follow the instructions in section 4 to verify controller was installed correctly.

   If the installation steps aren't clear, please read the detailed installation guide from CD-ROM :

   D:\SerialATA\2CH\SATARaid_Manual_Rev092.pdf.............................2channels or
   D:\Serial-ATA\4CH\SATARaid User's Manual.pdf................................4channels

◆ Windows 98SE / ME Fresh Installation Instructions

Follow the instructions in this section if you are performing a new installation of Windows 98SE/ME. If you wish to set RAID, please set BIOS boot from a device attached to the Serial-ATA card. Otherwise please set BIOS boot from CD-ROM or boot diskette. (About RAID setting, you could read the section 5.0 RAID Explain on page 9)

You may start up the Windows 98SE/ME installation from CD. If either your Windows 98SE/ME CD or CD-ROM drive is not bootable, your can start up with floppy diskettes.

1. The first please copy all files from CD-ROM driver into the diskette.
   D:\Serial-ATA\2CH\   …………………………………………...……….2channels or
   D:\Serial-ATA\4CH\Windows RAID\ …………………………………………..4channels

2. Power off the system. Insert the Serial-ATA card into an available PCI slot.
   Connect Serial-ATA cable(s) between the Serial-ATA card and the Serial-ATA devices.
   Power up the system.

3. Put your Windows 98SE/ME CD into the CD-ROM/DVD drive, and the Windows 98SE/ME boot diskette in the floppy drive if your system cannot boot from the CD.

4. Follow the normal Windows 98SE/ME setup instructions to select your choice for partition and file system.

5. Wait until Windows 98SE/ME finishes installing devices, regional settings, networking settings, components, and final set of tasks, reboot the system.

6. After the system reboots, right click on "My Computer" and select "Properties". From "System Properties", select "Device Manager", right click on the PCI Mass Storage controller" and select "Properties" from the context menu.

7. Click "Driver" ,"Update Driver" and select "Automatic search for a better driver ". Insert the driver diskette into floppy drive or specify a location driver from CD-ROM. Click "Next" and complete the driver installation.

8. System will go through the enumeration process and install the driver. At the end of the process, click "Yes" to reboot your system.

   If the installation steps aren't clear, please read the detailed installation guide from CD-ROM :

   D:\SerialATA\2CH\SATARaid_Manual_Rev092.pdf..............................2channels or
   D:\Serial-ATA\4CH\SATARaid User's Manual.pdf................................4channels

◆ **Adding the Serial-ATA card to an existing Windows NT4.0/2000/XP installation**

1. If your OS system installed in the booting SATA HDD which connected to the SATA PCI card, the HDD will be formatted, no matter setting Raid or not.

2. Please follow the step as Windows NT4.0/2000/XP Fresh Installation

3. If you set motherboard BIOS booting from SCSI card Device instead of CD-ROM, you should setup RAID function. Otherwise the OS can't work properly.
   About the RAID setting, you could skip to the section 5.0 RAID Explain on page 9.

◆ **Adding the Serial-ATA card to an existing Windows 98SE/ME installation**

Please set up motherboard BIOS boot from **SCSI Boot Device**, if you want to connect your Booting Serial-ATA OS HDD to the Serial-ATA card instead of mother-board bus.

1. Power off the system. Insert the Serial-ATA card into an available PCI slot. Connect Serial-ATA cable(s) between the Serial-ATA card and the Serial-ATA device(s). Power up the system.

2. During the system boot up, the Hardware Wizard will display that it found a "PCI Mass Storage Controller", click "Next". Select "Search for the best driver for your device (Recommended)" and click "Next".

3. Insert the CD-Drive into the CD/DVD-ROM.
   Please select "specify a location" and click "browser" change the folder to CD/DVD-ROM drivers as below link. Please click "Next".
       D:\Serial-ATA\2CH\   ……………………………………………..…….. .2channels or
       D:\Serial-ATA\4CH\Windows RAID\ ……………………………………….4channels

4. System will go through the enumeration process and install the driver. At the end of the process, Click "Finish" to complete the installation. Reboot the system if your Windows 98SE/ME drive is connected on the Serial-ATA PCI card.

   If the installation steps aren't clear, please read the detailed installation guide from CD-ROM :

   D:\SerialATA\2CH\SATARaid_Manual_Rev092.pdf............................2channels or
   D:\Serial-ATA\4CH\SATARaid User's Manual.pdf................................4channels

◆ **Verifying Serial-ATA card installation on Windows 98SE/ME/NT4.0/2000/XP**

Follow the instructions in this section to verify that the controller was installed correctly.

1. Right click on "My Computer" icon, select "Properties", left click on "Hardware" tab, and then on "Device Manager" button.

2. Double click on "SCSI and RAID Controllers", If there is no yellow "! " or " ? " in front of "Silicon Image SiI 311x SATARaid Serial ATA Controller", the driver has started correctly. If there is yellow "!" or "?" icon show up, please skip to the update driver.

3. To view information about the devices attached to the controller, right click the "Silicon Image SiI 311x SATARaid Serial ATA Controller" and select Properties from the context menu, then select the tab labeled "Device Info".

   Silicon Image SiI 3112 SATARaid Serial ATA Controller…………………...2channels or
   Silicon Image SiI 3114 SATARaid Serial ATA Controller……………………4channels

◆ **Update Serial-ATA card driver on Windows 98SE/ME/NT4.0/2000/XP**

With the **Serial-ATA card** already plugged in and the driver already installed.
Follow the instructions below to update **Serial-ATA** driver.

1. Right click on "My Computer" and select "Properties". Under the "System Properties" section, click on "Hardware" tab, and then on "Device Manager "click" SCSI and RAID Controllers" and right click "Silicon Image SiI 311x SATARaid Serial ATA Controller" then select "Properties" from the context menu.

2. Click "Update Driver" button on the "Driver" tab and select "Search for a suitable driver for my device [Recommended]". Insert the Driver CD into the CD-ROM drive and link the driver to the CD-ROM:
   D:\Serial-ATA\2CH\   ……………………………………………...…..…… 2channels or
   D:\Serial-ATA\4CH\Windows RAID\ ……………………………….….. 4channels

   Click "Next" and complete the driver installation.

3. System will go through the enumeration process and install the driver.
   At the end of the process, click "Yes" to reboot your system when necessary.

4. Please see instructions in section Verifying Serial-ATA card to verify controller was installed correctly.

4.0 GUI Installation

1. If the RAID function had not been used, you can skip this software.

2. Click CD-ROM: D:\Serial-ATA\GUI\InstallSATARaid.exe file to install.

3. After install step, [Start] [Program] will add "**SATARaid**" program. Click it.

4. Your task bar will add "**SATALink"** icon. Click it will display follow screen.
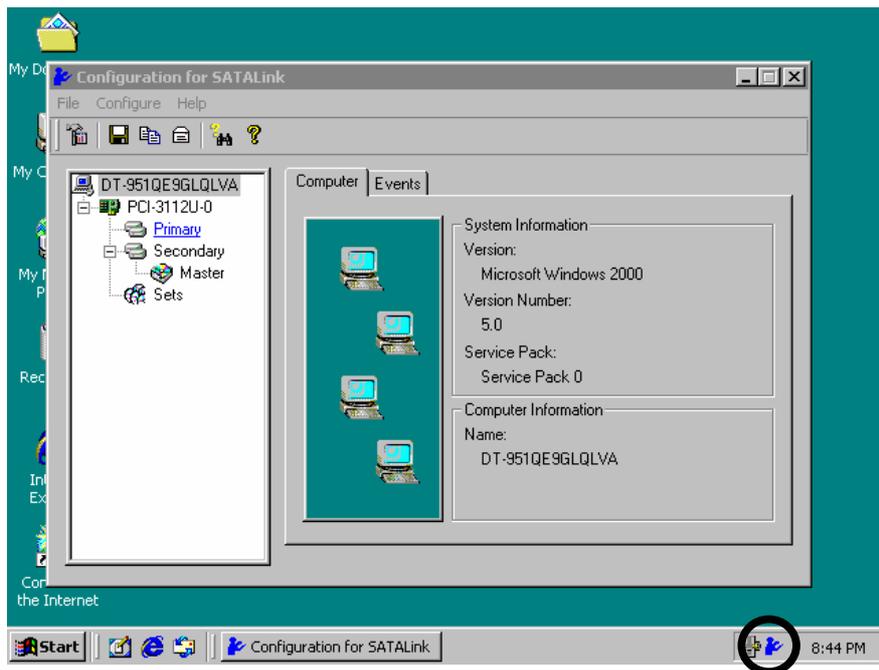
5. You can see the RAID information through this program.

6**.** About how to use the SATALink GUI software, please read the detailed PDF file from the CD-ROM:

   D:\SerialATA\2CH\SATARaid_Manual_Rev092.pdf............................2channels or
   D:\Serial-ATA\4CH\SATARaid User's Manual.pdf................................4channels

5.0 RAID Explained

◆ **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.

2 channels Serial-ATA card provides two RAID Setting types:

Striped (RAID 0) & Mirrored (RAID 1)

4 channels Serial-ATA card provides three RAID Setting types:

Striped (RAID 0), Mirrored (RAID 1) & Mirrored-Striped (RAID 0+1).

◆ **Disk Striping (RAID 0)**

Striping is a performance-oriented, non-redundant data mapping technique. While Striping is discussed as a RAID Set type, it is actually does not provide fault tolerance. With modern ATA 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.

This figure shows a stripe set using three disks with stripe one written to disk one, stripe two to disk two, and so forth.

Strip 0	Strip 1	Strip 2
Strip 3	Strip 4	Strip 5
Strip 6	Strip 7	Strip 8
Strip 9	Strip 10	Strip 11
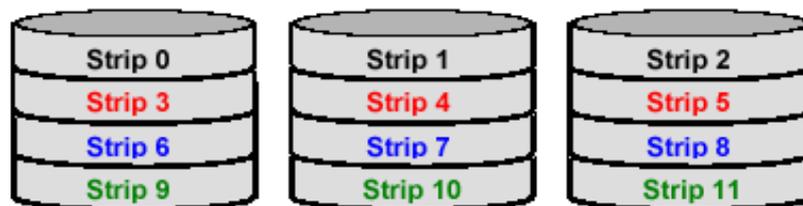
◆ **Disk Mirroring (RAID 1)**

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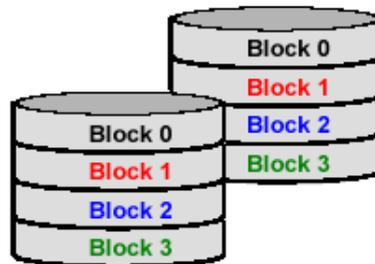
◆ **Mirrored-Striping (RAID 0+1 also known as RAID 10)**

A Mirrored-Striped 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.

◆ **RAID Setting**

Creating and deleting sets is a function found in the BIOS. During bootup, the following message will appear, pausing for as few moments to allow the user to choose what to do.

Press <**Ctrl+S**> or **F4** to enter RAID utility

In order to properly prepare and maintain strong system, the user needs to be aware of which drive was installed as the Primary Master, Primary Slave, Secondary Master and Secondary Slave. Identifying these drives will not only be useful because they are reported in order to in the BIOS as well in the CMS Medley GUI, but when optimizing RAID sets, it's best to use drives from different channel. It's also helpful to know which drives are not all of equal size.

Please read the detailed RAID function setting step by step guide from CD-ROM :

D:\SerialATA\2CH\SATARaid_Manual_Rev092.pdf.............................2channels or
D:\Serial-ATA\4CH\SATARaid User's Manual.pdf................................4channels