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# RAID Array 3000 Storage Subsystem Second Controller Option

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Installation Guide

EK-SM3KC-IG. C01

**Digital Equipment Corporation**  
Maynard, Massachusetts

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**Third Edition, September, 1998**

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# Contents

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- Revision Record** ..... v
- About This Guide** ..... vii
- Second Controller Option**
  - 1.0 Introduction ..... 1
  - 2.0 Install Firmware Upgrade ..... 2
  - 2.1 Save Existing Configuration ..... 3
  - 2.2 Update Firmware ..... 4
    - 2.2.1 Update Firmware Using SWCC ..... 4
    - 2.2.2 Update Firmware Using Serial Interface ..... 5
  - 2.3 Shutdown RA3000 ..... 6
  - 2.4 Install Two SIMMs in Second Controller ..... 6
  - 2.5 Replace Existing Controller ..... 8
  - 2.6 Restore Configuration ..... 9
  - 2.7 Upgrade Firmware on Second Controller ..... 10
  - 2.8 Install Original Controller ..... 10

**Figures**

1	Second Controller Pedestal Slot Location .....	2
2	Update Firmware Command .....	3
3	Firmware Update Dialog Box .....	4
4	Saving the Existing Configuration .....	5
5	Saved Configuration .....	5
6	Insert Module into SIMM Connector .....	6
7	Pivot Module Down to Seat .....	6
8	Remove Controller from Top Slot.....	7
9	Restoring Configuration to New Controller.....	8
10	Restored Configuration Example .....	9

## *Revision Record*

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*This Revision Record provides a concise publication history of this guide. It lists the revision levels, release dates, and a summary of changes.*

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The following revision history lists all revisions of this publication and their effective dates. The publication part number is included in the Revision Level column, with the last entry denoting the latest revision. This publication supports the installation and configuration of the Second Controller Option into the StorageWorks RAID Array 3000 Pedestal and Controller Shelf storage subsystems.

<b>Revision Level</b>	<b>Date</b>	<b>Summary of Changes</b>
EK-SM3KC-IG. A01	January, 1998	Original release.
EK-SM3KC-IG. B01	May, 1998	Expands controller configuration procedure using Command Console Client (SWCC).
EK-SM3KC-IG. C01	Sept, 1998	Adds a procedure to upgrade firmware using serial interface.



## *About This Guide*

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*This section identifies the audience of this guide. It also describes its contents and includes a list of associated documents and the conventions.*

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### **Intended Audience**

This guide is intended for installers and operators of the RAID Array 3000 pedestal and controller shelf storage subsystems. Installing the subsystems and its components (options) requires a general understanding of basic SCSI terminology and product installation procedures.

### **Document Structure**

This guide contains the following sections:

**1.0 Introduction** – summarizes the content of this guide.

**2.0 Install Firmware Upgrade** – includes the steps required to install the second controller option into the pedestal or controller shelf enclosures. The Information includes saving the existing configuration using the SWCC console, upgrading the firmware, and installing the cache memory SIMM modules to accommodate the second controller.

## Associated Documents

In addition to this guide, the following documentation is useful to the reader:

**Table 1 Associated Documents**

<b>Document Title</b>	<b>Order Number</b>
<i>StorageWorks RAID Array 3000 Storage Subsystem Hardware User's Guide</i>	<i>EK-SMCPO-UG</i>
<i>StorageWorks RAID Array 3000 Controller Shelf Hardware User's Guide</i>	<i>EK-SMCPQ-UG</i>
<i>StorageWorks RAID Array 3000 Configuration and Maintenance Guide</i>	<i>EK-SMCS2-UG</i>
<i>Installation Instructions for the RAID Array Replacement Controller – SWXRC-03</i>	<i>EK-SMCPL-PN</i>
<i>RAID Array 3000 Getting Started for Windows NT-Intel Installation Guide</i>	<i>AA-RACZA-TE</i>
<i>RAID Array 3000 Getting Started for Windows NT-Alpha Installation Guide</i>	<i>AA-RACUA-TE</i>

## Conventions

**Table 2 Style Conventions**

<b>Style</b>	<b>Meaning</b>
plain monospace type	Text
<b>boldface type</b>	For the first instance of terms being defined in text, or both.
<i>italic type</i>	<i>For emphasis, manual titles, chapter summaries, keyboard key names.</i>

## Support and Services

### Who to contact in the Americas

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<b>Information and Product Questions:</b>	Local Sales Office / StorageWorks Hotline 1-800-786-7967
<b>Installation Support:</b>	Contact the DIGITAL Distributor where the Storage Solution was Purchased / Local Digital Sales Office.
<b>DIGITAL Multivendor Customer Service (MCS):</b>	
<b>Installation</b>	Contact the DIGITAL Customer Support Center (CSC).
<b>Warranty</b>	Contact the DIGITAL Customer Support Center (CSC) for warranty service after solution is installed and operating.
<b>Remedial</b>	Contact the DIGITAL Customer Support Center (CSC) <b>Note:</b> A Service Contract is recommended when the equipment is out of warranty. Contact the local DIGITAL Sales Office.
<b>Customer Support Center (CSC)</b>	1 800-354-9000

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### Who to contact in Europe

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<b>Information and Product Questions:</b>	Contact the DIGITAL Distributor or reseller
<b>Installation Support and Installation:</b>	Contact the DIGITAL Distributor or reseller from whom the Storage Solution was purchased.
<b>For Warranty Service</b>	See the Warranty Card packaged with the product.
<b>For Remedial Service</b>	Contact the DIGITAL Distributor or reseller from whom the Storage Solution was purchased. <b>Note:</b> A Service Contract is recommended when the equipment is out of warranty.

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### Who to contact in Asia Pacific

For all services, contact the DIGITAL Distributor or reseller from whom the equipment was purchased



# *Second Controller Option*

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*This guide describes how to install a second RAID controller in the RAID Array 3000 pedestal or controller shelf. The second controller option adds a fail/safe feature to your storage subsystem.*

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## **NOTE**

The following second controller option installation and configuration procedure applies to both the desk-side pedestal and the rack-mount controller shelf. For clarity, only the pedestal is illustrated in this procedure.

## **1.0 Introduction**

The controller option adds a second (redundant) controller unit to your subsystem to preserve the integrity of data should the first controller malfunction. The second controller is installed directly below the existing controller in the bottom controller slot of the RAID Array 3000 pedestal (see Figure 1) or the rack-mount controller shelf version of the subsystem.

The installation procedure consists of adding two SIMM memory modules to the redundant controller and, depending on the option kit you are installing (see inventory below), one or two SIMM modules to the existing controller. Following the memory upgrade, you must upgrade the firmware in both controllers, seat the devices in their respective controller slots and configure the subsystem to accommodate a redundant controller.

Perform an inventory of the items contained in the second controller kit option. The kit should contain the following:

RAID Array 3000 Controller

For option kit DS-HSZ22-AA, 3 SIMMs

For option kits DS-HSZ22-AB, 4 SIMMs

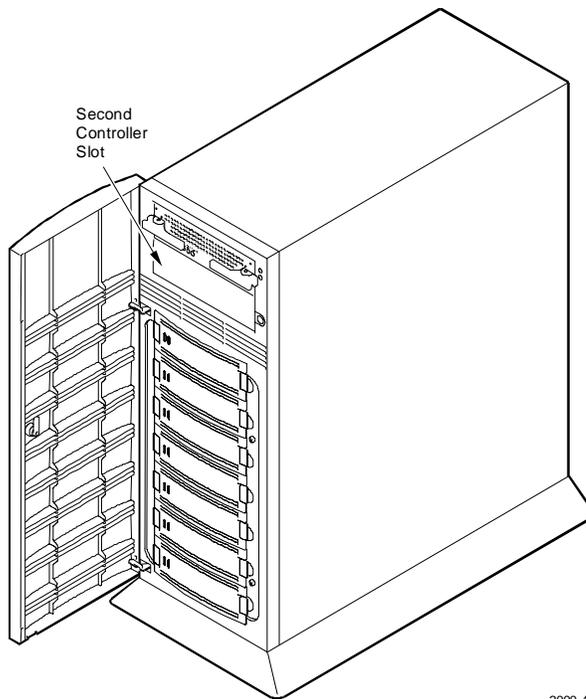
CD with new Firmware

Model Label

Warranty Card

This Guide

**Figure 1 Second Controller Pedestal Slot Location**



3000-48

## 2.0 Install Firmware Upgrade

### CAUTION

To prevent an electrical discharge from damaging the SIMMs, always wear an ESD wrist or foot strap connected to a suitable ground when handling the memory modules.

### NOTE

You can upgrade your firmware using the SCSI or network connection methods. These methods provide the fastest way to upgrade your firmware. To update your controller's firmware, proceed as follows.

## 2.1 Save Existing Configuration

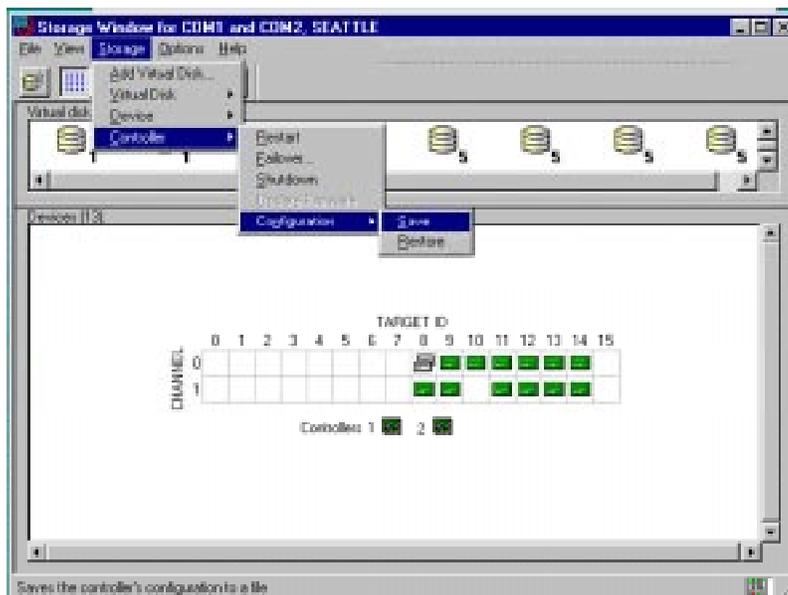
### NOTE

You must save the subsystem configuration using the Command Console Client (SWCC) before performing the installation procedure. Otherwise, the RAID controller may lose your configuration.

To save your current configuration:

Select the **Storage** pull-down menu from the Toolbar (see Figure 2), click on **Controller**, select **Configuration**, and then **Save**.

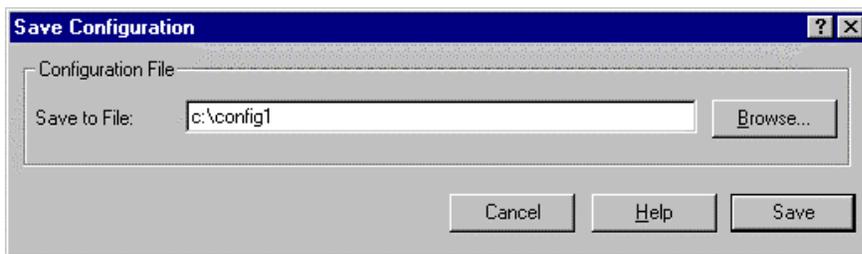
Figure 2. Saving the Existing Configuration



A saved configuration screen with a “Save to File” field appears as shown in Figure 3. The example below lists the file name as `c:\config1`.

Enter your file name in the “Save to File” field and click on **Save**

**Figure 3. Saved Configuration**



## 2.2 Update Firmware

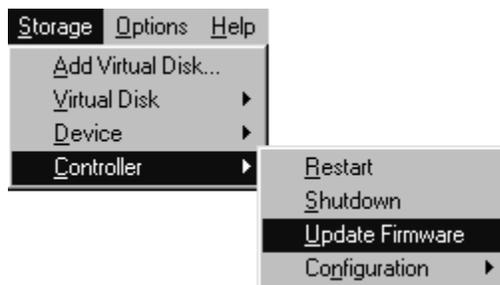
### CAUTION

If the systems disk is on the RA3000, firmware cannot be upgraded with SWCC. Establish a temporary system disk on a disk drive outside the RA3000 and proceed with these instructions or follow the alternative shown in Section 2.2.2

### 2.2.1 Update Firmware Using SWCC

Start SWCC and choose **SCSI** or **Network Connection**. From the **Storage** menu (see Figure 4), select **Controller**, and then select **Update Firmware**.

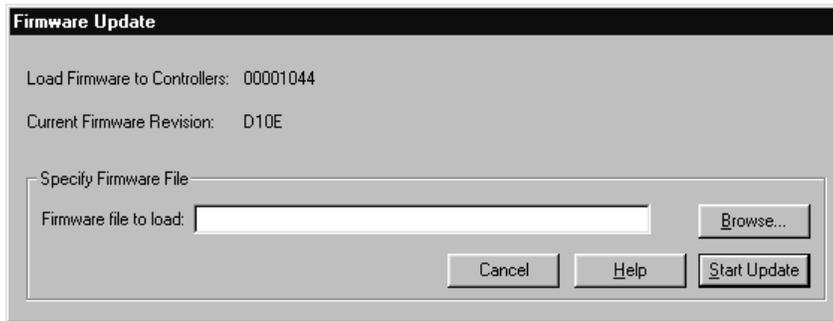
**Figure 4 Update Firmware Command**



A window will appear (see Figure 5) asking you to specify the firmware file that you want to load. This file resides on the CD supplied with the controller kit option. You can easily identify Firmware software by its `.fdi` extension. Enter the `.fdi` file name (for example, `D:\firmware\xxx.fdi`), then click **Start Update**. Upon completion

of the Firmware update, the system will automatically reboot and update the controller's firmware.

**Figure 5. Firmware Update Dialog Box**



## 2.2.2 Update Firmware Using Serial Interface

### NOTE

Follow this procedure only when the host operating system is installed on the RA3000.

1. Properly shutdown your host system
2. Using either a laptop computer or a computer other than that attached to the RA3000, connect a serial cable between the COM port on that machine and the corresponding serial port (CTR1 or CTR2) for the controller on the RA3000.
3. Start a terminal emulator session. On Windows NT, we suggest the HyperTerminal emulator. Settings to be used are 9600 baud, 8 bits, No Parity, 1 stop bit, XON/XOFF.
4. To get the controller's attention press Escape/& (escape key, shift key, number 7). The controller should respond with a banner stating DEC HSZ22 DEC Monitor Utility, followed by the firmware revision number. You will not actually be using this utility to upgrade the firmware, but knowing that it is operational makes the next step easier.
5. Reset the controller using the Reset button on the front. You should see a "**Flash Boot Utility...**" banner, followed by instructions to type CTRL/C to abort. Press

CTRL/C to abort the load sequence. A "**FLASH Boot Utility Options**" menu should be displayed.

6. Choose menu item (2), Change serial baud rate. Select 38400. When presented with the "Please change your baud rate and press RETURN" message, do so from within HyperTerminal via the **File\Properties** menu, then choose '**Configure...**' If there is no response from the utility after changing the baud rate, proceed with Step 6.
7. After changing the baud rate, you may have to close and re-enter HyperTerminal. Press the RETURN key after HyperTerminal restarts. You should see **the FLASH Boot Utility Option** menu again.
8. Select menu item "**1) Download new Firmware Image**". Using the Transfer menu in HyperTerminal, choose **Send Text File** and send the firmware. You should see a "**Receiving code for System Version <ver>**" message, followed by a series of \ | / - characters cycling at the end of the line. At 9600 baud, the download will take between 45-60 minutes. At 38400, it should take around 10-12 minutes. At completion, you'll see the **FLASH Programming complete** message, followed by the **FLASH Boot Utility Options** menu again.
9. Select item 9, **Restart Controller**. You'll be instructed to reset the baud rate back to 9600, which you'll again do from the HyperTerminal **File \Properties \Configure...** menu. As before, you'll probably have to exit and restart HyperTerminal to get any response. Press Enter when Hyperterminal restarts.
10. Your firmware should now be upgraded.

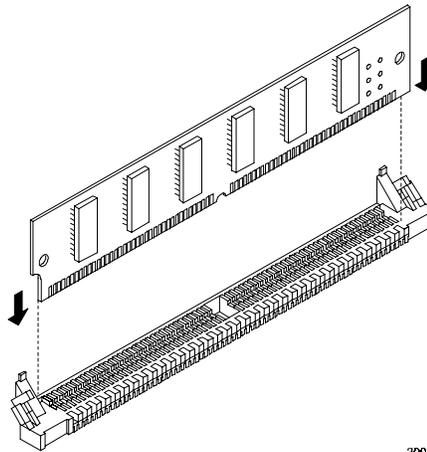
### 2.3 Shut down RA3000

1. Ensure that both host ports are in a quiescent state (no I/O activity).
2. Shut down the Host System.
3. Issue a "shutdown" command from the SWCC Console to the pedestal (or controller shelf) controller.
4. Power **OFF** the pedestal or controller shelf as applicable.

### 2.4 Install Two SIMMs in second controller

1. Install two of the SIMM modules into the second controller (make sure all SIMM modules are of the same type) by aligning the connector pins and inserting the modules into the SIMM module connectors as shown in Figure 6.

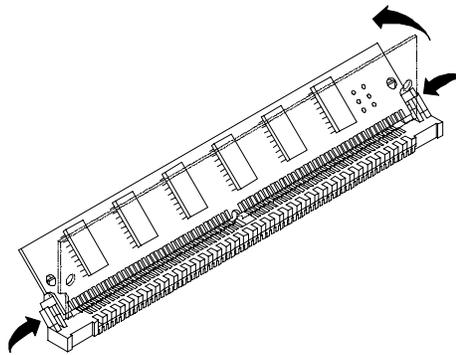
**Figure 6. Insert Module into SIMM Connector**



3000-32

2. Ensure the module is firmly seated and then gently pivot it toward the controller board until it snaps into place as shown in Figure 7.

**Figure 7. Pivot Module Down to Seat**

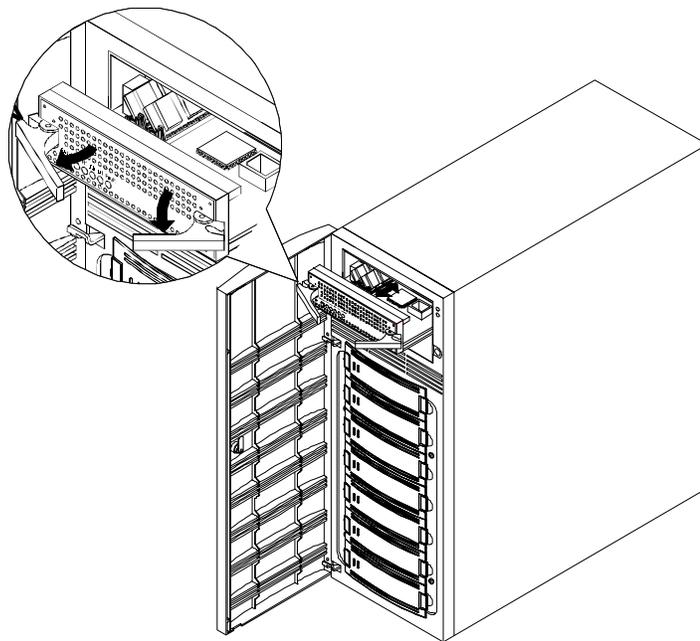


3000-33

## 2.5 Replace Existing Controller

1. Replace the existing controller (see Figure 8 to remove) with the new controller.

**Figure 8. Remove Controller from Top Slot**



3000-14

### NOTE

Ensure you install the new controller in the same slot as the existing controller removed in step 1 above. Do not leave the existing controller in the pedestal (or controller shelf) while performing the following step.

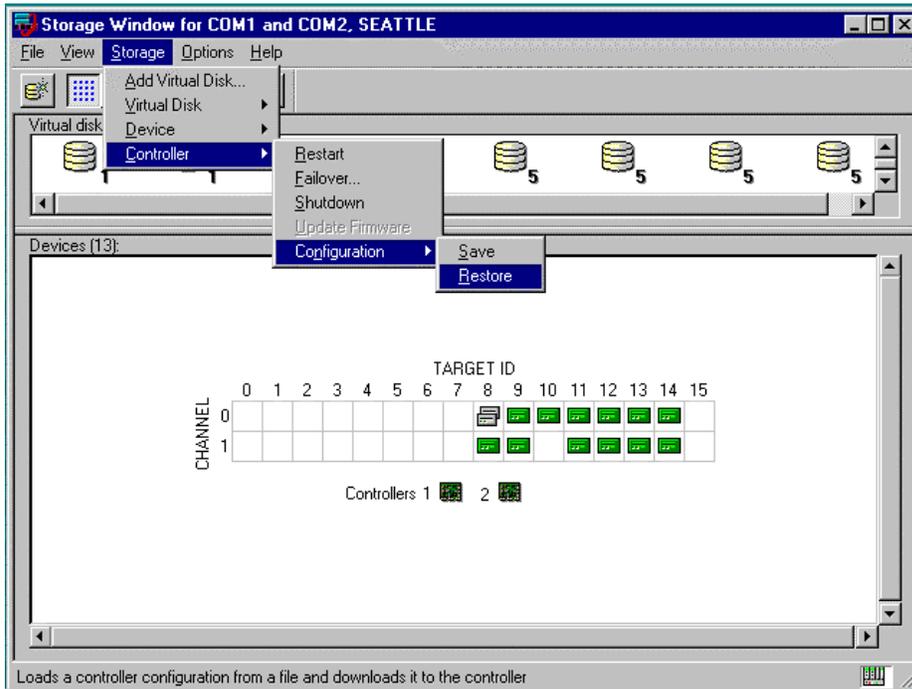
2. Power up the system and proceed to the following section to restore the configuration on the new controller.

## 2.6. Restore Configuration

To restore your configuration to the new controller:

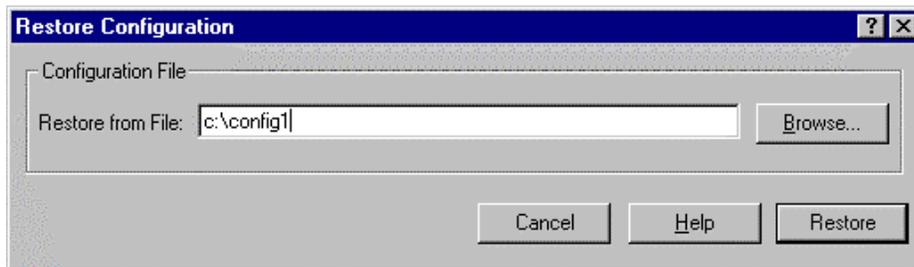
1. Restart SWCC in the “Serial Mode”. (See section 1.0 in your RA3000 Getting Started Manual.)
2. Select the **Storage** pull-down menu from the Toolbar, then choose **Controller**.
3. From the **Controller** pull-down menu (Figure 9), select **Configuration**, and then **Restore**.

Figure 9. Restoring Configuration to New Controller



The saved configuration screen with a “Restore from File” field appears as shown in the example of Figure 10.

**Figure 10. Restored Configuration Example**



**NOTE**

Restoring the configuration in the following step may take up to 5 minutes. Be patient.

4. Enter the file name that you saved in Section 2.1 and click on **Restore**.

### 2.7 Update Firmware on Second Controller

1. After configuration has been restored, update firmware on the second controller. Repeat the procedure in Section 2.2.1 or 2.2.2
2. After the configuration has been restored and firmware has been updated, power down the system.

### 2.8 Install Original Controller

1. If installing option kit DS-HSZ22-AA, add the second SIMM to the original controller. If installing option kit DS-HSZ22-AB, replace the existing SIMM with the two remaining SIMMs supplied with the kit. (See Section 2.4 for instructions.)
2. Install the second controller into the pedestal (or controller shelf) and power up the system. The system is now in the dual-redundant operating mode.
3. Locate the second serial cable that came in the second controller kit. Connect this cable to the second controller serial port on the RA3000 and to COM 2 port and restart SWCC in serial mode. You now have two serial connections.
4. To check that the controller pair is in redundant mode, click on the **Controller** icon. Properties for both controllers should be visible. Firmware revision of both controllers must be identical. If either controller is shown in gray, refer to the RA3000 Getting Started manual, Chapter 4 for more detailed instructions.

## *Reader's Comments*

**Manual Order Number:**  
**EK-SM3KC-IG. C01**

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<b>Manual Rating</b>	Excellent	Good	Fair	Poor
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Organization (logical sequence of information)	[ ]	[ ]	[ ]	[ ]
Layout (easy to follow subject matter)	[ ]	[ ]	[ ]	[ ]
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