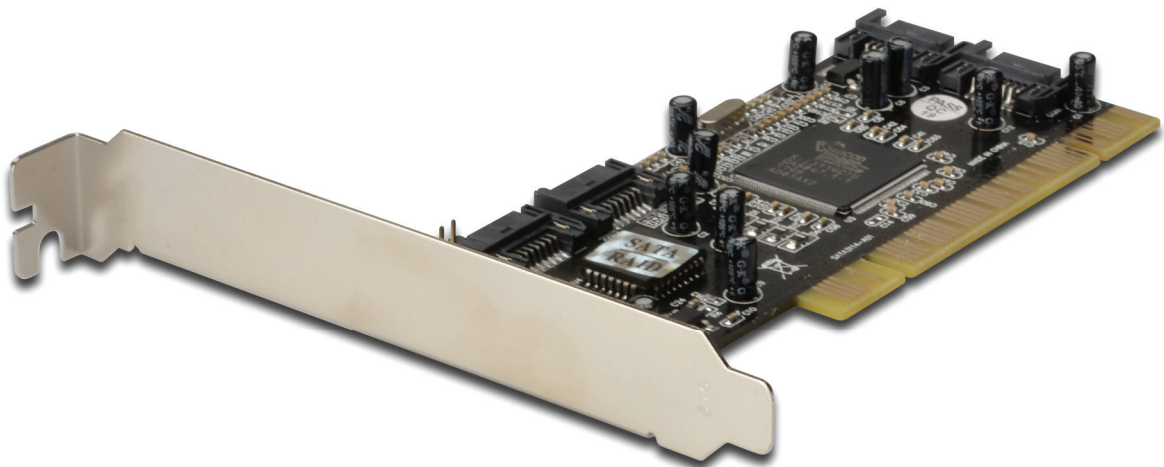# DIGITUS®

4-CHANNEL SATA PCI CONTROLLER

User Manual
DS-33102-1

Features

- Silicon Image SiI3114 SATA controller chip
- Compliant with PCI Specification, Rev. 2.3, 32-bit, 33/66Mhz
- Compliant with Serial ATA 1.0 specification
- Provides four independent channels to support up to four Serial ATA drives
- Supports RAID0 (striping), RAID1 (mirroring), RAID5 (Parity RAID), RAID 0+1(mirroring + striping) and Concatenation modes
- HDDs function normally when not in RAID sets
- Supports SATA up to 150MB/Sec
- Supports Windows$^{®}$ 2000, XP/2003 32/64 bit, Vista 32/64bit

Bus Interface

PCI Bus 32 bit

Connectors

4 x internal SATA connectors

Package Contents

1 x SATA 150 4-Channel PCI RAID Card
1 x Driver CD
2 x SATA Data Cable
1 x Manual

System Requirements

With one available PCI slot
Windows$^{®}$ 2000, XP/2003, Vista, Windows 7

Hardware Installation

1. Turn Off the power to your computer and any other connected peripheral devices.
2. Unplug the power cord form the back of the computer.
3. Remove your computer's cover.
4. Remove the slot bracket from an available PCI slot.
5. To install the card, carefully align the card's bus connector with the selected PCI slot on the motherboard. Push the board down firmly, but gently, until it is well seated.
6. Replace the slot bracket's holding screw to secure the card.

Device Connection

The SATA 150 4-Channel PCI RAID Card is a four channel Serial ATA controller that supports up to four Serial ATA hard disk drives. It is recommended to use identical hard drives for all RAID configurations.

1. Install your hard disk drive(s) in chassis.
2. Connect the Serial ATA hard disk drive to the system power supply using the included Serial ATA power cable.
3. Connect one end of the Serial ATA cable to the hard disk drive.
4. Attach the other end of the Serial ATA cable to the Serial ATA controller on the SATA 150 4-Channel PCI RAID Card.
5. Follow the same instructions to connect up to four hard drives. Device connection is now complete.
6. Replace the computer cover and reconnect the power cord.

RAID Arrays

RAID Arrays are setup in the SATA 150 4-Channel PCI RAID Card's BIOS. *RAID 0 (Striping)*

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

Auto configuration (recommended)

The default chunk size is **64k** when selecting **Auto configuration**.

1. As the BIOS boots press **Ctrl+S** or
   F4 when prompted to enter the RAID BIOS.
2. At the next screen select **Create RAID Set**, then press **Enter**.
3. Select **RAID0**, then press **Enter**.
4. Select the number of drives then press **Enter**.
5. Select **Auto configuration**, then press **Enter**.
6. Input the RAID size, press **Enter**.
7. When asked **Are You Sure (Y/N)?**, press **Y** to accept.
8. Press **Ctrl+E** to exit the BIOS.
9. When asked **Are you sure to exit (Y/N)?**,
   press **Y** to exit and reboot.
10. Continue with FDISK and FORMAT steps as if you were installing a conventional hard drive.

Manual configuration

1. As the BIOS boots press **Ctrl+S** or **F4** when prompted to enter the RAID BIOS.

2. At the next screen select **Create RAID Set**, then press **Enter**.

3. Select **RAID0**, then press **Enter**.

4. Select the number of drives then press **Enter**.

5. Select **Manual configuration** then press **Enter**

6. Select chunk size from **8k**, **16k**, **32k**, **64k** or **128k**, then press **Enter**.

7. Select the **first drive**, press **Enter**.

8. Select the **second drive**, press **Enter**.

9. If applicable select the **3rd** and **4th** drives pressing enter after each selection.

10. Input the RAID size, press **Enter.**

11. When asked **Are You Sure(Y/N)?**, press **Y** to accept.

12. Press **Ctrl+E** to exit the BIOS.

13. When asked **Are you sure to exit(Y/N)?**, press **Y** to exit and reboot.

14. Continue with FDISK and FORMAT steps as if you were installing a conventional hard drive.

RAID 1 (Mirror)
For New/Blank Hard Drives

1. As the BIOS boots press **Ctrl+S** or
   F4 when prompted to enter the RAID BIOS.
2. At the next screen select **Create RAID Set**, then press **Enter**.
3. At the next screen select **RAID1** then press **Enter**.
4. Select **Auto configuration**, then press **Enter**.
5. Input the RAID size, press **Enter**.
6. When asked **Are You Sure(Y/N)?**, press **Y** to accept.
7. Press **Ctrl+E** to exit the BIOS.
8. When asked **Are you sure to exit(Y/N)?**,
   press **Y** to exit and reboot.
9. Continue with FDISK and FORMAT steps as
   if you were installing a conventional hard drive.

For Existing Hard Drives with Data

1. As the BIOS boots press **Ctrl+S** or
   F4 when prompted to enter the RAID BIOS.
2. At the next screen select **Create RAID Set**, then press **Enter**.
3. At the next screen select **RAID1** then press **Enter**.
4. Select **Manual configuration**, then press **Enter**.
5. Select the **Source** drive, press **Enter**.
6. Select the **Target** drive, press **Enter**.
7. Select **Create with data copy**, then press **Enter**.
8. Select **online copy**, then press **Enter**.
   Note: Selecting **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. When asked **Are you sure to exit(Y/N)?**,
    press **Y** to exit and reboot.

    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.

Rebuilding a Failed Mirror Set

When a failure to one member occurs, you will be notified either by the **RAID BIOS** during boot or by the **SATARAID5 GUI** while in Windows. The steps below will guide you in rebuilding a failed mirror set.

1. Replace the failed drive with one of equal or greater capacity, then start the computer.

2. During boot press **Ctrl+S** or **F4** to enter the RAID BIOS.

3. Select **Create RAID Set** then press **Enter**.

4. Select **SPARE DRIVE** then press **Enter**.

5. Select the replacement drive then press **Enter**.

6. When asked **Are You Sure(Y/N)?**, press **Y** to confirm.

7. Press **Ctrl+E** to exit.

8. When asked **Are you sure to exit(Y/N)?**,
   press **Y** to exit. *RAID 0+1 (Mirroring + Striping)*

This RAID array to be used on **New/Blank** hard drives, do not use existing hard drive(s) with data. To create a RAID 0+1 set four hard drives are required.

Auto configuration (recommended)

The default chunk size is **64k** when selecting **Auto configuration**.

1. As the BIOS boots press **Ctrl+S** or **F4** when prompted to enter the RAID BIOS.
2. At the next screen select **Create RAID Set**, then press **Enter**.
3. Select **RAID10**, then press **Enter**.
4. Select **Auto configuration**, then press **Enter**.
5. Input the RAID size, press **Enter**.
6. When asked **Are You Sure(Y/N)?**, press **Y** to accept.
7. Press **Ctrl+E** to exit the BIOS.
8. When asked **Are you sure to exit(Y/N)?**, press **Y** to exit and reboot.
9. Continue with FDISK and FORMAT steps as if you were installing a conventional hard drive.

Manual configuration

1. As the BIOS boots press **Ctrl+S** or **F4** when prompted to enter the RAID BIOS.
2. At the next screen select **Create RAID Set**, then press **Enter**.
3. Select **RAID10**, then press **Enter**.
4. Select the number of drives then press **Enter**.
5. Select **Manual configuration** then press **Enter**.
6. Select chunk size from **8k, 16k, 32k, 64** or **128k**, then press **Enter.**
7. Select the **first drive**, press **Enter**.
8. Select the **second drive**, press **Enter**.
9. Select the **third drive**, press **Enter**.
10. Select the **fourth drive**, press **Enter**.
11. Select **Create without data copy** then press **Enter**.
12. Input the RAID size, press **Enter**.
13. When asked **Are You Sure(Y/N)?**, press **Y** to accept.

14. Press **Ctrl+E** to exit the BIOS.
15. When asked **Are you sure to exit(Y/N)?**,

    press **Y** to exit and reboot.
16. Continue with FDISK and FORMAT steps as

    if you were installing a conventional hard drive.

RAID 5 (Parity)

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

Auto configuration (recommended)

The default chunk size is **64k** when selecting **Auto configuration**.

1. As the BIOS boots press **Ctrl+S** or

   F4 when prompted to enter the RAID BIOS
2. At the next screen select **Create RAID Set**, then press **Enter**.
3. Select **RAID5**, then press **Enter**.
4. Select the number of drives then press **Enter**.
5. Select **Auto configuration**, then press **Enter**.
6. Input the RAID size, press **Enter**.
7. When asked **Are You Sure(Y/N)?**, press **Y** to accept.
8. Press **Ctrl+E** to exit the BIOS.
9. When asked **Are you sure to exit(Y/N)?**, press **Y** to exit and reboot
10. Continue with FDISK and FORMAT steps as

    if you were installing a conventional hard drive.

Manual configuration

1. As the BIOS boots press **Ctrl+S** or
    F4 when prompted to enter the RAID BIOS.
2. At the next screen select **Create RAID Set**, then press **Enter**.
3. Select **RAID5**, then press **Enter**.
4. Select the number of drives then press **Enter**.
5. Select **Manual configuration** then press **Enter**.
6. Select chunk size from **8k, 16k, 32k, 64** or **128k**, then press **Enter.**
7. Select the **first drive**, press **Enter**.
8. Select the **second drive**, press **Enter**.
9. Select the **third drive**, press **Enter**.
10. If applicable select the **4th** drive pressing enter after each selection.
11. Input the RAID size, press **Enter**.
12. When asked **Are You Sure(Y/N)?**, press **Y** to accept.
13. Press **Ctrl+E** to exit the BIOS.
14. When asked **Are you sure to exit(Y/N)?**,
    press **Y** to exit and reboot.
15. Continue with FDISK and FORMAT steps as if you were installing a conventional hard drive.

CONCATENATION

This RAID array allows you to use one, two, three or four hard drives to a array. It does not provide any data protection or performance improvement but can be useful for utilizing leftover space on disks.

1. As the BIOS boots press **Ctrl+F4** or
    F4 when prompted to enter the RAID BIOS.
2. At the next screen select **Create RAID Set**, then press **Enter**.
3. Select **CONCATENATION**, then press **Enter**.
4. Select the number of drives then press **Enter**.
5. Select the **first drive**, press **Enter.**
6. If applicable select the **2nd, 3rd, 4th**
    drive pressing enter after each selection.
7. When asked **Are You Sure(Y/N)?**, press **Y** to accept.
8. Press **Ctrl+E** to exit the BIOS.
9. When asked **Are you sure to exit(Y/N)?**,
    press **Y** to exit and reboot.
10. Continue with FDISK and FORMAT steps as
    if you were installing a conventional hard drive.

Deleting RAID Arrays

1. As the BIOS boots press **Ctrl+S** or **F4** when prompted to enter the RAID BIOS.
2. Select **Delete RAID Set**, then press **Enter**.
3. Select the RAID set then press **Enter**.
4. When asked **Are You Sure(Y/N)?**, press **Y** to confirm.

Resolving Conflicts

When a RAID set is created, then metadata written to the disk includes drive connection information. 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. 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, from the main BIOS window select **Resolve Conflicts**, then press **Enter**, the correct metadata, including the correct drive connection information, will be written to the replacement disk.

Low Level Format

Low Level Format is build into the RAID BIOS to make it more convenient to erase the entire contents of a hard disk drive, including data, drive and partition information. The Low Level Format utility works on single hard drive only, before the RAID set is configured.

Logical Drive Info

This menu item allows the display of the assignment of physical drives within a logical set (RAID0, RAID1, etc.). This is display only function.

BIOS Configuration

The SATA 150 4-Channel PCI RAID Card BIOS will appear every time your system starts up. If the BIOS doesn't show, please try your controller in another PCI slot. During this (POST) process, the BIOS will show up and indicate the devices attached to it.

Driver Installation For Windows® 2000
For A New Installation

A new installation requires a floppy disk for the driver installation. To make this floppy disk, copy the contents of the "\Driver\Windows driver\SIL3114_x86_15203" folder, found on the driver CD, onto a blank floppy disk then follow the directions below.

1. Setup the RAID Array prior to Windows installation.
2. Follow Windows® 2000 installation procedure.
3. Restart the computer when prompted by the installation.
4. At the Windows® 2000 Setup screen, press **F6** to install the RAID driver.
5. When prompted, press **S** to specify the location of the driver.
6. Insert the floppy disk, then press **Enter**.
7. Select **Silicon Image Sil 3114 SoftRaid 5 Controller for Windows 2000**, then press **Enter**.
8. Press **Enter** again to finish driver installation, then follow the onscreen instructions to complete the Windows installation.

For An Existing Installation

1. Setup the RAID Array prior to driver installation and boot up to Windows.
2. At **Found New Hardware Wizard**, click **Next**.
3. Select **Search for a suitable driver for my device (recommend)** then click **Next**.
4. Insert the driver CD, check **CD-ROM drives**, uncheck the other boxes, click **Next**, then click **Next** again.
5. If the **Digital Signature Not Found** message appears, click **Yes**. Our driver has been thoroughly tested for stability and compatibility.
6. Click **Finish**.
7. Repeat steps 2-6.

For Windows® XP/Server 2003
For A New Installation

*A new installation requires a floppy disk for the driver installation. To make this floppy disk, copy the contents of the "**Driver\Windows driver\SIL3114_x86_15203**" folder, found on the driver CD, onto a blank floppy disk then follow the directions below.*

1. Setup the RAID Array prior to Windows installation.
2. Follow Microsoft's Windows installation procedure.
3. Restart the computer when prompted by Windows' installation.
4. At the Windows Setup screen, press **F6** to install the RAID driver.
5. When prompted, press **S** to specify the location of the driver.
6. Insert the floppy disk, then press **Enter**.
7. Select **Silicon Image Sil 3114 SoftRAID 5 Controller for Windows XP/Server 2003**, then press **Enter**.
8. Press **Enter** to finish driver installation, then follow the on-screen instructions to complete the Windows installation.

Note: If the **Security Alert** warning pops up, click **Yes**. Our driver has passed Microsoft compatibility testing, this message appears during new installation.

For An Existing Installation

1. Setup the RAID Array prior to driver installation and boot up to Windows.
2. At the **Found New Hardware Wizard:** XP(w/SP1 or earlier)/Server 2003: continue to step #3 XP(w/SP2 or later)/Server 2003(w/SP1 or later): select **No, not this time**, then click **Next**.
3. Insert the driver CD, select **Install the software automatically (Recommended)**, and click **Next**.
4. Click **Finish**.
5. Repeat steps 2-4.

For Windows® XP-x64/Server 2003-x64
For A New Installation

*A new installation requires a floppy disk for the driver installation. To make this floppy disk, copy the contents of the "**Driver\Windows driver\SIL3114_x64_15203**" folder, found on the driver CD, onto a blank floppy disk then follow the directions below.*

1. Setup the RAID Array prior to Windows installation.
2. Follow Microsoft's Windows installation procedure.
3. Restart the computer when prompted by Windows' installation.
4. At the Windows Setup screen, press **F6** to install the RAID driver.
5. When prompted, press **S** to specify the location of the driver.
6. Insert the floppy disk, then press **Enter**.
7. Select **Silicon Image Sil 3114 SoftRAID 5 Controller for Windows XP/Server 2003**, then press **Enter**.
8. Press **Enter** to finish driver installation, then follow the on-screen instructions to complete the Windows installation.

Note: If the **Security Alert** warning pops up, click **Yes**. Our driver has passed Microsoft compatibility testing, this message appears during new installation.

For An Existing Installation

1. Setup the RAID Array prior to driver installation and boot up to Windows.

2. At the **Found New Hardware Wizard:**

   XP(w/SP1 or earlier)/Server 2003: continue to step #3

   XP(w/SP2 or later)/Server 2003(w/SP1 or later): select **No, not this time**, then click **Next**.

3. Insert the driver CD, select **Install the software automatically (Recommended)**, and click **Next**.

4. Click **Finish**.

5. Repeat steps 2-4.

For Windows® Vista / Windows 7
For A New Installation

*A new installation requires a floppy disk for the driver installation. To make this floppy disk, copy the contents of the "**Driver\Windows driver\SIL3114_x86_15203**" folder, found on the driver CD, onto a blank floppy disk then follow the directions below.*

1. Setup the RAID Array prior to Windows installation.

2. Follow Microsoft's Windows installation procedure.

3. Restart the computer when prompted by Windows' installation.

4. At the Windows Setup screen, press **Load Driver** to install the RAID driver.

5. Insert the floppy disk, please select **Silicon Image Sil 3114 SoftRaid 5 Controller (A:\si3114r5.inf)**, then press **Next**. (Change **A:** to match your floppy drive letter)

6. Follow the on-screen instructions to complete the Windows installation.

For An Existing Installation

1. Setup the RAID Array prior to driver installation and boot up to Windows.
2. At **Found New Hardware Wizard**, select **Locate and install driver software (recommended)**.
3. Please insert driver CD, click **Next**.
4. If the system prompts the user informing the drivers are not signed, select the option **Install this driver software anyway**.
5. Click **Close** to complete the installation.

For Windows® Vista / Windows 7 -x64
For A New Installation

*A new installation requires a floppy disk for the driver installation. To make this floppy disk, copy the contents of the "***Driver\Windows driver\SIL3114_x64_15203***" folder, found on the driver CD, onto a blank floppy disk then follow the directions below.*

1. Setup the RAID Array prior to Windows installation.
2. Follow Microsoft's Windows installation procedure.
3. Restart the computer when prompted by Windows' installation.
4. At the Windows Setup screen, press **Load Driver** to install the RAID driver.

To Verify Windows® Installation

1. Right click **My Computer** and click **Manage**.
2. Select **Device Manager**.
3. Double click **SCSI and RAID Controller**, then double click **Silicon Image Sil 3114 SoftRaid 5 Controller** to display driver properties. A message this device is working properly is displayed in the dialog box, the driver has been correctly installed.