



SATA+Ultra ATA RAID CONTROLLER **RC212**

User Manual

Contents

▪ Feature and benefits	3
▪ Package contents	3
▪ System requirement	3
▪ Magic Switch introduction and jumper setting	4
▪ Hardware installation	6
▪ Important message for user	6
▪ RAID introduction	
RAID 0	7
RAID 1	9
RAID 0+1	10
▪ Driver installation	
Quick guide	13
Detail guide	19

Features and Benefits

- Compliant with Serial ATA 1.0 specification
- Compliant with PCI Specification, revision 2.2
- Provides three independent channels to connect two SATA and two PATA hard disk drive
- Supports up to UDMA6 transfer mode of PATA
- Supports up to 4 storage device connection (Two SATA and Two PATA)
- Supports RAID 0, 1, 0+1 and JBOD functions
- Supports drives with capacities larger than 137GB
- Supports Windows® 98SE, ME, 2000, Windows XP and Server 2003
- Connectors : 2 x internal SATA connectors, 2 x external SATA connectors
1 x PATA connector

Package Contents

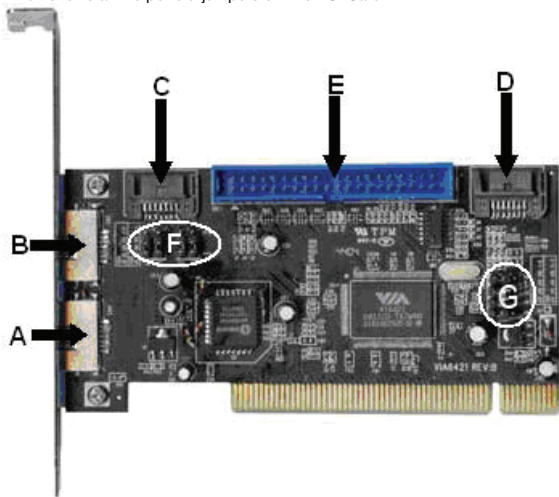
- 1x PCI SATA + PATA Raid Card
- 1x Manual
- 1x Driver CD
- 2x SATA Data Cable
- 2x SATA Power Cable
- 1x ATA 133 IDE Cable

System Requirements

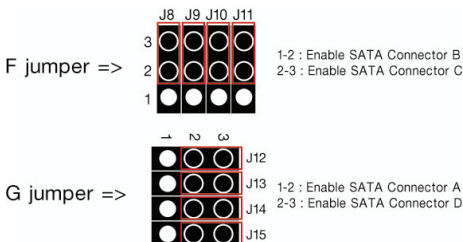
- Windows® 98SE, ME, 2000, XP and Server 2003
- Available PCI slot

Magic Switch introduction and jumper setting

Before installing the VIA VT6421 RAID PCI Card, please see the photo below which shows all the ports & jumpers on this PCI Card.



A	SATA Connector (External)
B	SATA Connector (External)
C	SATA Connector (Internal)
D	SATA Connector (Internal)
E	PATA Connector
F	Jumpers control BC Switch
G	Jumpers control AD Switch

IDE/RAID: Jumper Settings

JP		Description
J8-J11	1-2 close	Enable SATA Connector B
	2-3 close	Enable SATA Connector C
J12-J15	1-2 close	Enable SATA Connector A
	2-3 close	Enable SATA Connector D

Default Mode is all jumper 2-3 close, so C-D is active and A-B is inactive on default.

1. There are four SATA ports in RC212 RAID adapter. We named these ports character A through D. Ports C to D are internal SATA ports and A to B are external SATA ports. By changing the jumper setting (F and G) on RC212 that allows you to utilize 2 ports of this card. With different jumper setting you can active port A, B, C and D .

Note: There are four SATA ports in PCI SATA+PATA RAID card. We named these ports

character A through D. Ports C & D are internal SATA ports and A & B are external SATA ports. By changing the jumper setting on the PCI SATA+PATA RAID card that allows you to utilize 2 ports of this card at the same time. Please set which port to work by jumper setting. By default, Port C and D are working.

Hardware Installation

1. Turn Off the power to your computer.
2. Unplug the power cord and remove your computer's cover.
3. Remove the slot bracket from an available PCI slot.
4. To install the card, carefully align the card's bus connector with the selected PCI slot on the motherboard. Push the board down firmly.
5. Attach your internal or external devices to the PCI SATA+PATA RAID card.
6. Replace the slot bracket's holding screw to secure the card.
7. Replace the computer cover and reconnect the power cord.

Important message for user

1. Backup all your data in HD before setting any RAID.
2. New HD connecting to RC-212 is recommended to "initial" and "format" before setting a RAID. Otherwise, PC might find nothing in the system.
3. Please read the PDF file of "SATARAID5-UserGuide_v1.40" for basic RAID knowledge.
4. If you want to boot from correct HD either from motherboard HD or RC-212 HD, please change from BIOS "booting sequence".
5. 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.
6. If you want to use RC-212 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 P11 "Driver installation" directly to complete the install. The only different is ignoring the step of RAID setting and the driver setting is the same as a RAID card.

RAID Arrays

RAID Arrays are setup in the PCI SATA+PATA RAID card's BIOS.

There are four configurations supported:

RAID level/Type	Configurations	Number of disks needed
RAID 0	Disk Striping	2 or 3 or 4
RAID 1	Disk Mirroring	2
RAID 0+1	Disk Striping + Mirroring	4
JBOD	Disk Concatenation	2 or 3 or 4

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 **Tab** when prompted to enter the RAID BIOS.
2. At the RAID utility main menu select **Create Array**, press **Enter**.
3. At the next screen select **Auto Setup For Performance**, press **Enter**.

4. When asked Auto Create array will destroy all data on disks. Continue? (Y/N), press **Y** to accept.
5. And then a **Create New Raid Success!!** Message will be displayed. Press **ESC** to quit then go back to the RAID utility main menu.
6. Press **ESC** to exit the BIOS.
7. When asked **Do you really want to exit the utility? (Y/N)**, press **Y** to accept.

Manual configuration

1. As the BIOS boots press **Tab** when prompted to enter the RAID BIOS.
2. At the RAID utility main menu select **Create Array**, press **Enter**.
3. At the next screen select **Array Mode RAID 1 (Mirroring)**, press **Enter**.
4. At the next screen select **RAID 0 for performance**, press **Enter**.
5. At the next screen select **Select Disk Drives**, press **Enter**.
6. Please use arrow keys **↑** and **↓** to switch the disk, then press **Enter** to mark the selected disk.
7. Select Block Size 64, press Enter.
8. Select chunk size from **4K, 8K, 16K, 32K** or **64K**, then press **Enter**.
9. Select Start Create Process, press Enter.
10. When asked The data on the selected disk will be destroyed. Continue? (Y/N), press **Y** to accept.
11. And then a **Create New Raid Success!!** Message will be displayed. Press **ESC** to quit then go back to the RAID utility main menu.
12. Press **ESC** to exit the BIOS.
13. When asked **Do you really want to exit the utility? (Y/N)**, press **Y** to accept.

RAID 1 (Mirroring)

For New/Blank Hard Drives

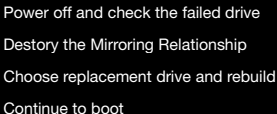
1. As the BIOS boots press **Tab** when prompted to enter the RAID BIOS.
2. At the RAID utility main menu select **Create Array**, press **Enter**.
3. At the next screen select **Auto Setup For Data Security**, press **Enter**.
4. When asked Auto Create array will destroy all data on disks. Continue? (Y/N), press **Y** to accept.
5. And then a **Create New Raid Success!!** Message will be displayed. Press **ESC** to quit then go back to the RAID utility main menu.
6. Press **ESC** to exit the BIOS.
7. When asked **Do you really want to exit the utility? (Y/N)**, press **Y** to accept.

For Existing Hard Drives with Data

1. As the BIOS boots press **Tab** when prompted to enter the RAID BIOS.
2. At the RAID utility main menu select **Create Array**, press **Enter**.
3. At the next screen select **Array Mode RAID 1 (Mirroring)**, press **Enter**.
4. At the next screen select **RAID 1 for data protection**, press **Enter**.
5. At the next screen select **Select Disk Drives**, press **Enter**.
6. Please use arrow keys **↑** and **↓** to select the **Source** drive, press **Enter**.
7. Please use arrow keys **↑** and **↓** to select the **Mirror(Target)** drive, press **Enter**.
8. Select Start Create Process, press **Enter**.
9. When asked Save the data on source disk to mirror after creation? (Y/N), press **Y** to accept.
10. The set will be built. The status of the built is displayed in the menu.
11. When build is completed, a **Create New Raid Success!!** Message will pop up inform

you that build is finished. Rebuild Mirror Drive

12. When a failure to one member occurs, you will be notified by the RAID BIOS during boot. The steps below will guide you in rebuilding a failed mirror set.
13. Replace the failed drive(s) with one of equal or greater capacity, then start the computer.
14. Then you will see the following message shown by the PCI SATA+PATA RAID card's BIOS on the screen.



Power off and check the failed drive
Destory the Mirroring Relationship
Choose replacement drive and rebuild
Continue to boot

15. Select Choose replacement drive and rebuild, press **Enter**.
16. Select the replacement drive then press **Enter**.
17. When asked WARNING: **Would you like to Continue? Press Y/N?**, press **Y** to accept.
18. The set will be rebuilt. The status of the rebuild is displayed in the menu.
19. When rebuild is completed, a Enter the VIA RAID Utility after exiting?(Y/N) message will pop up inform you that rebuild is finished, press N to reboot system.

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 **Tab** when prompted to enter the RAID BIOS.
2. At the RAID utility main menu select **Create Array**, press **Enter**.
3. At the next screen select **Auto Setup (Safe, Performance)**, press **Enter**.
4. When asked Auto Create array will destroy all data on disks. Continue? (Y/N), press **Y** to accept.
5. And then a **Create New Raid Success!!** Message will be displayed. Press **ESC** to quit then go back to the RAID utility main menu.
6. Press **ESC** to exit the BIOS.
7. When asked Do you really want to exit the utility? (Y/N), press **Y** to accept.

Manual configuration

1. As the BIOS boots press **Tab** when prompted to enter the RAID BIOS.
2. At RAID utility main menu select **Create Array**, press **Enter**.
3. At the next screen select **Array Mode RAID 1 (Mirroring)**, press **Enter**.
4. At the next screen select **RAID 0/1**, press **Enter**.
5. At the next screen select **Select Disk Drives**, press **Enter**.
6. Please use arrow keys **↑** and **↓** to select the **first** drive, press **Enter**.
7. Please use arrow keys **↑** and **↓** to select the **second** drive, press **Enter**.
8. Please use arrow keys **↑** and **↓** to select the **third** drive, press **Enter**.
9. Please use arrow keys **↑** and **↓** to select the **fourth** drive, press **Enter**.
10. Select Block Size 64, press **Enter**.
11. Select chunk size from **4K, 8K, 16K, 32K** or **64K**, then press **Enter**.
12. Select Start Create Process, press **Enter**.
13. When asked The data on the selected disk will be destroyed. Continue? (Y/N), press **Y** to accept.

14. And then a **Create New Raid Success!!** Message will be displayed. Press **ESC** to quit then go back to the RAID utility main menu.
15. Press **ESC** to exit the BIOS.
16. When asked Do you really want to exit the utility? (Y/N), press **Y** to accept.

SPAN (JBOD)

1. As the BIOS boots press **Tab** when prompted to enter the RAID BIOS.
2. At the RAID utility main menu select **Create Array**, press **Enter**.
3. At the next screen select **Auto Setup For Capacity**, press **Enter**.
4. When asked Auto Create array will destroy all data on disks. Continue? (Y/N), press **Y** to accept.
5. And then a **Create New Raid Success!!** Message will be displayed. Press **ESC** to quit then go back to the RAID utility main menu.
6. Press **ESC** to exit the BIOS.
7. When asked Do you really want to exit the utility? (Y/N), press **Y** to accept.

Delete RAID Disk Drive

1. As the BIOS boots press **Tab** when prompted to enter the RAID BIOS.
2. At the RAID utility main menu select **Delete Array**, press **Enter**
3. Please use arrow keys **↑** and **↓** to select the RAID set then press **Enter**.
4. When asked The selected array will be destoried. Are you sure? Continue? Press Y/N, press **Y** to confirm.

BIOS Configuration

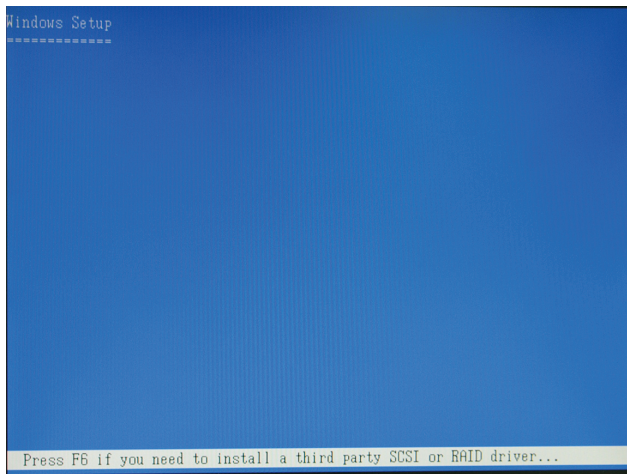
The PCI SATA+PATA RAID card's BIOS will appear every time your system starts up.

During this (POST) process, the BIOS will show up and indicate the devices attached to it.

Driver Installation

Quick guide:

1. If you want to add RC-212 to an existing OS, set up RC-212 into a PCI slot. Enter the OS and install RC-212 with driver disk. In this case, PC is booting up by an existing HD connecting to motherboard. After RC-212 is installed complete, you can add HD and set the RAID by RAID BIOS.
2. If you want to add RC-212 to a new PC without any OS, you need to boot the OS from HD connecting to RC-212 instead of motherboard.
 - 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, enter and complete the RAID set. After you complete, save and left the setting.
 - c. Inset Windows installation disk and start the windows installation.
 - d. Press **F6** at the beginning as the blue screen scanning.
3. Please follow below steps a~f to complete the installation.



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.

```
Windows Setup
=====

Setup could not determine the type of one or more mass storage devices
installed in your system, or you have chosen to manually specify an adapter.
Currently, Setup will load support for the following mass storage device(s):

    <none>

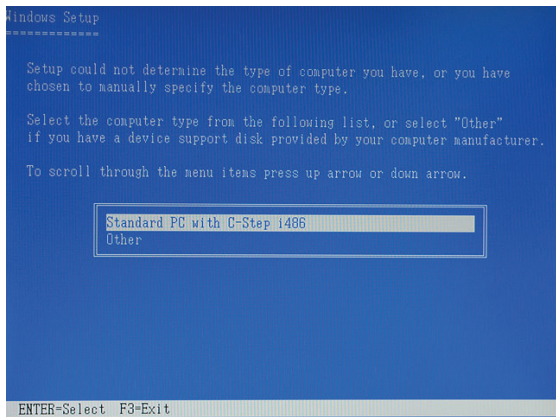
* To specify additional SCSI adapters, CD-ROM drives, or special
  disk controllers for use with Windows, including those for
  which you have a device support disk from a mass storage device
  manufacturer, press S.

* If you do not have any device support disks from a mass storage
  device manufacturer, or do not want to specify additional
  mass storage devices for use with Windows, press ENTER.

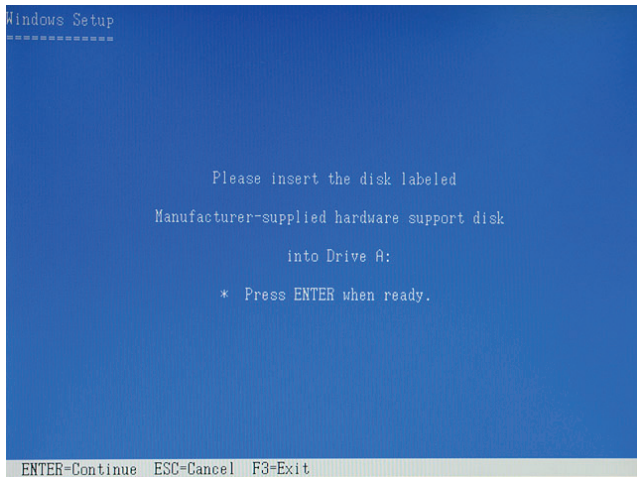
S=Specify Additional Device  ENTER=Continue  F3=Exit
```

Choose the correct OS which you are going to install when system asks you.

If below screen happens, please choose "Standard PC with C-Step i486".



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-212 by floppy drive will be completed and the system will detect the HD which now plug on the card.

After you install RC-212 successfully by floppy disk, installation will lead you back to the same screen as below and then press “**enter**” to left the setting.

```
Windows Setup
*****

Setup will load support for the following mass storage device(s):

    Silicon Image SiI 3114 SATA RAID Controller for Windows XP/Server 2003

* To specify additional SCSI adapters, CD-ROM drives, or special
  disk controllers for use with Windows, including those for
  which you have a device support disk from a mass storage device
  manufacturer, press S.

* If you do not have any device support disks from a mass storage
  device manufacturer, or do not want to specify additional
  mass storage devices for use with Windows, press ENTER.

S=Specify Additional Device  ENTER=Continue  F3=Exit
```

- f. Once the system can find the HD connecting to RC-212, you can follow the normal steps to complete the Windows installation.
1. 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 RC212 is desired. It means in this case you will boot our computer from RC212 instead of motherboard. Please follow the following instructions.
 - a. Install RC-212 to an existing OS HD connecting to motherboard.
 - b. After RC-212 install complete, turn off PC. Take the original HD off from motherboard and connect to RC-212. Take another fresh HD to connect to RC-212 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. (Please change the booting sequence in CMOS if necessary)

Detail guide:

For Windows® XP/Server 2003

****For New Installation***

A new installation requires a floppy disk for the driver installation. To make this floppy disk, copy the contents of the “**RC-212\DriverDisk**” 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 VIA RAID Controller (Windows 2003 ID32) or VIA RAID Controller (Windows XP), then press **Enter**.
8. Press **Enter** to finish driver installation, then 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 the **Found New Hardware Wizard** window pop-up, please click **Cancel** button to cancel the driver installation for the device at this moment. The driver for this device will be installed in the next step.
3. Please insert the CD driver bound with PCI SATA+PATA RAID card into your CD-ROM Drive.
4. At the Windows desktop, click **Start**, then **Run**.
5. Type **D:\RC-212\Setup.exe**, click **OK**. (Change **D:** to match your CD-ROM drive letter)
6. Follow the on-screen instructions to complete the installation.
7. Restart Windows to complete the 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 "**RC-212\DriverDisk**" 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 VIA RAID Controller (Windows 2000), then press Enter.
8. Press **Enter** again to finish driver installation, then 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 the **Found New Hardware Wizard** window pop-up, please click **Cancel** button to cancel the driver installation for the device at this moment. The driver for this device will be installed in the next step.
3. Please insert the CD driver bound with PCI SATA+PATA RAID card into your CD-ROM Drive.
4. At the Windows desktop, click **Start**, then **Run**.
5. Type **D:\RC-212\Setup.exe**, click **OK**. (Change **D:** to match your CD-ROM drive letter)
6. Follow the on-screen instructions to complete the installation.
7. Restart Windows to complete the installation.

***To Verify Windows® 2000/XP/Server 2003 Installation**

1. Right click **My Computer** and click **Manage**.
2. Select Device Manager.
3. Double click **SCSI and RAID Controller**, then double click **VIA VT6421 RAID Controller** to display driver properties. A message this device is working properly is displayed in the dialog box, the driver has been correctly installed.

For Windows® 98SE/Me

****For New Installation***

1. Setup the RAID array prior to Windows installation.
2. Follow Microsoft procedures to install Windows 98SE/Me accordingly.
3. Once Windows has installed and booted. Please insert the CD driver bound with PCI SATA+PATA RAID card into your CD-ROM Drive.
4. At the Windows desktop, click **Start**, then **Run**.
5. Type **D:\IRC-212\Setup.exe**, click **OK**. (Change **D:** to match your CD-ROM drive letter)
6. Follow the on-screen instructions to complete the installation, and then restart your system.
7. Once you have rebooted your computer. Windows® 98SE/Me will detect the PCI SATA+PATA RAID card and find a **VIA VT6421 RAID Controller** device. When the **Add New Hardware Wizard** asks **What would you like to do?**, select **Specify the location of driver (Advanced)** and click **Next** button.
8. When the **Add New Hardware** asks for the driver installation, uncheck all the boxes to allow Windows® 98SE/Me search its own driver database. Click **Next** to start the search.
9. The **Add New Hardware Wizard** will find the driver for the device **VIA VT6421 RAID Controller**. Click **Next** to continue.
10. When the driver installation is complete, click **Finish**.
11. Your computer must be restarted in order to complete the installation, click **Yes** to restart your computer.

***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** window pop-up, please click **Cancel** button to cancel the driver installation for the device at this moment. The driver for this device will be installed in the next step.
3. Please insert the CD driver bound with PCI SATA+PATA RAID card into your CD-ROM Drive.
4. At the Windows desktop, click **Start**, then **Run**.
5. Type **D:\RC-212\Setup.exe**, click **OK**. (Change **D:** to match your CD-ROM drive letter)
6. Follow the on-screen instructions to complete the installation, and then restart your system.
7. Once you have rebooted your computer. Windows® 98SE/Me will detect the PCI SATA+PATA RAID card and find a **VIA VT6421 RAID Controller** device. When the **Add New Hardware Wizard** asks **What would you like to do?**, select **Specify the location of driver (Advanced)** and click **Next** button.
8. When the **Add New Hardware** asks for the driver installation, uncheck all the boxes to allow Windows® 98SE/Me search its own driver database. Click **Next** to start the search.
9. The **Add New Hardware Wizard** will find the driver for the device **VIA VT6421 RAID Controller**. Click **Next** to continue.
10. When the driver installation is complete, click **Finish**.
11. Your computer must be restarted in order to complete the installation, click **Yes** to restart your computer.

***To Verify Windows® 98SE/Me Installation**

1. Right click **My Computer**, click **Properties**, then click **Device Manager**.
2. Double click **SCSI Controllers**, **VIA VT6421 RAID Controller** should be displayed.
3. Highlight **VIA VT6421 RAID Controller** and click **Properties**. A message this device is working properly is displayed in the dialog box, the driver has been correctly installed.

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