KCRCM AlphaServer Remote Console Module

Installation and User's Guide

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Any changes or modifications made to this equipment may void the user's authority to operate this equipment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experience radio/TV technician for help.

The KCRCM interconnect cable as supplied with the unit may not be substituted, nor altered or modified in any way.

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Preface

Introduction

This guide explains the installation and operation of the KCRCM AlphaServer Remote Console Module. This option, known as the "RCM," is used to monitor and control an AlphaServer system. The RCM option is installed into an EISA/ISA slot and allows the system administrator to connect to a managed system either locally or through a modem, using a serial terminal or serial terminal emulator.

From the serial terminal, the administrator invokes a special command interface that consists of firmware that resides on an independent microprocessor. This firmware is not part of the SRM console firmware. The administrator enters RCM console commands to monitor the power supplies, temperatures, and fans, and reset, halt, and power the system on or off. No interaction with the SRM firmware or operating system is required to perform these functions.

A Hayes-compatible modem, capable of 14,400 bits/s or better, is required for monitoring the system remotely. A list of modems that have been qualified to operate with the RCM is in Chapter 3.

This guide does not cover all possible server system configurations. Refer to your system Owner's Guide for details on how to gain access to your server's EISA/ISA bus slots.

Audience

This guide is intended for system administrators and others who are responsible for installing options and managing the following systems:

- AlphaServer 1000 and 1000A
- AlphaServer 2000
- AlphaServer 2100, 2100 RM, 2100A and 2100A RM

Basic familiarity with modems and paging services is required.

Terminology

This guide uses the term “RCM” to refer to the KCRCM AlphaServer Remote Console Module.

For More Information

The RCM is programmed to work with a variety of Hayes-compatible modems. Modems are tested constantly. As information on using different modems with RCM becomes available, it will be posted on the Internet at the following location:

ftp://ftp.digital.com/pub/Digital/Alpha/misc/rcm_modems.html

Documentation for AlphaServer systems that support the RCM option is listed below.

Document Title	Part Number
AlphaServer 1000 Owner’s Guide	EK-DTLSV-OG
AlphaServer 1000A Owner’s Guide	EK-ALPSV-OG
AlphaServer 2000 Owner’s Guide	EK-400MP-IN
AlphaServer 2100 Owner’s Guide	EK-KN450-OP
AlphaServer 2100 RM Series Installation and Owner’s Guide	EK-KN450-RM
AlphaServer 2100A Owner’s Guide	EK-2100A-OP
AlphaServer 2100 A RM Series Installation and Owner’s Guide	EK-2100A-RM
AlphaServer 2000/2100/2100A Firmware Reference Guide	EK-AXPFW-RM

1
Remote Console Module Overview

This chapter provides information about the KCRCM-*xx* Remote Console Module Hardware Kit and the KCRCM module. Read this information before you begin the installation.

Parts List for AlphaServer 1000/1000A Installation

The following components are needed to install the KCRCM module on AlphaServer 1000 and 1000A systems.

Component	Part Number
Remote console module	54–24655-01
External power supply	See Power Supply Variants table.
16-pin interconnect cable	17-04334-01
12-pin DC enable cable	17-04126-02
RCM to system COM1 cable	17-01364-03
H8571-J MMJ to PC DB9 adapter	12-23599-08
KCRCM modem cable	17-04322-01

Parts List for AlphaServer 2x00 Installation

The following components are needed to install the KCRCM module on AlphaServer 2000 2100, 2100 RM, 2100A, and 2100A RM systems

Component	Part Number
Remote console module	54–24655-01
External power supply	See power supply table.
16-pin interconnect cable	17-04089-02
RCM to system COM1 cable	17-01364-03
H8571-J MMJ to PC DB9 adapter	12-23599-08
KCRCM modem cable	17-04322-01
2-wire power controller cable	17-04164-01

Power Supply Variants

KCRCM Kit	Description	Part Number
KCRCM-AA	110 V North America	30-46485-01
KCRCM-BA	220 V Europe	30-46485-02
KCRCM-CA	220 V United Kingdom	30-46485-04
KCRCM-DA	240 V Australia/New Zealand	30-46485-03

Optional UPS

You may wish to include an uninterruptible power supply (UPS) as part of the installation to provide backup power for a modem and the controller in case of a power failure. To purchase a UPS, call 1-800-DIGITAL.

KCRCM Module Specifications

Attribute	Specification
Slot requirement	One industry-standard 8-bit ISA bus slot
On-board processor	20 MHz Microchip PIC16C73
Internal monitoring sensors	System temperature/power present
External power	8 VDC–12 VDC
Operating current	500 mA maximum
Power supply noise/ripple	50 mV maximum p-p
Relative humidity	Operating: 20% to 80% Nonoperating: 5% to 90%
Temperature range	Operating: 10°C to 40°C (54°F to 104°F) Nonoperating: -10°C to 50°C (14°F to 122°F)
Altitude	Operating: 3,048 m (10,000 ft) Nonoperating: 9,144 m (30,000 ft)

2
Installing the Remote Console Module

This chapter describes how to install the KCRCM AlphaServer Remote Console Module and make internal and external cable connections. It is organized into the following sections:

- Installing the RCM
- Making internal connections
- Making external connections
- Verifying the installation

Note

The internal connections vary for different AlphaServer models. Be sure to refer to the description and illustration of the internal connections for your model.

Installing the KCRCM Module

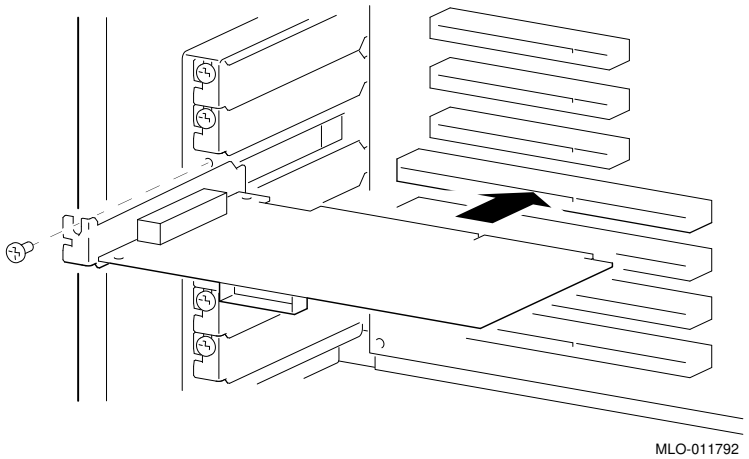
Caution

Static electricity can destroy the circuits in the system or RCM. Discharge static electricity by touching the metal chassis of the system before touching any part of the system backplane or motherboard, or the RCM. It is recommended that you use an anti-static strap.

The AlphaServer system in which the RCM is installed must have one open or unused EISA/ISA bus slot. The installation requires a Phillips screwdriver.

1. The system's console terminal must be set to 9600 baud. Reset the port and terminal to 9600 baud, if necessary.
2. Power down the system, unplug the power cord or cords, and remove any covers or panels necessary to gain access to the EISA/ISA bus expansion slots. Refer to your system Owner's Guide, if necessary.
3. Install the RCM in the designated EISA/ISA slot.
   - Remove the bulkhead cover from the designated EISA/ISA slot.
   - Install the RCM and secure it with the screw to ensure proper electromagnetic interference (EMI) and electrostatic discharge (ESD) characteristics.

Figure 2-1 Module Installation

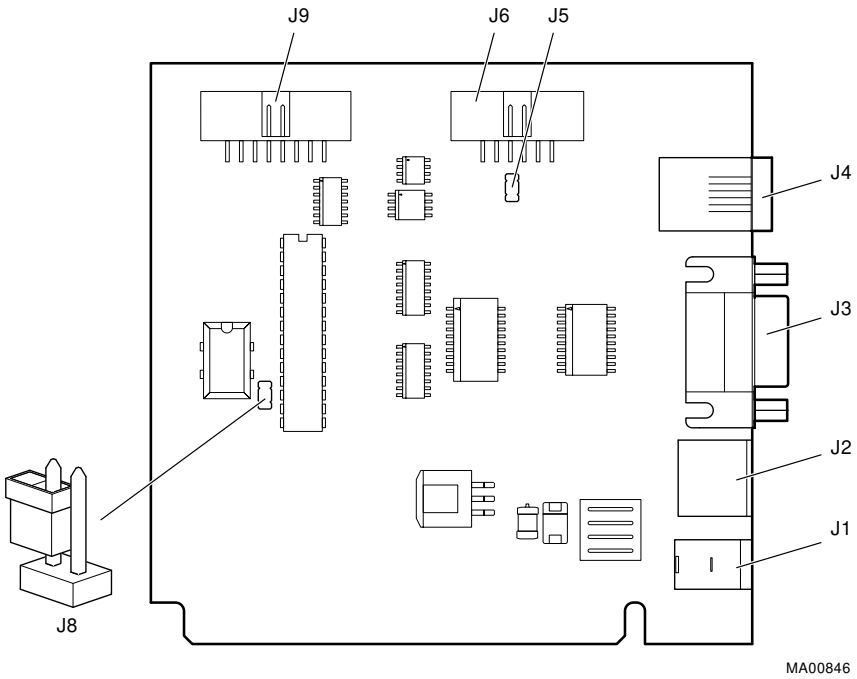


Making Internal Connections

Note

Refer to the description and illustration for your system on the following pages to make the internal cabling connections. Refer to Figure 2-2 for the locations of connectors and jumpers on the RCM.

Figure 2-2 Connector and Jumper Locations on RCM



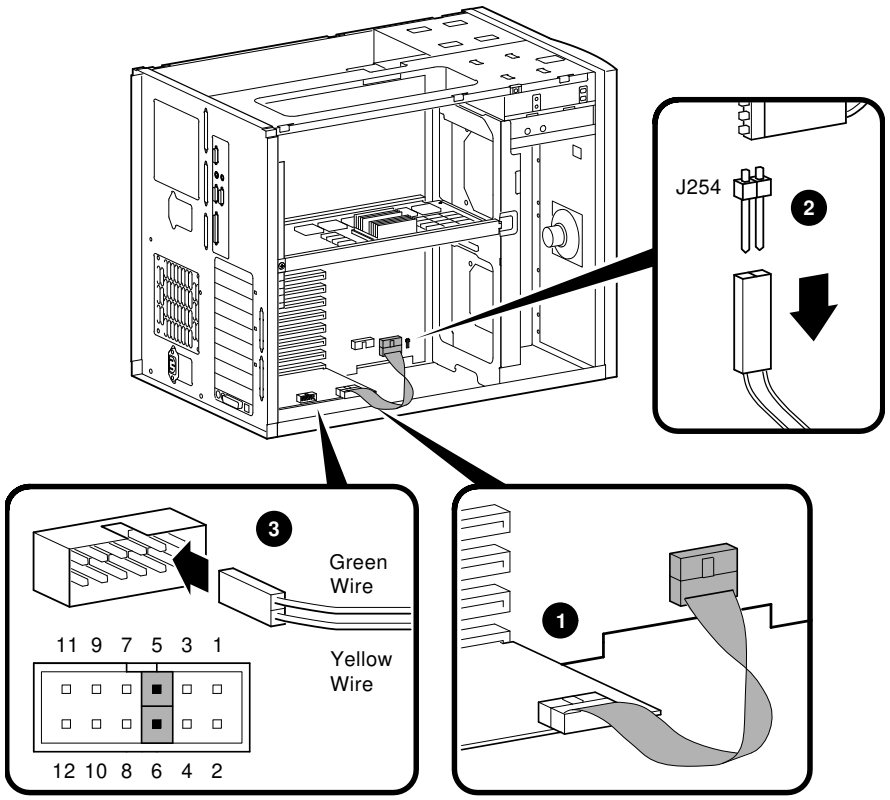
J1 External power supply connector
J2 Modem connector
J3 Local console terminal connector
J4 System COM1 connector
J5 External power-down disable jumper
J6 12-pin DC enable cable connector
J9 16-pin interconnect cable connector
J8 Password and option reset jumper

AlphaServer 1000 Internal Connections

1. Connect one end of the 16-pin interconnect ribbon cable (17-04334-01) to the 16-pin J9 connector on the RCM. See **1** in Figure 2-3.
2. Plug the other end of the 16-pin interconnect ribbon cable into the motherboard. See **1**.
3. Disconnect the 2-wire connector (J254) from the motherboard. See **2.**

   Plug the 2-wire connector, which you disconnected in step 3, into the 12-pin J6 connector on the RCM. See **3**. Be sure to plug the green wire into pin number 5 and the yellow wire into pin number 6.

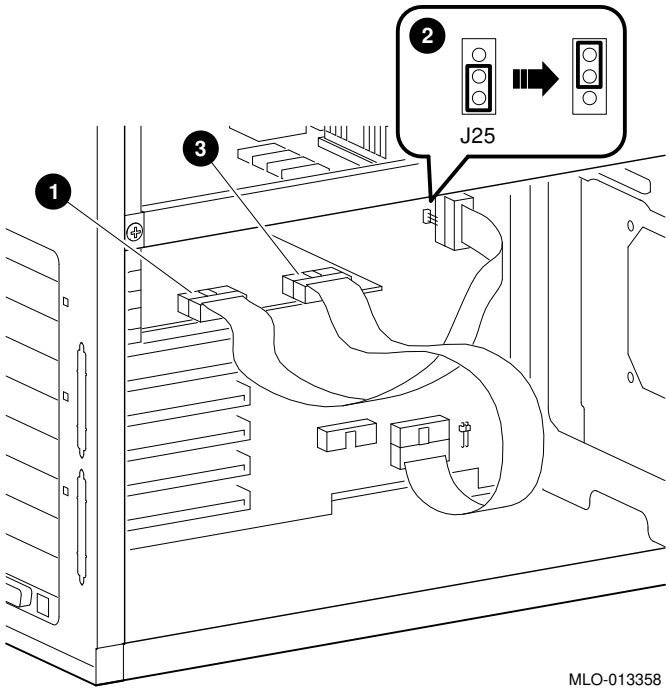
Figure 2-3 AlphaServer 1000 Internal Connections



AlphaServer 1000A Internal Connections

1. Connect one end of the 12-pin DC enable cable (17-04126-02) to the 12-pin J6 connector on the RCM. See **1** in Figure 2-4.
2. Plug the other end of the 12-pin cable into the DC enable connector on the motherboard (at J17). See **1**.
3. Move the DC enable jumper J25 (3-pin jumper) on the motherboard from the bottom 2 pins to the top 2 pins. This activates the RCM DC enable connector. See **2**.
4. Connect one end of the 16-pin interconnect ribbon cable (17-04334-01) to the 16-pin J9 connector on the RCM. See **3**.
5. Plug the other end of the 16-pin interconnect ribbon cable into the motherboard (at J54). See **3**.

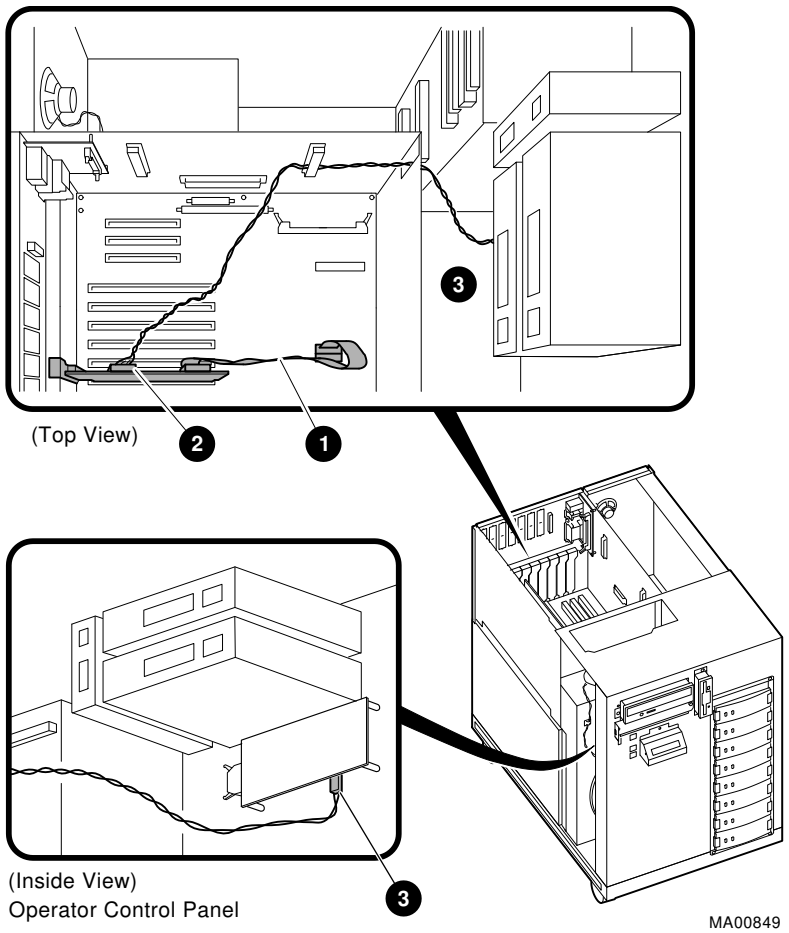
Figure 2-4 AlphaServer 1000A Internal Connections



AlphaServer 2000 Internal Connections

1. Connect one end of the 16-pin interconnect ribbon cable (17-04089-02) to the 16-pin J9 connector on the RCM. See **1** in Figure 2-5.
2. Plug the other end of the 16-pin interconnect ribbon cable into the 16-pin connector on the system backplane. See **1**.
3. Connect the 2-wire power controller cable (17-04164-01).
    - Plug the 12-pin connector end of the 2-wire cable into connector J6 of the RCM. See **2**.
    - Route the 2-wire power controller cable as shown in Figure 2-5.
    - Remove the 2-pin jumper on the connector on the operator control panel.
    - Plug the other end of the 2-wire power controller cable into the connector on the operator control panel. See **3**.

Figure 2-5 AlphaServer 2000 Internal Connections



AlphaServer 2100 Internal Connections

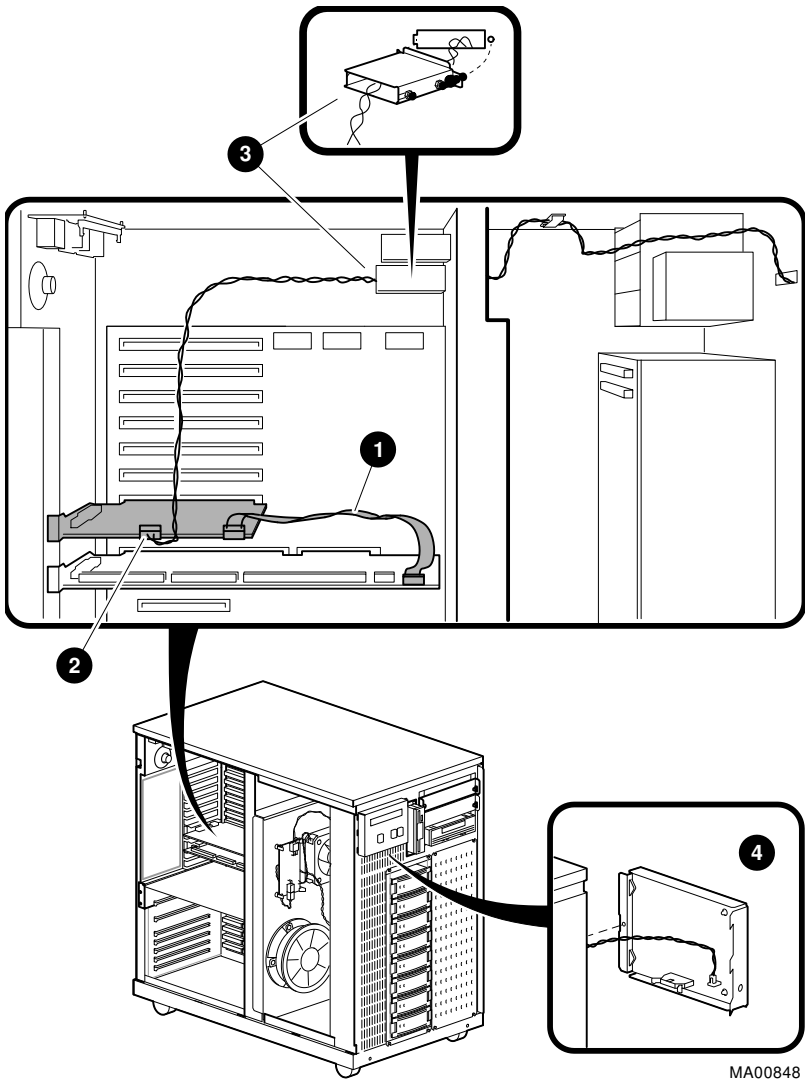
1. Connect one end of the 16-pin interconnect ribbon cable (17-04089-02) to the 16-pin J9 connector on the RCM. See **1** in Figure 2-6.
2. Plug the other end of the 16-pin interconnect ribbon cable into the 16-pin connector on the standard I/O module. See **1.**

Note

Some early model AlphaServer 2100 systems do not support the external power-down feature. If your system does not have a 2-pin jumper on the connector on the operator control panel, skip step 3.

3. Connect the 2-wire power controller cable (17-04164-01):
   - Plug the 12-pin connector end of the 2-wire cable into connector J6 of the RCM. See **2.**
   - Thread the 2-wire cable through the cable router box. See **3**.
   - Remove the 2-pin jumper on the connector on the operator control panel.
   - Plug the other end of the 2-wire power controller cable into the connector on the operator control panel. See **4.**

Figure 2-6 AlphaServer 2100 Internal Connections



AlphaServer 2100 RM Internal Connections

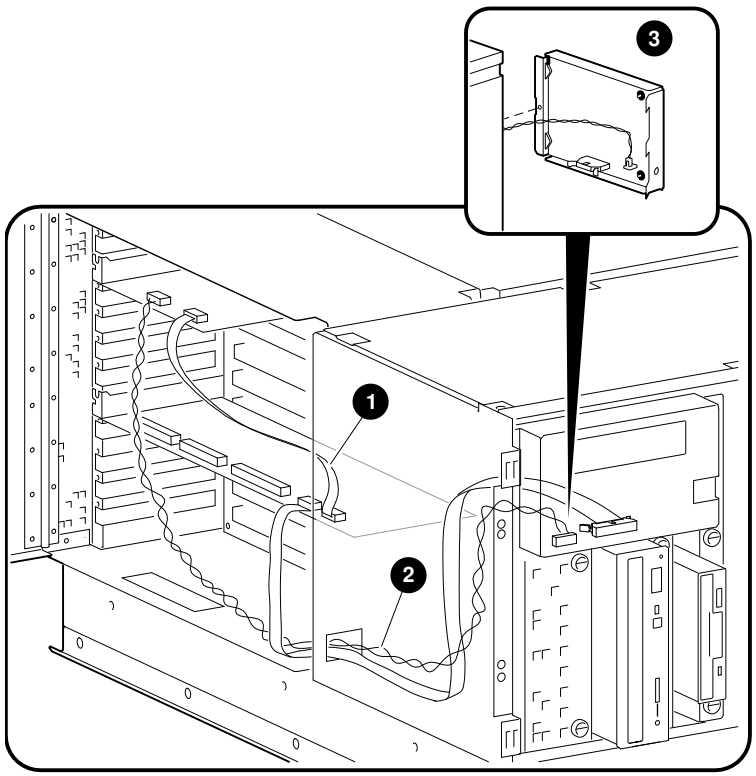
1. Connect one end of the 16-pin interconnect ribbon cable (17-04089-02) to the 16-pin J9 connector on the RCM. See **1** in Figure 2-7.
2. Plug the other end of the 16-pin interconnect ribbon cable into the 16-pin connector on the standard I/O module. See **1.**

Note

Some early model AlphaServer 2100 RM systems do not support the external power-down feature. If your system does not have a 2-pin jumper on the connector on the operator control panel, skip step 3.

3. Connect the 2-wire power controller cable (17-04164-01):
   - Plug the 12-pin connector end of the 2-wire cable into connector J6 of the RCM.
   - Route the 2-wire cable along the same path as the operator control panel cable. See **2.**
   - Remove the 2-pin jumper on the connector on the operator control panel.
   - Plug the other end of the 2-wire power controller cable into the connector on the operator control panel. See **3.**

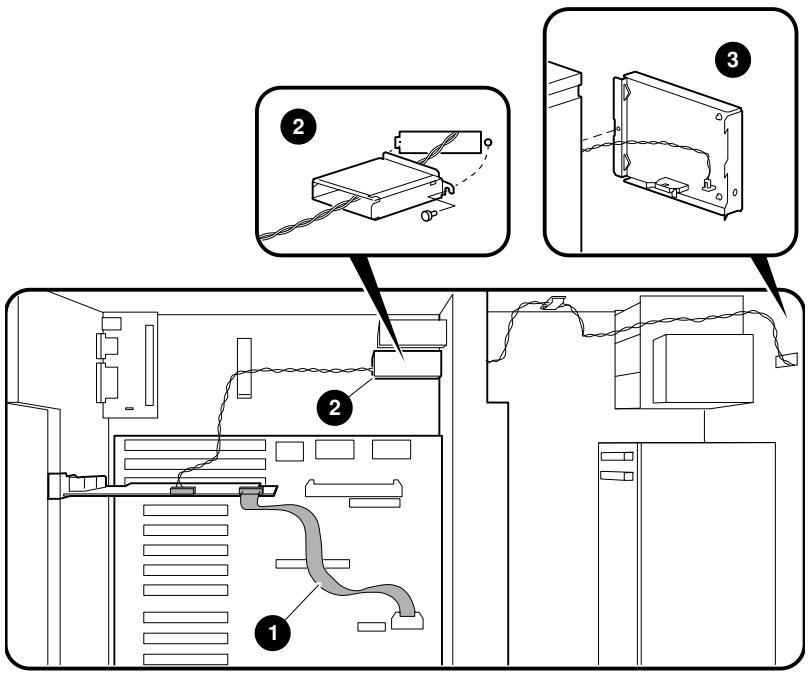
Figure 2-7 AlphaServer 2100 RM Internal Connections



AlphaServer 2100A Internal Connections

1. Connect one end of the 16-pin interconnect ribbon cable (17-04089-02) to the 16-pin J9 connector on the RCM. See **1** in Figure 2-8.
2. Plug the other end of the 16-pin interconnect ribbon cable into the 16-pin connector on the system backplane. See **1**.
3. Connect the 2-wire power controller cable (17-04164-01):
    - Plug the 12-pin connector end of the 2-wire cable into connector J6 of the RCM.
    - Thread the 2-wire cable through the cable router box. See **2**.
    - Remove the 2-pin jumper on the connector on the operator control panel.
    - Plug the other end of the 2-wire power controller cable into the connector on the operator control panel. See **3**.

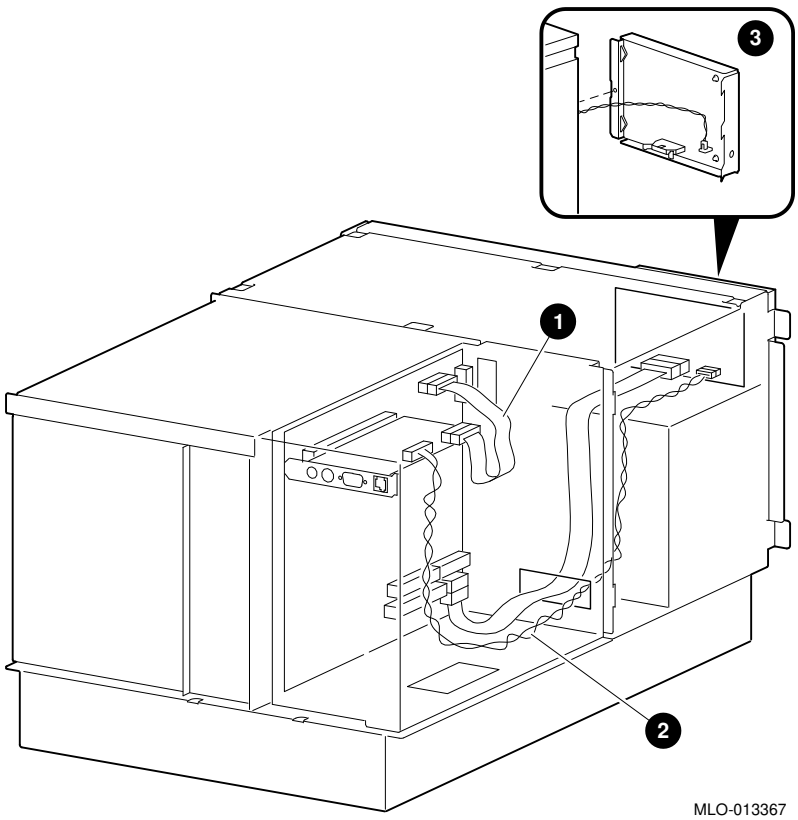
Figure 2-8 AlphaServer 2100A Internal Connections



AlphaServer 2100A RM Internal Connections

1. Connect one end of the 16-pin interconnect ribbon cable (17-04089-02) to the 16-pin J9 connector on the RCM. See **1** in Figure 2-9.
2. Plug the other end of the 16-pin interconnect ribbon cable into the 16-pin connector on the system backplane. See **1**.
3. Connect the 2-wire power controller cable (17-04164-01):
    - Plug the 12-pin connector end of the 2-wire cable into connector J6 of the RCM.
    - Route the 2-wire cable along the same path as the operator control panel cable. See **2**.
    - Remove the 2-pin jumper on the connector on the operator control panel.
    - Plug the other end of the 2-wire power controller cable into the connector on the operator control panel. See **3**.

Figure 2-9 AlphaServer 2100A RM Internal Connections

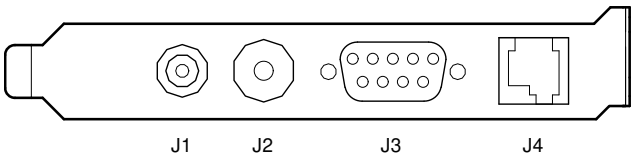


Making External Connections

Refer to Figure 2-10, Figure 2-11, and the following procedure for making the external connections.

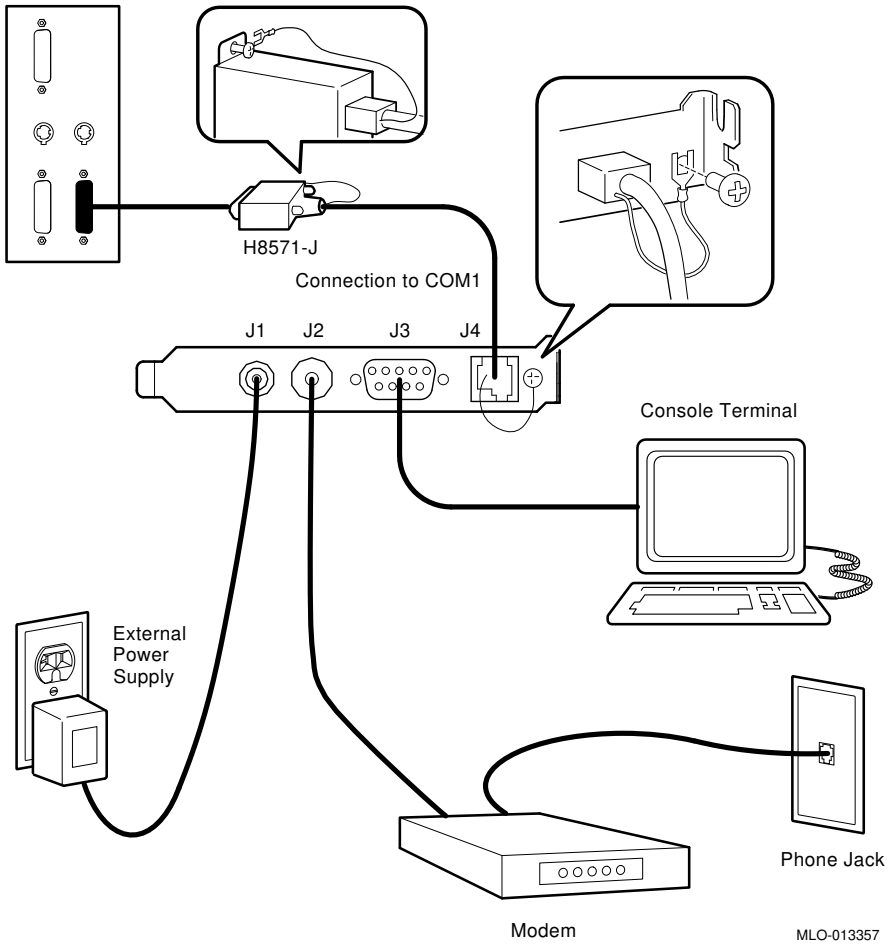
1. Connect the modem to the RCM.
    - Connect the 8-pin DIN connector end of the modem cable into the J2 connector on the RCM.
    - Connect the other end of the modem cable to the modem.

Figure 2-10 Bulkhead View of RCM



2. Connect the external power supply.
    - Connect the external power supply cable to the J1 connector on the RCM.
    - Plug the external power supply into a wall receptacle.
3. Move the console terminal connection from COM1 on the system to the J3 connector on the RCM.
4. Connect the 9-pin D-subminiature adapter (H8571-J) to one end of the 17-01364-03 cable. Connect the other end to J4 on the RCM. Then connect the shield cables to the screws as shown in Figure 2-11.

Figure 2-11 External Connections



Completing the Installation

1. Replace the system cover, panels, or door. Refer to the instructions in your system Owner's Guide, if necessary.

   Note

   On AlphaServer systems, interlock switches prevent the system from powering up if the system panels and cover are not in place.

2. Power up the system in the following order: external power supply, modem, and system. Refer to the instructions in the appropriate documentation, if necessary.

Verifying the Installation

1. Turn on the system. You should see the power-up displays on the console terminal. At the P00>>> or >>> prompt, enter an SRM console firmware command, such as **show config**, to verify that the system can receive input.
2. Verify that you can communicate with the RCM firmware by typing the default firmware escape sequence.

   ```
   ^]^]rcm
   ```

   The character string "^]" is created by simultaneously holding down the Ctrl key and pressing the] (right square bracket) key .

   The firmware prompt, RCM>, should now be displayed.

3
Using the RCM Firmware Console

The RCM has special console firmware that is used to remotely control an AlphaServer system. This chapter describes how to connect to the RCM console firmware and use RCM console commands to remotely monitor and control a managed system.

RCM Console Overview

The RCM firmware resides on an independent microprocessor. It is not part of the SRM console that resides in the flash ROM. The RCM firmware has its own command interface that allows the user to perform the tasks that are usually done from the system's console terminal. RCM console commands are used to reset, halt, and power the system on or off, regardless of the operating system or hardware state. The RCM console commands are also used to monitor the power supplies, temperature, and fans.

The user can enter the RCM console either remotely or through the local serial console terminal. Once in command mode, the user can enter the commands described in this chapter to control and monitor the system.

- To enter the RCM console remotely, the user dials in through a modem, enters a password, and then types a special escape sequence that invokes RCM command mode. You must set up the modem before you can dial in remotely. See the next section.
- To enter the RCM console locally, the user types the escape sequence at the SRM console prompt on the local console terminal.

The RCM also provides an autonomous dial-out capability when it detects a power failure within the system in which it is installed. When triggered, the RCM dials a paging service at 30-minute intervals until the administrator clears the alert within the RCM.

Modem Configuration

Modem Selection

The RCM requires a Hayes-compatible modem, capable of 14,400 bits/s or better. The controls that the RCM sends to the modem have been selected to be acceptable to a wide selection of modems. The modems that have been tested and qualified include:

Motorola LifeStyle Series 28.8
AT&T DATAPORT 14.4/FAX
Zoom Model 360

The U.S. Robotics Sportster DATA/FAX MODEM is also supported, but requires some modification of the modem initialization and answer strings. See Chapter 4.

Modem Configuration Procedure

1. Connect a Hayes-compatible modem to the RCM as shown in Figure 2-11, and power up the modem.
2. From the local serial console terminal, enter the RCM firmware console by typing the following escape sequence:

   ```
   ^]^]rcm
   ```

   The character pair "^]" is created by simultaneously holding down the Ctrl key and pressing
   the] key (right square bracket). The firmware prompt, RCM>, should now be displayed.
3. Enter a modem password with the **setpass** command, described in the Commands Reference section.
4. Enable the modem port with the **enable** command described in the Commands Reference section.
5. Enter the **quit** command to leave the RCM console.

Dialing In to the RCM Modem Port

1. Dial the modem connected to the RCM. The RCM answers the call and after a few seconds prompts for a password with a "#" character.
2. Enter the password that was loaded using the **setpass** command. The user has three tries to correctly enter the password. On the third unsuccessful attempt, the connection is terminated, and as a security precaution, the modem is not answered again for 5 minutes.

   On successful entry of the password, the RCM banner message "RCM V1.0" is displayed, and the user is connected to the system COM1 port. At this point the local terminal keyboard is disabled except for entering the RCM console firmware. The local terminal displays all the terminal traffic going out to the modem.
3. To connect to the RCM firmware console, type the RCM escape sequence.

A sample dial-in dialog would look similar to the following:

Example 3-1 Sample Dial-In Dialog

```
ATQ0V1E1S0=0                !When modem dial-in connection is made, a screen
OK                          display similar to this appears.
ATDT30167
CONNECT 9600


#                           !Enter password at this prompt.
RCM V1.0                    !RCM banner is displayed.
                            !Enter the escape sequence, ^]^]rcm, after the banner is
                            displayed.  The escape sequence is not echoed on the
                            terminal.
RCM>                        !After the escape sequence is entered, the RCM prompt
                            is displayed.  RCM commands can be entered.
```

Terminating a Remote Console (Modem) Session

Terminate the modem session by executing a **hangup** command from the RCM console firmware. This will cleanly terminate the modem connection.

If the modem connection is terminated without using the **hangup** command, or if the line is dropped due to phone line problems, the RCM will detect carrier loss and initiate an internal **hangup** command. This process can take a minute or more, and the local terminal will be locked out until the auto hangup process completes.

If the modem link is idle for more than 20 minutes, the RCM initiates an auto hangup.

Entering and Leaving Command Mode

Use the default escape sequence shown below to enter RCM command mode for the first time. You can enter RCM command mode from the SRM console level, the operating system level, or an application.

```
^]^]rcm
```

The character string "^]" is created by simultaneously holding down the Ctrl key and pressing
the] key (right square bracket). The firmware prompt, RCM>, should now be displayed.

The RCM **quit** command reconnects the terminal to the system console port.

Changing the Default Escape Sequence

The escape sequence used to enter the RCM firmware console command mode can be changed by the user. To change the sequence, use the **setesc** command, described in the Commands Reference section.

Note

If you change the escape sequence, be sure to record the new sequence. Although the module factory defaults can be restored if the user has forgotten the escape sequence, this involves accessing the KCRCM module and moving a jumper.

RCM Firmware Console Commands

The following commands are used to remotely monitor an AlphaServer system.

- Commands are not case sensitive.
- A command must be entered in full.
- If a command is entered that is not valid, the command fails with the message:

  ```
  *** ERROR – unknown command ***
  ```

  Enter a valid command.

Command	Function
alert_clr	Clears alert flag, stopping dial-out alert cycle
alert_dis	Disables the KCRCM dial-out alert function
alert_ena	Enables the KCRCM dial-out alert function
disable	Disables remote access to the modem port
enable	Enables remote access to the modem port
hangup	Terminates the modem connection
halt	Halts server
help or ?	Displays the list of commands
poweroff	Turns off power to server
poweron	Turns on power to server
quit	Exits console mode and returns to system console port
reset	Resets the server
setesc	Changes the escape sequence for entering command mode
setpass	Changes the modem access password
status	Displays server's status and sensors

Commands Reference

alert_clr

The **alert_clr** command clears an alert condition within the RCM. The alert enable condition remains active, and the RCM will again enter the alert condition when it detects a system power failure. Refer to the section Dial-Out Alerts.

```
RCM>alert_clr
```

alert_dis

The **alert_dis** command disables RCM dial-out capability. It also clears any outstanding alerts. Refer to the section Dial-Out Alerts. The alert disable state is nonvolatile. Dial-out capability remains disabled until the **alert_enable** command is issued.

```
RCM>alert_dis
```

alert_ena

The **alert_ena** command enables the RCM to automatically dial out when it detects a power failure within the system. The RCM repeats the dial-out alert at 30-minute intervals until the alert is cleared. The alert enable state is nonvolatile. Dial-out capability remains enabled until the **alert_disable** command is issued.

```
RCM>alert_ena
```

In order for the **alert_enable** command to work, two conditions must be met:

- A modem dial-out string must be entered with the system console.
- Remote access to the RCM modem port must be enabled with the **enable** command.

See Configuring the Modem for Dial-Out Alerts.

If the **alert_enable** command is entered when remote access is disabled, the following message is returned:

```
*** error ***
```

disable

The **disable** command disables remote access to the RCM modem port.

```
RCM>disable
```

The module's remote access default state is DISABLED. The modem enable state is nonvolatile. When the modem is disabled, it remains disabled until the **enable** command is issued. If a modem connection is in progress, entering the **disable** command terminates it.

enable

The **enable** command enables remote access to the RCM modem port. It can take up to 10 seconds for the **enable** command to be executed.

```
RCM>enable
```

The module's remote access default state is DISABLED.

The modem enable state is nonvolatile. When the modem is enabled, it remains enabled until the **disable** command is issued.

The **enable** command can fail for two reasons:

- There is no modem access password configured.
- The modem is not connected or is not working properly.

If the **enable** command fails, the following message is displayed:

```
*** ERROR – enable failed ***
```

hangup

The **hangup** command terminates the modem session. When this command is issued, the remote user is disconnected from the server. This command can be issued from either the local or remote console.

```
RCM>hangup
```

halt

The **halt** command attempts to halt the managed system. It is functionally equivalent to pressing the Halt button on the system operator control panel to the "in" position and then releasing it to the "out" position. The RCM console firmware exits command mode and reconnects the user's terminal to the system console port.

```
RCM>halt
Focus returned to COM port
```

Note

Pressing the Halt button has no effect on systems running Windows NT.

help or ?

The **help** or **?** command displays the RCM firmware command set.

poweroff

The **poweroff** command requests the RCM module to power off the system It is functionally equivalent to turning off the system power from the operator control panel.

```
RCM>poweroff
```

If the system is already powered off, this command has no effect.

The external power to the RCM must be connected in order to power off the system from the RCM firmware console. If the external power supply is not connected, the command will not power the system down, and displays the message:

```
*** ERROR ***
```

poweron

The **poweron** command requests the RCM module to power on the system. For the system power to come on, the following conditions must be met:

- AC power must be present at the power supply inputs.
- The DC On/Off button must be in the “on” position.
- All system interlocks must be set correctly.

The RCM firmware console exits command mode and reconnects the user’s terminal to the system console port.

```
RCM>poweron
Focus returned to COM port
```

Note

If the system is powered off with the DC On/Off button, the system will not power up. The RCM will not override the “off” state of the DC On/Off button.

If the system is already powered on, the **poweron** command has no effect.

quit

The **quit** command exits the user from command mode and reconnects the user's terminal to the system console port. The following message is displayed:

```
Focus returned to COM port
```

The next display you see depends on what the system was doing when you invoked the RCM. For example, if you invoked the RCM from the SRM console prompt, you will get the console prompt when you enter a carriage return. Or, if you invoked the RCM from the operating system prompt, you will get the operating system prompt when you enter a carriage return.

reset

The **reset** command requests the RCM module to perform a hardware reset. It is functionally equivalent to pressing the Reset button on the system operator control panel.

```
RCM>reset
Focus returned to COM port
```

The following events occur when the **reset** command is executed:

- The system restarts and the system console firmware reinitializes.
- The console exits RCM command mode and reconnects the user's terminal to the server's COM1 serial port.
- The power-up messages are displayed, and then the console prompt is displayed or the operating system boot messages are displayed, depending on the state of the Halt button.

setesc

The **setesc** command allows the user to reset the default escape sequence for entering console mode. The escape sequence can be any character string. A typical sequence consists of 2 or more characters, to a maximum of 15 characters. The escape sequence is stored in the module's on-board NVRAM.

Note

If you change the escape sequence, be sure to record the new sequence. Although the module factory defaults can be restored if the user has forgotten the escape sequence, this involves accessing the KCRCM module and moving a jumper.

The following sample escape sequence consists of five instances of the Ctrl key and the letter "o".

```
RCM>setesc
^o^o^o^o^o
RCM>
```

If the escape sequence entered exceeds 15 characters, the command fails with the message:

```
*** ERROR ***
```

When changing the default escape sequence, avoid using special characters that are used by the system's terminal emulator or applications.

Control characters are not echoed when entering the escape sequence. To verify the complete escape sequence, use the **status** command, described in this chapter.

If the user has forgotten the escape sequence, the module factory defaults can be restored. Refer to Chapter 4.

setpass

The **setpass** command allows the user to change the modem access password that is prompted for at the beginning of a modem session. The password is stored in the module's on-board NVRAM.

```
RCM>setpass
new pass>*********
RCM>
```

The maximum password length is 15 characters. If the password entered exceeds 15 characters, the command fails with the message:

```
***  ERROR ***
```

The minimum password length is one character, followed by a carriage return. If only a carriage return is entered, the command fails with the message:

```
*** ERROR – illegal password ***
```

If the user has forgotten the password, a new password can be entered.

status

The **status** command displays the current state of the server's sensors, as well as the current escape sequence and alarm information.

```
RCM>status

Firmware Rev: V1.0
Escape Sequence: ^]^]RCM
Remote Access: ENABLE/DISABLE
Alerts: ENABLE/DISABLE
Alert Pending: YES/NO (C)
Temp (C): 26.0
RCM Power Control: ON/OFF
External Power: ON
Server Power: OFF
PS 1:
PS 2:
R_Mode:
Fans:

RCM>
```

The status fields are explained in the following table.

Item	Description
Firmware Rev:	Revision of RCM firmware.
Escape Sequence:	Current Escape sequence to enter RCM firmware console.
Remote Access:	Modem remote access state. (ENABLE/DISABLE)
Alerts:	Alert dial-out state. (ENABLE/DISABLE)
Alert Pending:	Alert condition triggered. (YES/NO)
Temp (C):	Current system temperature in degrees Celsius.
RCM Power Control:	Current state of RCM system power control. (ON/OFF)
External Power:	Current state of power from external RCM power supply. (ON/OFF)
Server Power:	Current state of system power. (ON/OFF)
PS 1: and PS 2:	Current status of the power supplies in the server.
R_Mode:	Current state of the redundant power jumper in the system. (ON/OFF)
Fans:	Current state of fans in system. (OK)

Note

The PS 1:, PS 2:, R_Mode:, and Fans: states are blank if the system power is off.

Two power supplies are always shown. If the system has only one supply, the second supply would usually be displayed as OFF.

Dial-Out Alerts

The RCM can be configured to automatically dial out through the modem (usually to a paging service) when it detects a power failure within the system in which it is installed.

When a dial-out alert is triggered, the RCM initializes the modem for dial-out, sends the dial-out string, hangs up the modem, and reconfigures the modem for dial-in.

The RCM and modem must continue to be powered, and the phone line must remain active, for the dial-out alert function to operate.

Enabling Dial-Out Alerts

Enable the dial-out alert function as follows:

1. Enter the SRM system console command, **set rcm_dialout**, followed by a dial-out alert string, from the system console (P00>>> or >>> prompt). The command takes the form:

   ```
   >>>set rcm_dialout "ATDTstring#;"
   ```

   The *string* is a modem dial-out character string, not to exceed 47 characters, that is used by the RCM when dialing out through the modem.

   See the next section for details on composing the modem dial-out string.

2. Enter the RCM firmware console and enter the **enable** command to enable remote access dial-in. The RCM firmware **status** command should display "Remote Access: Enable."

   ```
   RCM>enable
   RCM>status
   .
   .
   Remote Access:  Enable
   .
   .
   .
   ```

3. Enter the RCM firmware **alert_ena** command to enable outgoing alerts.

   ```
   RCM>alert_ena
   ```

Composing a Modem Dial-Out String

The modem dial-out string emulates a user dialing an automatic paging service. Typically, the user dials the pager phone number, waits for a tone, and then enters a series of numbers. The RCM dial-out string has the following requirements:

- The entire string following the **set rcm_dialout** command must be enclosed by quotation marks.
- The characters ATDT must be entered after the opening quotation marks. Do not mix case. Enter the characters either in all uppercase or all lowercase.
- Enter the character X if the line to be used also carries voice mail. Refer to the example that follows.
- A semicolon (;) is required to terminate the string.

The valid characters for the dial-out string are the characters on a phone keypad: 0–9, *, and #. In addition, a comma (,) requests that the modem pause for 2 seconds.

A typical **set rcm_dialout** command string would be similar to the following:

```
>>>set rcm_dialout "ATXDT9,15085553333,,,,,,5085553332#;"
```

ATXDT	AT = Attention X = Forces the modem to dial "blindly" (not look for a dial tone). Enter this character if the dial-out line modifies its dial tone when used for services such as voice mail. D = Dial T = Tone (for touch-tone) , = Pause for 2 seconds.
9,	In the example, "9" gets an outside line. Enter the number for an outside line if your system requires it.
15085553333	Dial the paging service.
,,,,,,	Pause for 12 seconds for paging service to answer
5085553332#	"Message," usually a call-back number for the paging service.
;	Return to console command mode. Must be entered to terminate string.

Use the **show** command to verify the RCM dial-out string:

```
>>>show rcm_dialout
rcm_dialout       ATXDT9,15085553333,,,,,,5085553332#;
```

4
Troubleshooting

This chapter explains how to reset the controller to factory settings if the escape sequence has been lost. The chapter also contains troubleshooting suggestions and lists the error messages associated with RCM firmware console commands.

Resetting the RCM to Factory Defaults

If the escape sequence has been forgotten, you can reset the controller to factory settings as follows:

1. Power down the server and remove panels or covers to access the EISA/ISA bus on which the RCM has been installed.
2. Unplug all external cables to the RCM and remove the module from the system.
3. Locate jumper J8 on the RCM (refer to Figure 2-2). Move the jumper so that it is sitting on both pins.
4. Replace any panels or covers so you can power up the system. Press the Halt button and then power up the system to the P00>>> or >>> console prompt. Powering up with the J8 jumper in place resets the escape sequence, password, and modem enable states to the factory default.

5. When the console prompt is displayed, power down the system and move jumper J8 back onto the single pin.
6. Replace any panels or covers that you removed earlier and power up the system to the console prompt.
7. Type the default escape sequence to enter RCM command mode:

   ```
   ^]^]rcm
   ```

8. Use the **setesc** command to reset the escape sequence. Reset the password and modem enable states in order to enable remote access.

Troubleshooting Guide

Symptom	Possible Cause	Suggested Solution
The local terminal will not communicate with the system or the RCM.	System and terminal baud rate set incorrectly.	Set the system and terminal baud rates to 9600 baud.
	Cables not correctly installed.	Review external cable installation.
RCM will not answer when the modem is called.	Modem cables may be incorrectly installed.	Check modem phone lines and connections.
	RCM remote access is disabled.	Enable remote access.
	RCM does not have a valid password set.	Set password and enable remote access.
	The local terminal is currently in the RCM console firmware.	Issue a **quit** command on the local terminal.
	On power-up, the RCM defers initializing the modem for 30 seconds to allow the modem to complete its internal diagnostics and initialization. Also, modem COM port data traffic is suspended during RCM initialization.	Wait 30 seconds after powering up the system and RCM before attempting to dial in.
	Modem may have had power cycled since last being initialized or modem is not set up correctly.	Enter **enable** command from RCM console.
After the system and the RCM are powered up, the COM port seems to hang and then starts working after a few seconds.	This delay is normal behavior.	Wait a few seconds for the COM port to start working.
RCM installation is complete, but system will not power up.	RCM Power Control: is set to DISABLE.	Enter RCM console and issue the **poweron** command.
	Power control cable is not correctly installed.	Check installation of the power control cable that plugs into J6 of the RCM module.
New password, escape sequence, and modem enable state are forgotten when system and RCM module are powered down.	The password and option reset jumper, J8, is still installed.	After resetting RCM to factory defaults, move J8 so that it is sitting on only one pin.

Symptom	Possible Cause	Suggested Solution
The remote user sees a "+++" string on the screen.	The modem is confirming whether the modem has really lost carrier. This occurs when the modem sees an idle time, followed by a "3," followed by a carriage return, with no subsequent traffic. If the modem is still connected, it will remain so.	This is normal behavior.
The message "unknown command" is displayed when the user enters a carriage return by itself.	The terminal or terminal emulator is including a linefeed character with the carriage return.	Change the terminal or terminal emulator setting so that "new line" is not selected.
Cannot enable modem or modem will not answer.	The modem is not configured correctly to work with the RCM.	Modify the modem initialization and/or answer string as described in Chapter 5.

5
Modem Dialog Details

This chapter provides further details on the dialog between the KCRCM module and the modem and is intended to help you reprogram your modem if necessary.

Phases of Modem Operation

The RCM is programmed to expect specific responses from the modem during four phases of operation:

- Initialization
- Ring detection
- Answer
- Hang-up

The initialization and answer command strings are stored in the RCM NVRAM. The factory default strings are:

Initialization string: `AT&F0EVS0=0S12=50<cr>`

Answer string `ATXA<cr>`

Note

All modem commands must be terminated with a <cr> character (0x0d hex).

Initialization

The RCM initializes the modem to the following configuration:

Factory defaults (`&F0`)

No Echo (`E`)

Numeric response codes (`V`)

No Auto Answer (`S0=0`)

Guard-band = 1 second (`S12=50`)

Fixed modem-to-KCRCM baud rate

Connect at highest possible reliability and speed

The RCM expects to receive a "`0<cr>`" (OK) in response to the initialization string. If it does not, the **enable** command will fail.

This default initialization string works on a wide variety of modems. If your modem does not configure itself to these parameters, the initialization string will need to be modified. See Modifying Initialization and Answer Strings.

Ring Detection

The RCM expects to be informed of an in-bound call by the modem signaling the RCM with the string, "`2<cr>`" (RING).

Answer

When the RCM receives the ring message from the modem, it responds with the answer string. The "`X`" command modifier used in the default answer string forces the modem to report simple connect, rather than connect at *xxxx*. The RCM expects a simple connect message, "`1<cr>`" (CONNECTED). If the modem responds with anything else, the RCM forces a hang-up and initializes the modem.

The default answer string is formatted to request the modem to provide only basic status. If your modem does not provide the basic response, the answer string, and/or initialization string will need to be modified. See Modifying Initialization and Answer Strings.

After receiving the "connect" status, the modem waits for 6 seconds, and then prompts the user for a password.

Hangup

When the RCM is requested to hang up the modem, it forces the modem into command mode and issues the **hangup** command to the modem. This is done by pausing for a minimum of the guard time, sending the modem "+++". When the modem responds with "0<cr>" (OK), the hang-up command string is sent. The modem should respond with "3<cr>" (NO CARRIER). After this interchange, the modem is reinitialized in preparation for the next dial-in session.

KCRCM/Modem Interchange Overview

Table 5-1 summarizes the actions between the RCM and the modem from initialization to hangup.

Table 5-1 KCRCM/Modem Interchange Summary

Action	Data to modem	Data from Modem
Initialization command	AT&F0EVS0=0S12=50<cr>	
Initialization successful		0<cr>
Phone line ringing		2<cr>
RCM answering	ATXA<cr>	
Modem successfully connected		1<cr>
Force modem into command mode	<guard_band>+++	
Modem in command mode		0<cr>
Hangup	ATH<cr>	
Successful hangup		3<cr>

Modifying Initialization and Answer Strings

The initialization and answer strings are stored in the RCM's NVRAM. They come pre-programmed to support a wide selection of modems. In the circumstance where the default initialization and answer strings do not set the modem into the desired mode, the following SRM system console **set** and **show** commands are provided to enable the user to define and examine the initialization and answer strings.

To replace the initialization string:

```
P00>>>set rcm_init " new_init_string"
```

To replace the answer string:

```
P00>>>set rcm_answer "new_answer_string"
```

To display all the RCM user settable strings:

```
P00>>>show rcm*
rcm_answer  ATXA
rcm_dialout
rcm_init    AT&F0EVS0=0S12=50
P00>>>
```

Initialization and Answer String Substitutions

The following modems have been identified as requiring modified initialization and/or answer strings.

Modem Model	Initialization string	Answer string
KCRCM Defaults	"AT&F0EVS0=0S12=50"	"ATXA"
U.S. Robotics Sportster 28,800 Data/Fax Modem	KCRCM default	"ATX0&B1&A0A"

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