3ware® 9650SE Serial ATA RAID Controller

Installation Guide

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About this Guide

Congratulations on your purchase of the 3ware® 9650SE Serial ATA RAID Controller. This guide tells you how to install it.

Chapter	Description
1 Getting Started	Overview of the 3ware RAID controller and important safety factors to keep in mind during installation
2 Installing Your 3ware RAID Controller	How to install your 3ware RAID controller
3 Installing the Battery Backup Unit	How to install a 3ware Battery Backup Unit (BBU) on your 3ware RAID controller

The following additional documentation is available for your 3ware RAID controller on the CD that came with your controller. It is also available through the 3ware website:

- *3ware Serial ATA RAID Controller User Guide*
- *3ware Serial ATA RAID Controller CLI Guide*
- *3ware HTML Bookshelf* is an HTML version of the documentation, combining the User Guide and the CLI Guide.

Online help is also available when you are using 3DM 2 (3ware Disk Manager).

Additional support information is available in the 3ware Knowledgebase, at this website: http://www.3ware.com/KB

Chapter 1. Getting Started

The 3ware® 9650SE RAID controller provides these features:

- RAID 6 with simultaneous parity generation to maximize performance
- 8th-generation StorSwitch non-blocking switch fabric for maximum controller output
- StreamFusion optimization of RAID 5 and RAID 6 disk accesses to maximize application performance under heavy loads
- StorSave BBU with write journaling to optimize data protection and performance
- RAID levels 0, 1, 5, 6, 10, 50, Single Disk, and JBOD

  (RAID 6 and RAID 50 are available only with 3ware RAID controller models that have 8 or more ports)
- PCI Express® x1, x4, and x8 connectivity

Contents of this Package

- This document, *3ware 9650SE Serial ATA RAID Controller Installation Guide*
- 3ware CD-ROM with driver, software, and additional documentation
- Appropriate cables for the 3ware 9650SE model
  - For the 2-port model, two SATA interface cables, one for each port are provided.
  - For the 4-port, 8-port, 12-port, and 16-port models, multilane break-out cables (SFF-8087) are provided, for use with individual drives. Each of these cables supports up to four serial ATA drives.

1 cable is provided with the 4-port controller

2 cables are provided with the 8-port controller

3 cables are provided with the 12-port controller

4 cables are provided with the 16-port controller

Note: Double-ended multilane cables, for use with a multilane backplane, can be purchased separately. For details about these cables, see “Multilane Cables” on page 5.

System Requirements

Motherboard and Slot Requirements

A workstation-class or server-class motherboard with PCI-Express® slot that supports the specific 9650SE model, as shown in Table 1. A list of systems that have been tested is available at http://www.3ware.com/products/compatibility_sata2.asp

Table 1: Required Slots for 3ware RAID Controller Models

Controller Model	PCI-E X1	PCI-E X4	PCI-E X8	PCI-E x16
9650SE-2LP	Yes	Yes	Yes	Yes
9650SE-4LPML	No	Yes	Yes	Yes
9650SE-8LPML	No	Yes	Yes	Yes
9650SE-12LPML	No	No	Yes	Yes
9650SE-16LPML	No	No	Yes	Yes

Drive Requirements

Depending on the particular model, the 3ware RAID controller may be connected to two, four, eight, twelve, or sixteen SATA drives using the supplied interface cables.

Drives must meet SATA-1 (1.5 Gb/s) or SATA-2 (3.0 Gb/s) standards. Drives may be of any capacity or physical form factor.

A list of tested drives is available at http://www.3ware.com/products/compatibility_sata2.asp

Note: Shielded and unshielded interface cables for Serial ATA controllers may not exceed 1M (39”) in length.

Operating System Requirements

- Windows 2000, Windows XP, Windows Server 2003, both 32-bit and 64-bit x86
- Red Hat Linux, 32-bit and 64-bit x86
- SuSE Linux, 32-bit and 64-bit x86
- Fedora Core, 32-bit and 64-bit x86
- Other versions of Linux, 32-bit and 64-bit x86, using the open source Linux 2.4 or 2.6 kernel driver
- FreeBSD, 32-bit and 64-bit x86

For the latest driver versions for all operating systems, see the Release Notes.

Other Requirements

- Adequate air flow and cooling
- Adequate power supply for drives
- 3DM 2 (3ware Disk Manager), a browser-based application used to configure and maintain RAID units, requires one of the following browsers:
  - Internet Explorer 5.5 and later
  - Mozilla Firefox 1.2 and later
  - Netscape 7 and later

  In addition:
  - JavaScript must be enabled
  - Cookies must be enabled
  - For best viewing, screen resolution should be 1024 x 768 or greater, with 16-bit color or greater.

9650SE RAID Controller Card Models

Figure 1. 2-Port 3ware 9650SE-2LP Serial ATA RAID Controller

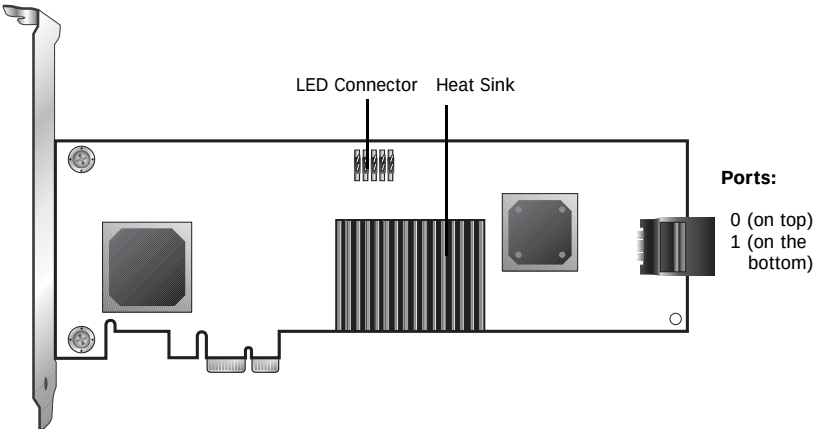


Figure 2. 4-Port 3ware 9650SE-4LPML Serial ATA RAID Controller

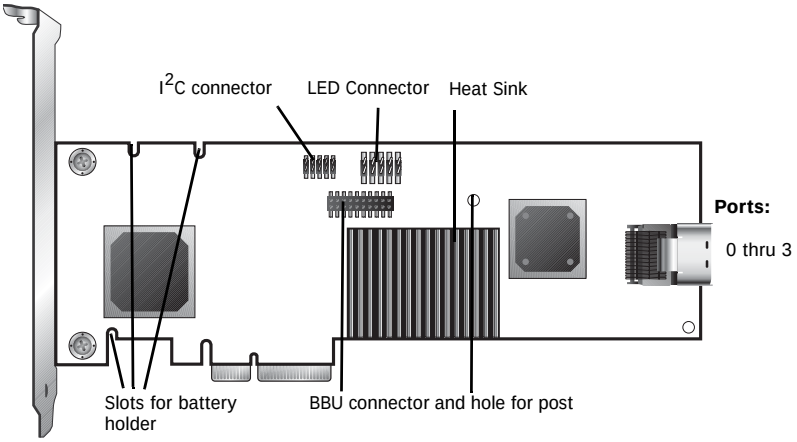


Figure 3. 8-Port 3ware 9650SE-8LPML Serial ATA RAID Controller

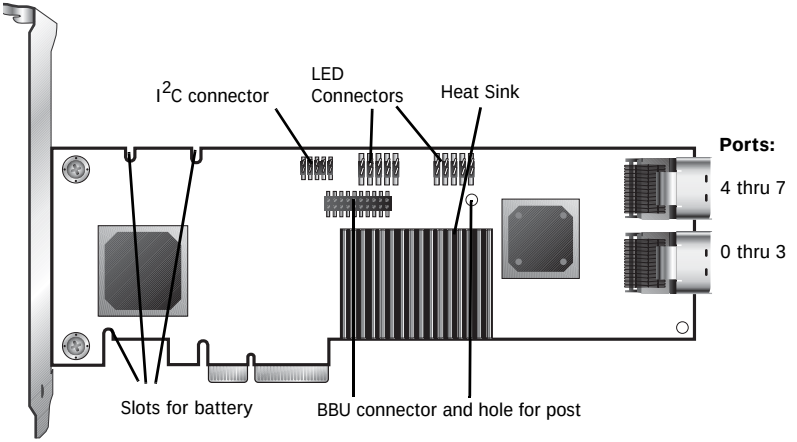


Figure 4. 12-Port 3ware 9650SE-12ML Serial ATA RAID Controller

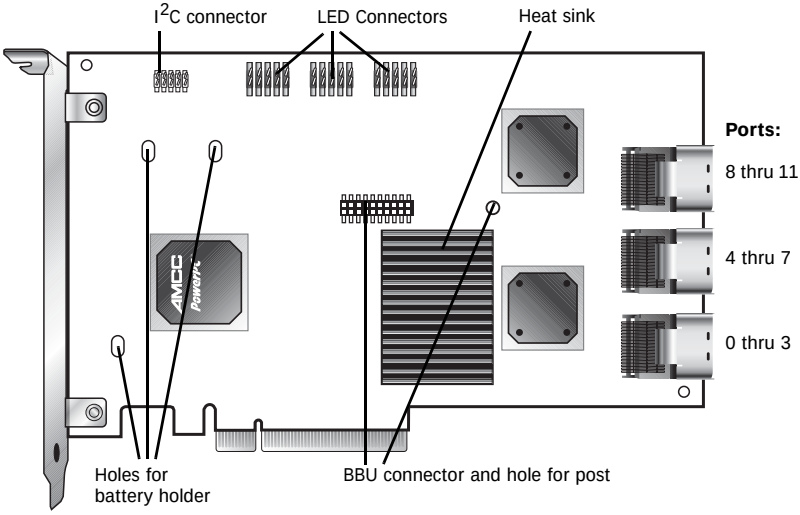
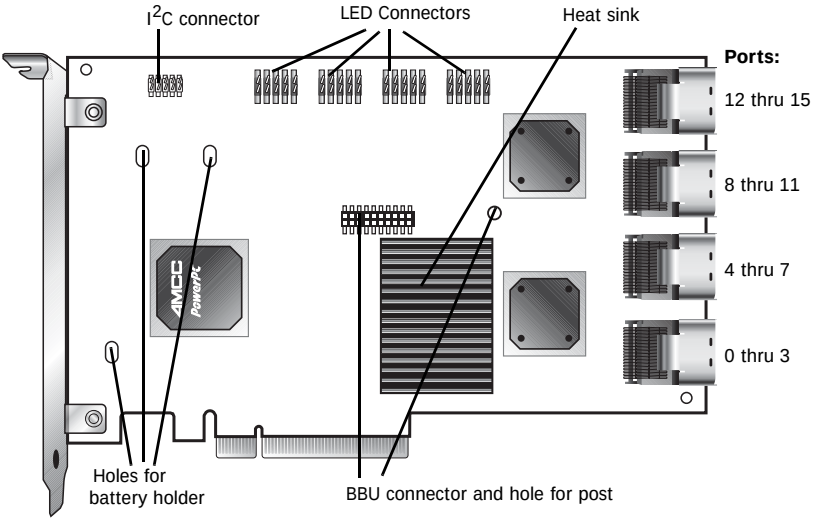


Figure 5. 16-Port 3ware 9650SE-16ML Serial ATA RAID Controller



Cables

SATA Cables

The 2-port 9650SE RAID controller uses standard SATA cables.

Multilane Cables

Important: You should only use AMCC/3ware certified cables with your 3ware RAID controller. Using an incorrect cable can result in drives that are not detected. The appropriate cables are included with your controller. If you must replace a cable, see the list of available cables and associated part numbers at http://3ware.com/products/cables.asp.

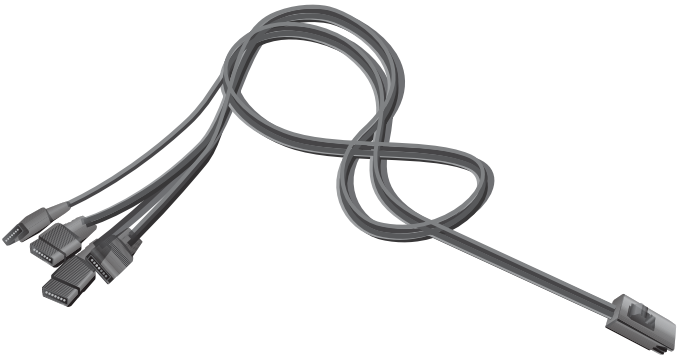
Three types of multilane cables can be used with the 4-port, 8-port, 12-port, and 16-port 3ware 9650SE RAID controllers.

- **Multilane breakout cables**

  For use with a backplane that has individual SATA connectors or individual serial ATA drives, multilane breakout cables have an SFF-8087 multilane connector on one end and four individual SATA connectors on the other end.

  Note: This is the type of cable that ships with the 3ware 9650SE multilane controllers. Depending on the enclosure you are using, you may need to purchase a different cable to connect the 9650SE controller and the enclosure backplane

  Figure 6. Multi-lane Serial ATA Break-out Cable (SFF-8087)



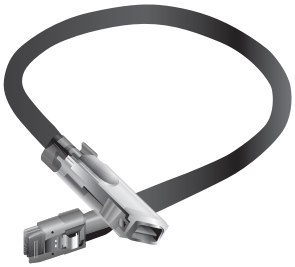
- **Multilane double-ended 4x cables**

  For use with a multilane-enabled drive backplane that has the SFF-8087 mini SAS 4i connectors, these double-ended 4x cables have multilane connectors on each end.

  Figure 7. Multilane Cable Serial ATA (SFF-8087)

- **Multilane converter cables**
  To connect from a 3ware 9650SE multilane RAID controller to a chassis that has SFF-8470 connectors on the backplane, use multilane converter cables, which have a SFF-8087 connector on one end and an Infini-band SFF8470 connector on the other.

Figure 8. Multilane SFF-8087 to SFF-8470 Serial ATA Converter Cable



Safety Information

To reduce the risk of bodily injury, electrical shock, fire, and equipment damage, read this information and observe all warnings and precautions in this guide before installing or maintaining your computer.

The 3ware 9650SE RAID controller card should be installed by technically qualified persons. If you are uncomfortable opening a computer system and conforming to standard ESD (electrostatic discharge) practices, you should have a computer technician perform the installation.

Site Selection

The product is designed to operate as a component to a computer system.The environment that is provided for the system must be:

- Clean, dry, and free of airborne particles (other than normal room dust).
- Well-ventilated and away from sources of heat including direct sunlight and radiators.

- Away from sources of vibration or physical shock.
- Isolated from strong electromagnetic fields produced by electrical devices.
- In regions that are susceptible to electrical storms, we recommend you plug your system into a surge suppressor and disconnect telecommunication lines to your modem during an electrical storm.
- Provided with a properly grounded wall outlet.
- Provided a product main power disconnect or sufficient space to access the power supply cord(s), because they serve as the product's main power disconnect.

Personal Safety When Installing the 9650SE RAID Controller in Your Computer

Warning! High voltages may be found inside computer equipment.

Before installing any of the hardware in this package or removing the protective covers of any computer equipment, turn off power switches and disconnect power cords. Do not reconnect the power cords until the hardware is installed and the system cover is closed.

Protecting Equipment and Data

Heat Sink Warning. Do not replace the factory-installed heat sink shipped with the 3ware 9650SE RAID controller. Replacing the heat sink will alter thermal characteristics and cooling requirements and may cause the controller to fail. Replacing the factory-installed heat sink will void the warranty.

Back up your data! Creating or deleting disk arrays destroys existing files on the member drives. If your drives contain valuable data, back them up and save the data elsewhere before attaching the drives to the controller.

ESD (Electrostatic Discharge) Precautions

To avoid damaging computer components and accessories when installing or removing the 3ware RAID controller, follow standard electrostatic discharge (ESD) precautions:

- When your computer case is open and its internal parts are exposed, do not touch any internal part unnecessarily.
- Always wear a grounded strap or work on an ESD-protective mat.
- Do not remove the 3ware RAID controller from its protective bag until you are properly grounded.
- Handle the 3ware RAID controller by its edges or by the black rail and metal bracket at its two ends.
- Do not touch any pin, contact, lead or component on the 3ware RAID controller.

Installation Considerations

Air Flow, Cable Length, and Routing Space

Adequate airflow and ventilation are particularly important for 3ware 9650SE RAID controllers. The on-board heat sink collects heat, and must have adequate airflow in order to disburse it. It is important that the cables do not obstruct the air flow or prevent proper ventilation of the system.

Selecting the Slot in Which to Install the Controller

Consider these factors when deciding on the slot in which to insert the controller:

- Cable routing may be easier if you install the 3ware RAID controller next to an open slot.
- 3ware 9650SE RAID controllers must be installed in PCI Express® slots. Table 1 on page 2 shows the type of PCI Express slot required for each 9650SE model.

Note: Some low-cost motherboards have a single PCI Express slot which is reserved for a video card. These slots cannot accommodate a 9650SE RAID controller or other PCI-E device.

Warning! Do **NOT** insert the 9650SE controller into a PCI-X slot. Doing so could potentially damage the board or the system, and void the warranty.

Deciding Whether to Use the LED Status Connector

3ware RAID controllers include two types of LED status connectors:

- Overall indicator, which lights when any drive is active.
- Individual LED indicators, for each drive. (Not supported on chassis that have a common ground.)

If you are building a system from scratch, you may want to consider using a chassis or drive carrier that is compatible with the 3ware RAID controller activity LEDs, such as the AMCC RDC-400-SATA drive carrier, available through AMCC. Please check the 3ware web site for the Chassis Reference list (www.3ware.com/products/compatibility_sata.asp).

Most chassis have a single drive activity cable that you can connect to the overall activity indicator on the 3ware 9650SE controller. For the location of the overall drive activity connector, see the figure for the appropriate controller on page 20 and 22, and refer to Table 2, “LED Indicator Pin Positions,” on page 23.

Note: If you are using a chassis that includes a Chassis Control Unit (CCU), follow the instructions that came with the chassis to connect the I^2C cable (Chassis Control Cable) from the CCU to the I^2C connector on the 9650SE.

Drive Installation Considerations

- **Selecting an enclosure.** If you are planning to use RAID 1, 5, 6, 10, or 50, you may want to consider installing drives into hot-swappable enclosures, so that they can be easily removed in the event of a drive failure. For a discussion of RAID levels, see the *3ware Serial ATA RAID Controller User Guide*.
- **When to install the drives.** If the drives are not already installed in your computer, you can choose to install them either before or after installing the 9650SE controller. In either case, be sure to connect the SATA cable from the drive to the controller and connect the drive to power before turning on the system or you will not be able to see or configure the drives.

Things to Watch Out For During Installation of the RAID Controller

Be careful when installing the 3ware RAID controller into your system. **Excessive force can damage the board or your system.**

Be sure to follow the installation instructions in “Chapter 2. Installing Your 3ware RAID Controller” on page 13.

Chapter 2. Installing Your 3ware RAID Controller

Tools You Need

You will need the following tools during installation:

- An ESD grounding strap or mat
- A Phillips screwdriver

Before You Start

3ware 9650SE RAID controllers can be installed in a standard enclosure or in an enclosure with a backplane.

1. Be sure to read “Safety Information” on page 8 in Chapter 1.
2. If you have a Battery Backup Unit (BBU), install it on the controller before proceeding. For details, see “Chapter 3. Installing the Battery Backup Unit”.

Step 1 (9650SE-2LP). Connect the Cables to the Controller

1 For the 9650SE-2LP, take out the SATA cables provided with the controller. (For other 9650SE models, turn to the next page.)

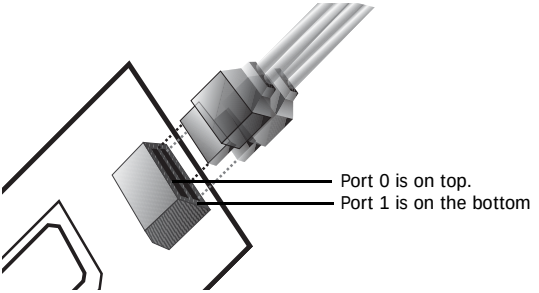
One edge of each SATA cable connector is keyed so that it can only be inserted in one direction. This helps to ensure proper orientation and installation

2 Decide to which port you want to connect the first cable.

3 Align the cable connector with the connector on the controller, matching the slotted key and carefully mate the connectors.

Note: The connectors on the end of the serial controller and the drive are susceptible to damage from excessive bending. Be careful not to insert or remove the SATA cable connector at an angle.

Figure 9. SATA Cables Being Inserted Into Port



4 Repeat steps 2 and 3 for the second SATA cable. (You connect one cable for each hard drive you will attach.)

Step 1 (Multilane Controllers). Connect the Cables to the Controller

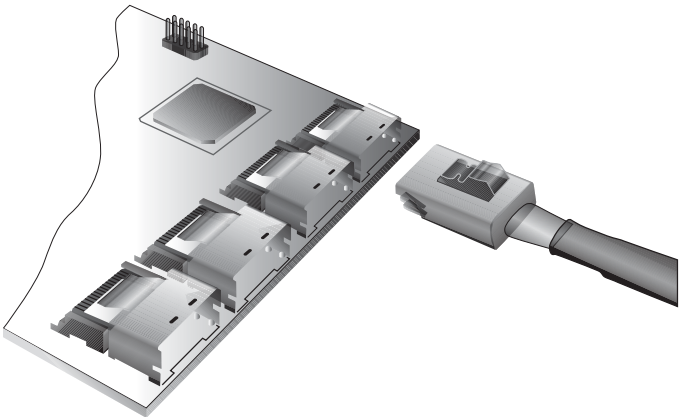
The 9650SE-4LPML, 9650SE-8LPML, 9650SE-12ML, and 9650SE-16ML models are all multilane controllers. (For the 9650SE-2LP, turn to the previous page.)

1 Take out the multilane cables provided with your controller.

2 Connect each multilane cable to a multilane connector on the controller.

When the cable is inserted correctly, you will feel it click into place.

Figure 10. Connecting a Multilane Cable with an SFF-8087 Connector to the 9650SE-16ML Controller



Depending on the which model of the 9650SE you have, and the number of drives you will be connecting, you will connect between one and four multilane cables.

Step 2. Install the Controller in the Computer

1 If the computer is running, shut it down. Turn off power to the computer and disconnect the power cord from the outlet.

2 Make sure you are properly grounded. (For details about safety precautions, see page 8.)

3 Open the computer case according to the manufacturer's instructions.

4 Find the PCI Express slot you want to use for the 3ware 9650SE RAID controller.

For a discussion of which slot to use, see "Selecting the Slot in Which to Install the Controller" on page 10.

Warning! Make sure you select a PCI Express slot, not a PCI or PCI-X slot. Inserting a 9650SE into a PCI or PCI-X slot could potentially damage the board or system, and void the warranty of either the 9650SE or the motherboard. If you are uncertain about which slot to use, see the documentation for your system's motherboard.

5 Remove the metal filler bracket for the slot.

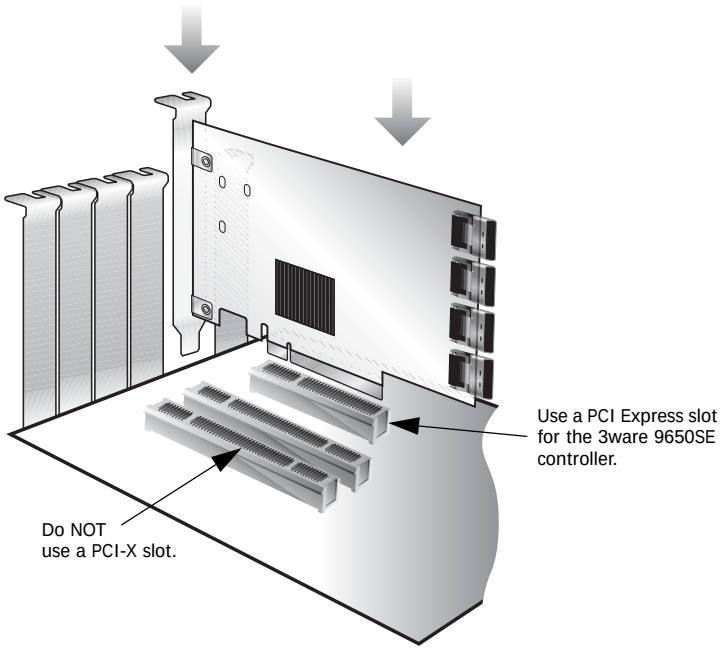
Save this screw; it will be used to secure the 3ware RAID controller after you have seated it in the slot.

6 Position the card in the PCI Express slot so that the contacts will mate with the grooves in the slot, and all pins make proper contact with the PCI Express slot pins when pushed into place.

Only the 3ware 9650SE-2LP RAID controller will fit in a one lane (x1) PCI Express slot. The 4-port and 8-port cards will work in the x4, x8, or x16 PCI Express slots, while the 12-port and 16-port cards will work in the x8 or x16 PCI Express slots.

7 Press down gently on the edge of the 3ware RAID controller directly above the PCI Express slot until it is fully seated.

Figure 11. Inserting Controller Into PCI Express Slot



8 Check that the 3ware RAID controller's metal bracket covers the hole in the case and secure the bracket with the screw that was used to secure the filler bracket in step 5.

9 When you tighten the screw on the bracket to the enclosure, make sure the card is not slanted in any direction; otherwise the card will not work properly.

Step 3 (9650SE-2LP). Connect the Cables to the Drives

For 9650SE-2LP controller, follow the steps below. For other 9650SE models, turn to the next page.

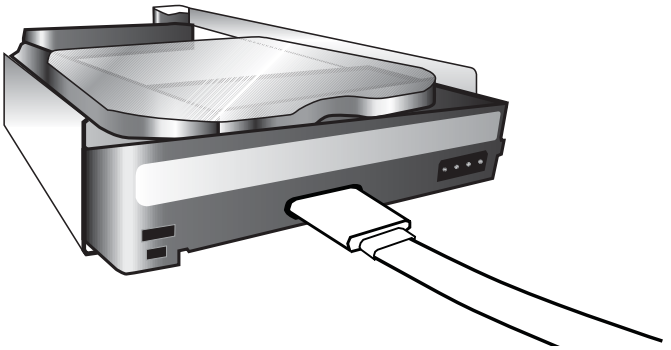
1 If your drives are not already installed in the computer chassis or hot swap carriers, install them now. Be sure that the drives are connected to the power supply, either by cable or through the drive cage.

If appropriate, set the PM2 (power management) jumper on the disk drives, to enable staggered spinup. Check the documentation that came with your disk drives to see whether this is required.

2 For each drive, select the end of an SATA cable not connected to the 3ware RAID Controller and plug it into the drive or drive carrier.

One edge of each SATA cable connector is keyed to ensure proper installation.

Figure 12. SATA Cable Connecting to Drive



Step 3 (Multilane Controllers). Connect the Cables to the Drives or Backplane

For the 9650SE-4LPML, 9650SE-8LPML, 9650SE-12ML, and 9650SE-16ML models, follow the steps below. (For the 9650SE-2LP, turn to the previous page.)

1 If your drives are not already installed, install them now, either by attaching them to the backplane, or by installing them in the computer chassis.

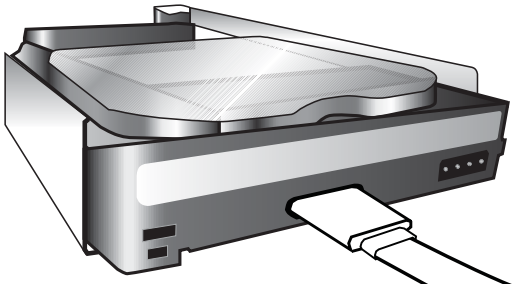
If appropriate, set the PM2 (power management) jumper on the disk drives, to enable staggered spinup. Check the documentation that came with your disk drives to see whether this is required.

2 If your enclosure has a multilane drive backplane, connect the other end of each multilane cable to the backplane.

If you are using a breakout cable, select one of the ends and plug it into each drive or drive carrier.

One edge of each SATA cable connector is keyed to ensure proper installation.

Figure 13. SATA End of Breakout Cable Connecting to Drive



3 Be sure that the power supply is connected to either the backplane or the individual drives, either by cable or through the drive carrier.

4 (Optional) Connect the drive activity LED connectors. For details, see page 20.

5 Turn to “Check Installation and Close the Case” on page 25.

Step 4. Connecting Drive Activity LED Indicators (Optional)

Connecting drive activity LED indicators is optional. For a discussion of whether to make these connections, see “Deciding Whether to Use the LED Status Connector” on page 11.

Figure 14 through Figure 18 show the location of LED indicators on the different 9650SE controllers.

Additional detail about these connectors starts on page 23.

Figure 14. 2-Port 3ware 9650SE-2LP Serial ATA RAID Controller

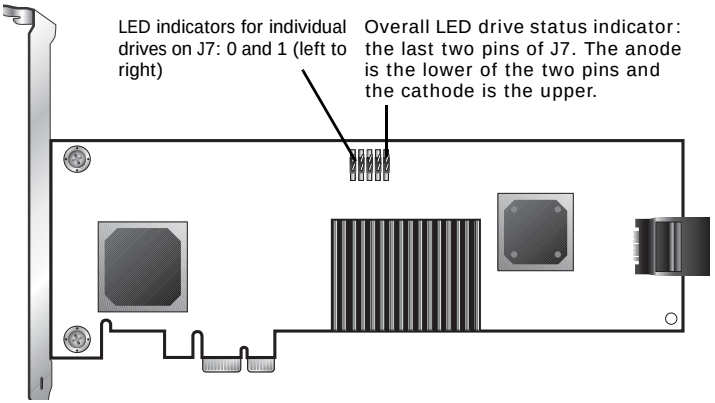


Figure 15. 4-Port 3ware 9650SE-4LPML Serial ATA RAID Controller

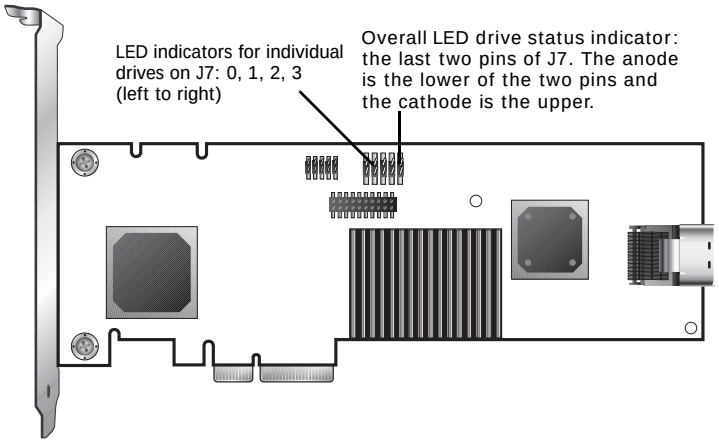


Figure 16. 8-Port 3ware 9650SE-8LPML Serial ATA RAID Controller

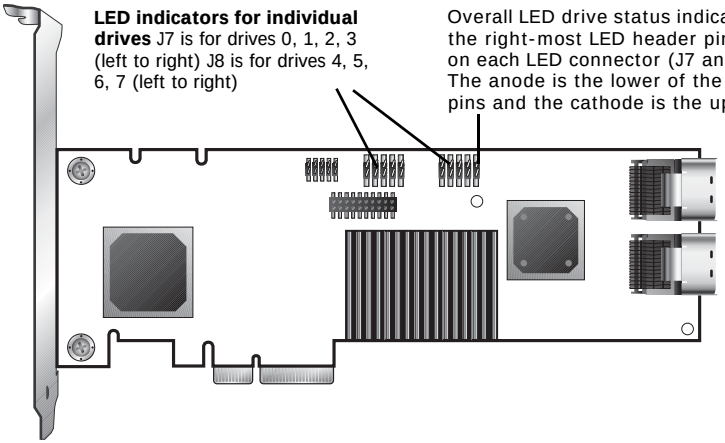


Figure 17. 12-Port 3ware 9650SE-12ML Serial ATA RAID Controller

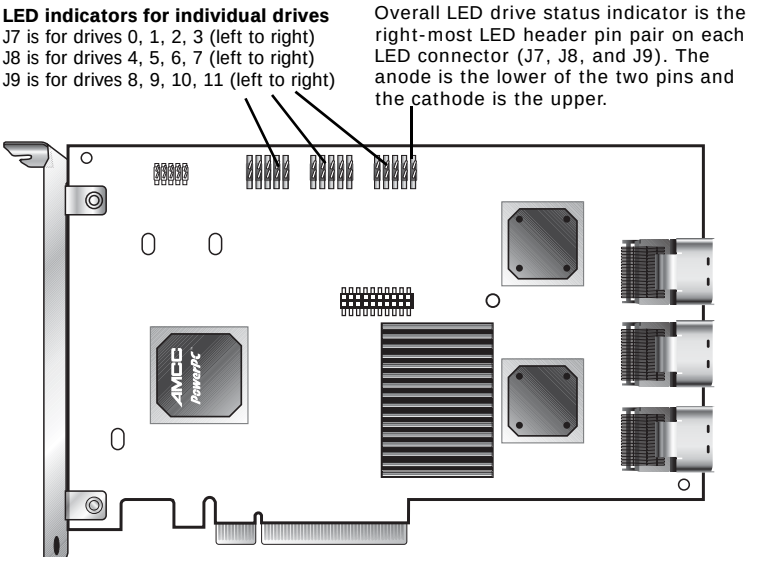
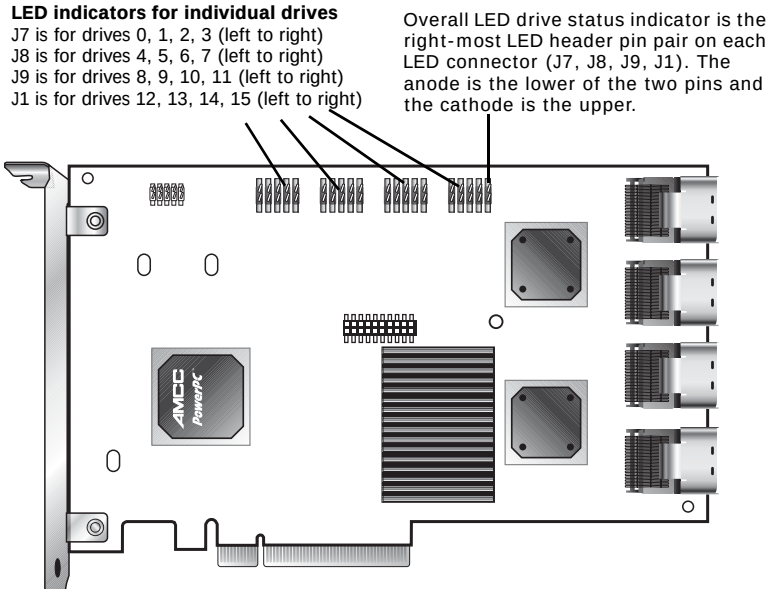


Figure 18. 16-Port 3ware 9650SE-16ML Serial ATA RAID Controller



Additional Details About the LED Status Connectors

As shown in Figure 15 through Figure 18, LED connectors for individual drives are on J7, J8, J9, and J1 for the 16 port card, on J7, J8, and J9 for the 12-port cards, and on J7 and J8 for the 8-port, and J7 for the 2-port and 4-port cards.

Pin 1 is located in the lower left-hand corner of each 10-pin connector. The odd-numbered pins, located on the bottom row, are 3.3V for the anode (+) side of each LED to be connected. The even-numbered pins are on the top or cathode (-) side. Table 2 summarizes the LED indicator pin positions for the different controllers.

Table 2: LED Indicator Pin Positions

Controller	LED Header	Pin Pair	Comment
9650SE-2LP	J7	`: : : : :`	Orientation Horizontal
		`0 1 : : All`	Port number/All (all activity indicator)
		k-cathode-minus is on the top a-anode-plus is on the bottom	
9650SE-4LPML	J7	`: : : : :`	Orientation Horizontal
		`0 1 2 3 All`	Port number/All (all activity indicator)
		k-cathode-minus is on the top a-anode-plus is on the bottom	
9650SE-8LPML	J7	`: : : : :`	Orientation Horizontal
		`0 1 2 3 All`	Port number/All (all activity indicator)
	J8	`: : : : :`	Orientation Horizontal
		`4 5 6 7 All`	Port number / All (All activity indicator)
		k-cathode-minus is on the top a-anode-plus is on the bottom	

Table 2: LED Indicator Pin Positions

Controller	LED Header	Pin Pair	Comment
9650SE-12ML	J7	: : : : :	Orientation Horizontal
		0 1 2 3 All	Port number/All (All activity indicator)
	J8	: : : : :	Orientation Horizontal
		4 5 6 7 All	Port number/All (All activity indicator)
	J9	: : : : :	Orientation Horizontal
		8 9 10 11 All	Port number/All (all activity indicator)
		k-cathode-minus is on the top a-anode-plus is on the bottom	
9650SE-16ML	J7	: : : : :	Orientation Horizontal
		0 1 2 3 All	Port number/All (All activity indicator)
	J8	: : : : :	Orientation Horizontal
		4 5 6 7 All	Port number/All (All activity indicator)
	J9	: : : : :	Orientation Horizontal
		8 9 10 11 All	Port number/All (all activity indicator)
	J1	: : : : :	Orientation Horizontal
		12 13 14 15 All	Port number/All (all activity indicator)
		k-cathode-minus is on the top a-anode-plus is on the bottom	

Warning: If using a chassis that has a common or shared LED ground, be sure to only connect LED cables to the anode pins on the controller. Do not connect any common ground to any cathode pins on the controller.

Step 5. Finishing Up the RAID Controller Installation

After you have installed the controller in the computer and attached appropriate cables to the controller and drives, complete the following steps to complete the hardware installation.

Check Installation and Close the Case

1 Verify that the cables do not interfere with the operation of any other components in the case or block the flow of cooling air.

2 Close the case and reconnect the power cables.

Step 6. Configure Your RAID Arrays

Turn to “First Time RAID Configuration” and “Configuring Units” in *3ware Serial ATA RAID Controller User Guide* for information about configuring RAID arrays. The user guide is included on the 3ware CD that came with your controller. It is also available from the 3ware website at http://3ware.com/support/userdocs.asp.

Chapter 3. Installing the Battery Backup Unit

The Battery Backup Unit (BBU) is an add-on that can be attached to a 3ware 9650SE RAID controller to supply power to the memory module from an attached battery pack in the event of a system power loss. This allows the controller to use write-caching for optimal performance and not be exposed to data loss in the event of a system power failure. When fully charged, the battery preserves the contents of the controller cache memory for a limited period of time (up to 72 hours). When power is restored, cached data is flushed to disks.

Caution: Both the 3ware RAID controller and the BBU are sensitive electronic equipment and can be damaged through electrostatic discharge. When installing the BBU on the controller, be sure you are grounded. Use a grounding strap, or work on an ESD-protective mat.

- Do not remove the 3ware controller or BBU from their protective bags until you are properly grounded.
- Handle the 3ware RAID controller by its edges or by the metal bracket at its end.
- Do not touch any pin, contact, lead, or component on the 3ware RAID controller.

Important: The battery is a heat-sensitive component. The cooler the battery, the longer the battery lasts. If possible, place the controller with the BBU in a slot with good airflow, away from components that generate the most heat in the system, such as video cards.

Note: The battery will drain if it is plugged into the BBU and there is no power to the unit. Wait to plug the battery into the BBU until the system is ready for use.

Tools and equipment required

- Slot-head screwdriver
- Grounding strap
- Battery Backup Unit (BBU) and battery
- 3ware 9650SE series controller

Installation Overview

The Battery Backup Unit (BBU) is comprised of two pieces: the battery module and the BBU control module.

These pieces attach to the controller at the points illustrated in Figures 19 through 21:

a Clips on the battery module match to slots on the half-height controllers (4-port and 8-port) and holes on the full-height controllers (12-port and 16-port).

b Connector on the BBU mates to receptacle on the controller.

c Post on the BBU mates to post hole on the controller.

Figure 19. Points of connection on the BBU

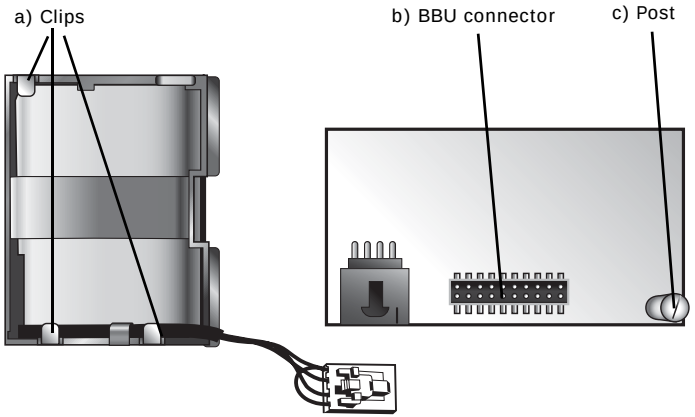


Figure 20. Points of connection on the half-height controller

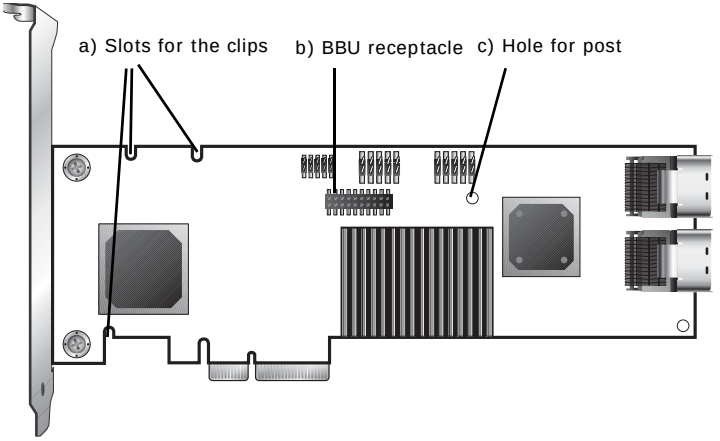
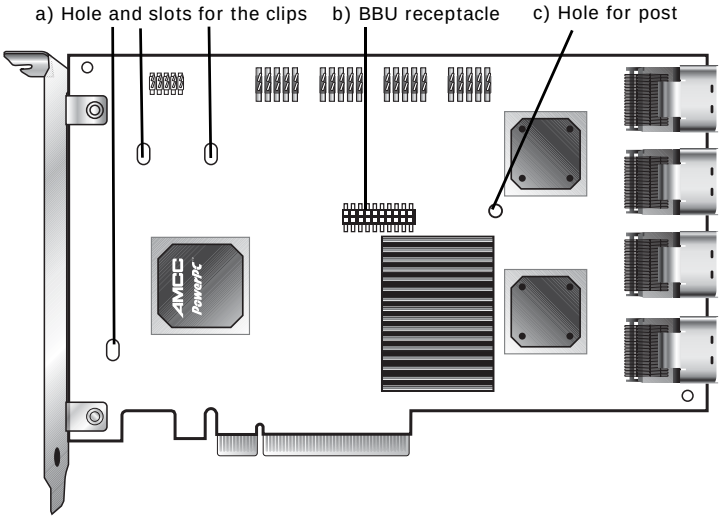


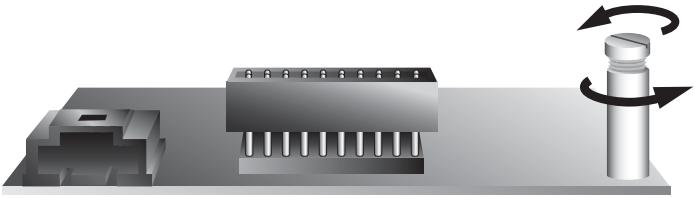
Figure 21. Points of connection on the full-height controller



Installation Instructions

1 Remove the screw head from the plastic post on the BBU control module and set it aside (you will reattach it soon.)

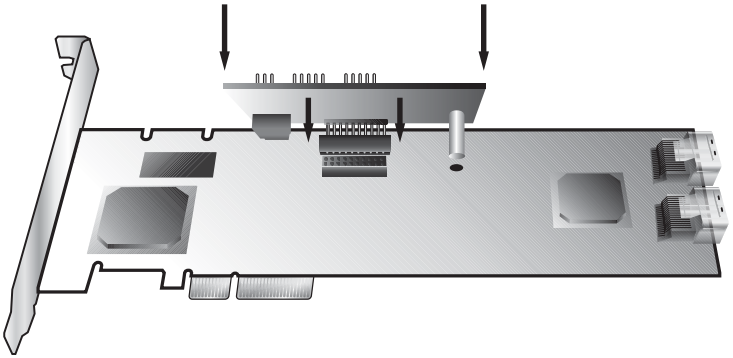
Figure 22. Removing the head from the plastic post



2 Position the BBU control module above the controller and align the BBU control module and the controller, making sure to:

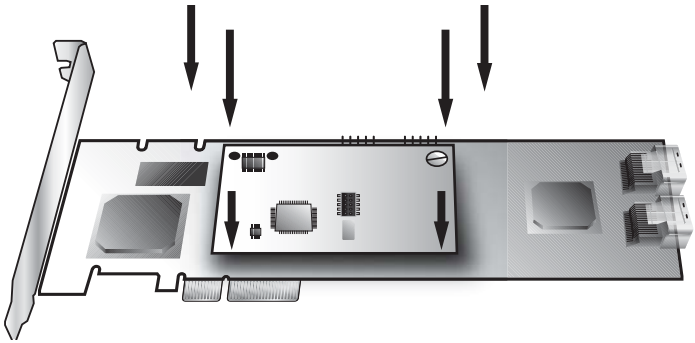
- Mate the connector on the BBU control module with the receptacle on the controller.
- Match the plastic post on the BBU with the hole on the controller.

Figure 23. BBU control module ready to connect to the controller



3 Press down gently until the BBU is seated.

Figure 24. BBU control module connected to the controller



4 Turn the controller over, insert the plastic screw head that you removed in step 1 into the plastic post, and tighten it gently but firmly. (Do not over-tighten!)

Warning! To avoid possible damage to the controller and the motherboard, make sure the module is connected in the proper orientation, and that the plastic post is attached.

When the plastic post and the connector are attached correctly, the module is in the correct orientation.

5 If you have a 4-port or 8-port 9650SE:

a Hook the clips on the top of the battery module over the slots on the top edge of the controller.

Figure 25. Clips on the battery module hook over slots on the top edge of the half-height controller

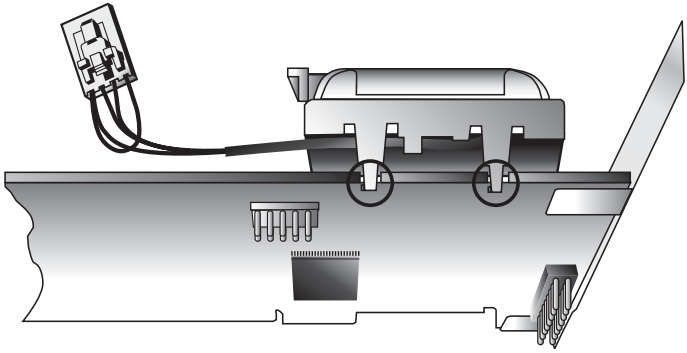
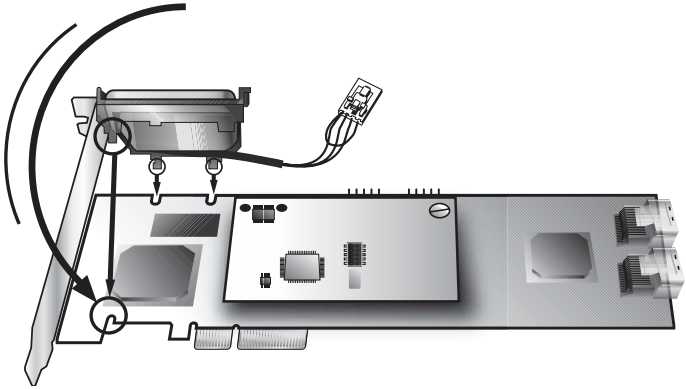
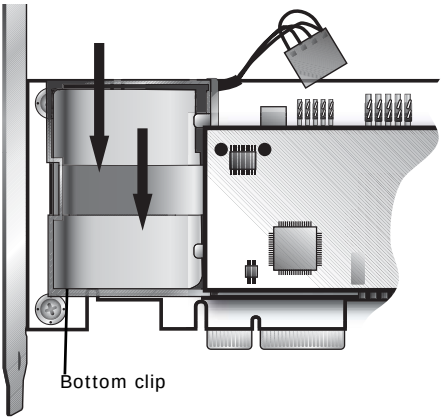


Figure 26. Attaching the battery module to the half-height controller



b Press down gently on the top of the battery unit so that the battery holder flexes slightly and the clip on the bottom slips over the slot on the bottom edge of the controller.

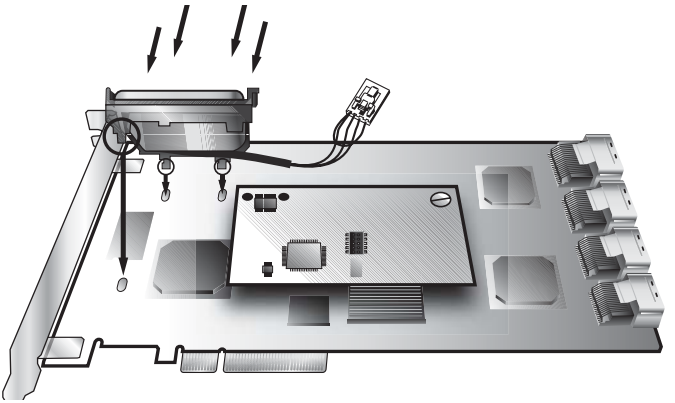
Figure 27. Pressing down gently so that the bottom clip can be inserted



If you have a 12-port or 16-port 9650SE:

a Insert the clips on the top of the battery module into the holes on the controller.

Figure 28. Attaching the battery module to the full-height controller

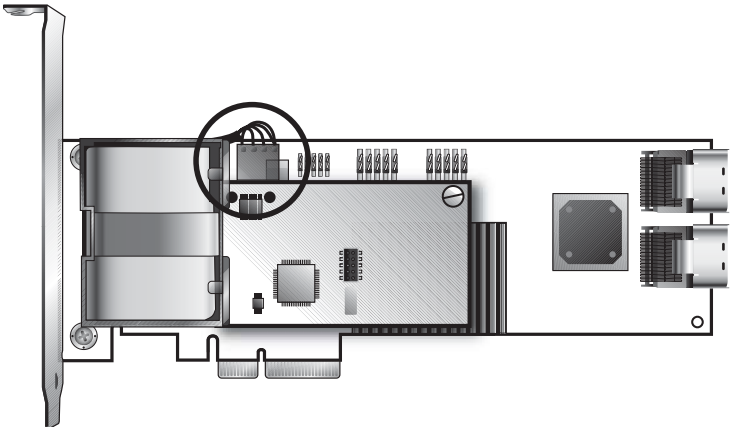


b Press down gently on the battery module until the bottom clip snaps into place in the lower hole.

3 Insert the battery power connector into the power receptacle on the BBU.

Note: The battery will drain if it is plugged in and there is no power to the unit. If the system will not be used right away, wait to do this step until the system is ready for use.

Figure 29. Battery power connector inserted in power receptacle



The controller is now ready to install in your system.

Replacing the Battery

The Battery Backup Unit (BBU) will last for many years. The battery has an expected life span of one to two years depending on usage.

You can check the current status of the battery, and test it. For details, see instructions in *3ware Serial ATA RAID Controller User Guide*.

Caution: There is a risk of explosion if the battery is replaced by an incorrect type. To obtain a replacement battery module, contact AMCC.

For proper battery disposal resources, contact RBRC, the Rechargeable Battery Recycling Corporation (www.rbrc.com).

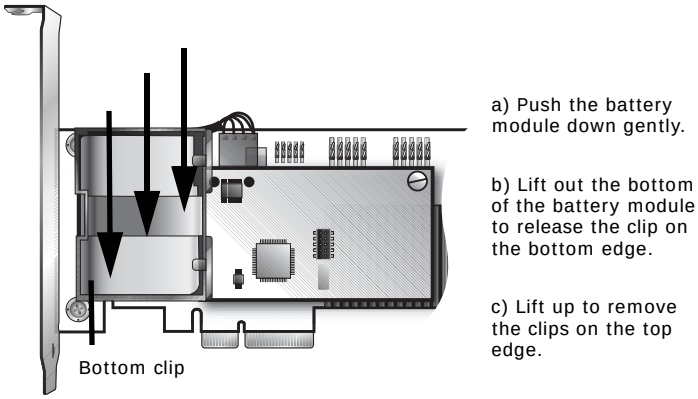
Vorsicht: Es entsteht Explosionsgefahr bei Auswechslung der Baterie mit einer des falschen Typs. Um eine Ersatzbaterie zu erhalten, wenden Sie sich an die AMCC.

Um Ressourcen zur korrekten Entsorgung der Baterie in Erfahrung zu bringen, wenden Sie sich an die RBRC (the Rechargeable Battery Recycling Corporation) (www.rbrc.com).

To replace the battery

1. Make sure the system is powered down, that you are grounded, and follow all appropriate safety procedures.
2. Remove the 3ware RAID controller from your system.
3. Press down on the top of the battery module to free the clip on the bottom of the module.
4. While pressing down on the top of the battery module, lift out the bottom of the battery module slightly.
5. Once the bottom of the module is free, slide the module up to release the clips on the top.

Figure 30. Removing the battery module



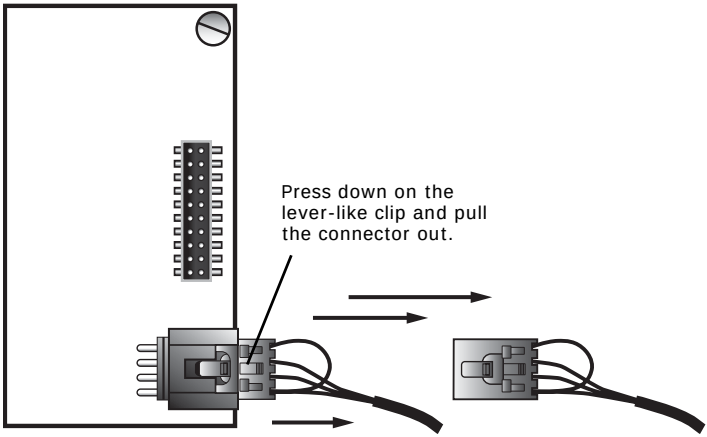
6 Disconnect the battery power cable from the BBU.

To do so, press down on the lever-like clip on the battery power connector and slide it out of the slot.

(If desired, you can remove the BBU control module to facilitate disconnecting the power cable.)

Figure 31 shows how removing the connector looks if you remove the BBU control module from the controller.

Figure 31. Removing the power cable from the BBU module



7 If you removed the BBU control module in step 6, reattach it now.

8 Insert the new battery module and cable it up.

9 Reinstall the 3ware RAID controller, close up your system, and restart it.

10 Run a battery test to compute the estimated battery capacity of this new battery.

You can run the battery test from the BBU page of either 3BM or 3DM 2, or by using the 3ware CLI. For detailed instructions, see the *3ware Serial ATA RAID Controller User Guide* and the *3ware Serial ATA RAID Controller CLI Guide*.

Appendix: Technical Support

For support, troubleshooting tips, frequently asked questions, software releases, and compatibility information related to 3ware RAID controllers, refer to:

- 3ware support page at: http://www.3ware.com/support/
- 3ware knowledgebase: http://www.3ware.com/KB/kb.asp
- 3ware software downloads: http://www.3ware.com/support/download.asp
- 3ware documentation: http://www.3ware.com/support/userdocs.asp
- 3ware Compatibility Lists: http://www.3ware.com/support/sys_compatibility_sata2.asp

For specific answers to questions or to give feedback about the product, visit our Web site at http://www.3ware.com/support and log in. AMCC also offers toll-free 1 (800) 840-6055 or 1 (408) 542-8800 direct phone support during normal business hours.

Sales and ordering information

For sales information, send an electronic mail message to 3wareSales@amcc.com.

Feedback on this manual

Your feedback is welcome. If anything in the guide seems unclear please let us know by using the email form at http://www.3ware.com/support.