DIGITAL Remote Server Manager Hardware

Installation Guide

Part Number: ER–PCDSC–IA. C01

Digital Equipment Corporation
Maynard, Massachusetts

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This device complies with Part 15 of the FCC rules. Operation is subject to the following conditions; (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

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 experienced radio/TV technician for help

The user may find the following booklet prepared by the Federal Communications Commission helpful: *How to Identify and Resolve Radio-TV Interference Problems.* This booklet is available from the U.S. Government Printing Office, Washington, D.C., 20402. Stock No. 004-00398-5.

All external cables, except power cords, connecting to this basic unit must be shielded.

This digital apparatus does not exceed the Class B limits for radio noise emissions set out in the radio interference regulations of the Canadian Department of Communications.

When used near a radio or TV receiver, it may become the cause of radio interference.

Read the instructions for correct handling.

This equipment meets or exceeds requirements for safety in the U.S. (UL 1950), Canada (CSA C22.2 No. 950), and Europe (EN 60950/IEC 950) with Nordic requirements.

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Introduction 1

About This Guide

Note that throughout this guide the DIGITAL Remote Server Manager (RSM) controller is referred to as the *"controller."*

This guide describes:

- Kit contents
- Product description
- Controller features
- How to install the controller in a server
- How to troubleshoot the controller
- Hardware specifications of the controller
- Cable requirements

This guide also contains several appendices that provide specific hardware information for the controller with respect to DIGITAL Server systems and connector pin assignments for the controller.

It is not the intent or purpose of this guide to cover all possible server system configurations. Therefore, refer to your server user's guide and installation manuals for details on how to install optional controllers in the server's EISA bus master slots.

Server Requirements

The server must have one open or unused EISA bus master slot.

Hardware Kit Contents

The following tables describe the hardware kit contents.

Component	Part Number	Quantity
Hardware Kit	FR–PCDSC–AA	1 kit
Controller module	54–23136–01	1 module
Server Configuration diskette	QB–38CAA–SA	1 diskette
Keyboard jumper cable	17–04064–01	1 cable
Modem cable	17–00289–00	1 cable
External Power Supply	30–42431–01	1 unit
External Power Cord	17–00606–01	1 cord
Hardware Installation Guide	ER–PCDSC–IA	1 book

The following table describes each item in the kit and its purpose.

Component Type	Purpose
Controller	See features.
Configuration Diskette	This diskette contains the EISA *config* file.
Keyboard Jumper Cable	Connects the keyboard through the controller.
Modem Cable	Connects the modem to the controller.
External power supply	An alternative controller main power source.

The following is a list of additional items that are recommended for use with the controller.

Component	Component Type	Purpose
Modems	Must have DTE speed between 300 and 57.6kbps, V.42 error control and bi-directional hardware handshake capabilities.	Communications link between the server management station and the controller in the remote server.
Uninterruptable power supply (UPS)		Backup power for a modem and the controller in case of a power failure.

Modems

The software supports these modems without modifications:

- Zoom 14.4
- ATT Paradyne
- ATT Datalink

The server requires external modems, while either external or internal modems may be used on the management station. If your modem is not listed above, you may be need to customize the dialer strings.

Controller Description

Figure 1 shows the controller layout.

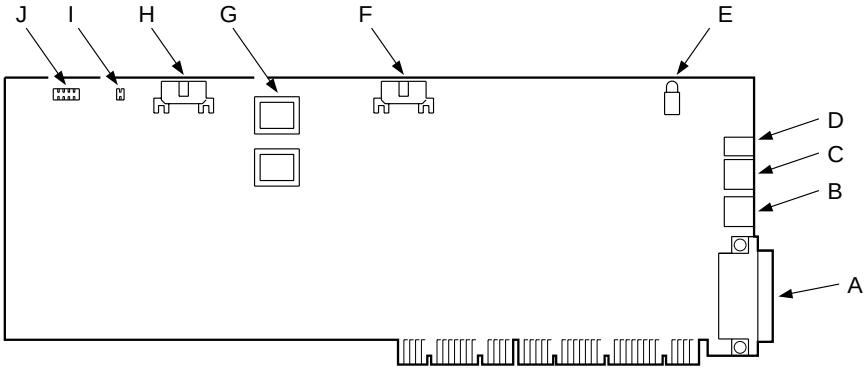


Figure 1 Controller Layout

Legend for Figure 1.

Figure Legend	Component
A	25-Pin RS232 Connector
B	Keyboard jumper connector
C	Keyboard input connector
D	External DC Power In
E	Diagnostic LED
F	Reset and control cable connector
G	Flash ROM (reference only)
H	Server control/monitoring connector
I	Factory use only
J	Factory use only (Password Reset)

Controller Features

The controller is an EISA-bus master hardware controller. The controller is used to:

- Sense internal and external conditions of the server
- Control the server
- Communicate with the management station.

The controller provides monitoring, alerting, and control of a remote server. The controller communicates the conditions of the remote server to the management station through a communications port on the remote server. The controller is not dependent on the server power* or server operating system for its basic operation. Controller features are:

- Communicates with the management station
- Communicates with the server
- Independent real-time clock (lithium battery)
- Nonvolatile memory for storing updatable firmware and the event log
- OS-independent keystroke monitoring and control
- Ability to utilize external and internal power*
- Hard reset of the host server system*
- Software password protection
- Ability to power the server down and power it back up*

* Except for XL servers

Controller Installation 2

This chapter describes how to install the controller into the remote server.

You should refer to your server documentation for the proper procedures to power down and to remove any covers to gain access to the EISA bus master expansion slots.

Installation Overview

The RSM controller installation procedure consists of the following steps. Complete each step before continuing on to the next step.

1. Installing the controller in the server
2. Connecting the reset cable to the server
3. Connecting an external power supply
4. Connecting the keyboard to the controller
5. Connecting the modem to the controller
6. Connecting to an optional UPS
7. Powering up
8. Running the SCU utility
9. Verifying connections

Step 1. Install the Controller in the Remote Server

CAUTION: Be sure that the server is not in use before you proceed.

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

Refer to your server user's guide to:

1. Power down the server.
2. Remove the power cord.
3. Remove any covers necessary to gain access to the EISA expansion slots.
4. Install the controller in an EISA bus master slot. It is recommended that you use the lowest EISA slot to ease installation of the reset cable, as the controller may block the MLB connector when installed in other slots. Refer to the server user's guide to identify the EISA bus master slots.

5. Secure the controller in place as shown in Figure 2.

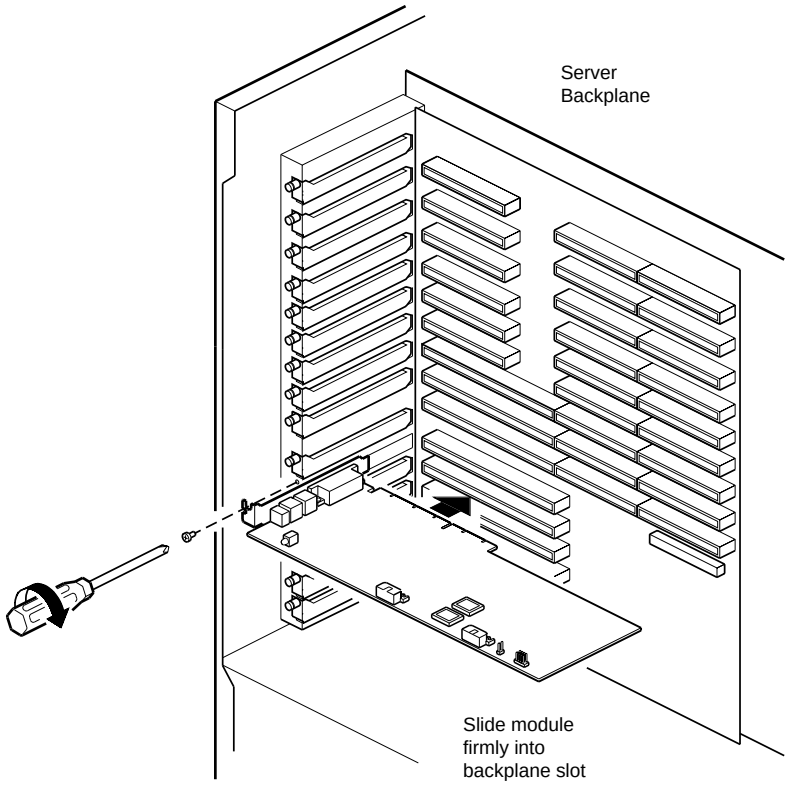


Figure 2. Controller Installed in EISA Bus Master Slot

Step 2. Connect the Reset Cable to the Remote Server

Connect the reset cable to the F connector on the controller (Figure 3).

Connect the other end of the reset cable to the server's main logic board connector according to the server reset situation. (Refer to the server User's Guide for more information.)

Refer to the server's User's Guide for information on setting the MLB jumper or switch for "RSM installed".

NOTE: If the MLB "RSM installed" or "DSM installed" jumper or switch is set and there is no power to the RSM controller, or an RSM controller is not installed, the server will not power up.

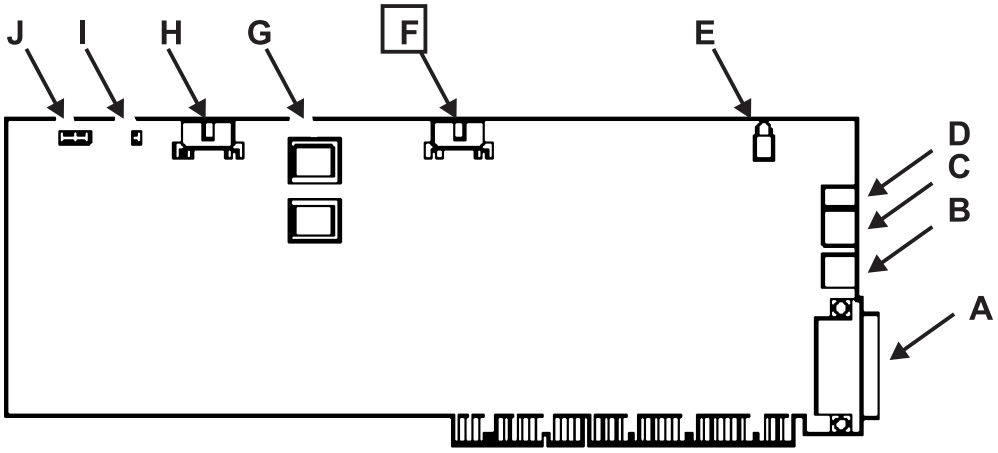


Figure 3 Connecting the Reset Cable

Step 3. Connect the External Power Supply

NOTE: Skip this step if you are installing the controller in an XL server.

Connect the cable from the external power supply to the **D** connector on the controller (Figure 4).

Connect the power cord to the external power supply.

Connect the power cord into a wall receptacle or other ac power source.

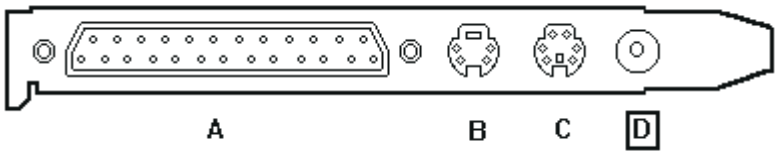


Figure 4. Connecting the External Power Supply

Step 4. Connect the Keyboard to the Controller

Disconnect the keyboard from the server.

Connect the keyboard to the **C** connector on the controller (Figure 5).

Connect the 4-pin end of the keyboard jumper cable to the **B** connector on the controller (Figure 5).

Connect the 6-pin end of the keyboard jumper cable to the keyboard socket on the server.

Your server keyboard is now connected to the server through the controller.

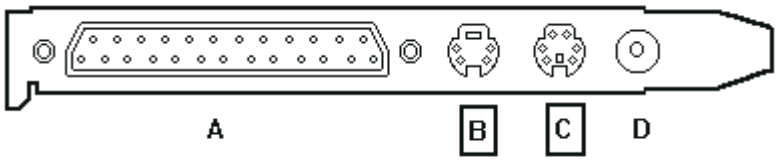


Figure 5. Connecting the Keyboard to the Controller

Step 5. Connect the Modem to the Controller

Connect the 25-pin modem cable to the A connector on the controller (Figure 6).

Connect the other end of the 25-pin modem cable to the 25-pin connector on the external modem.

Consult your modem documentation for instructions on how to set modem characteristics.

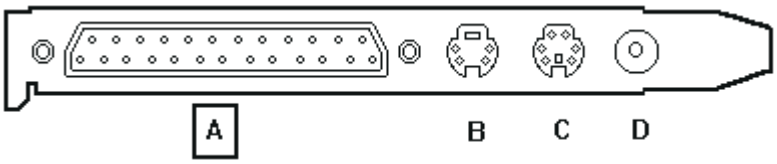


Figure 6. Connecting the Modem Cable to the Controller

Figure 7 shows a typical system installation with a keyboard and a VGA monitor.

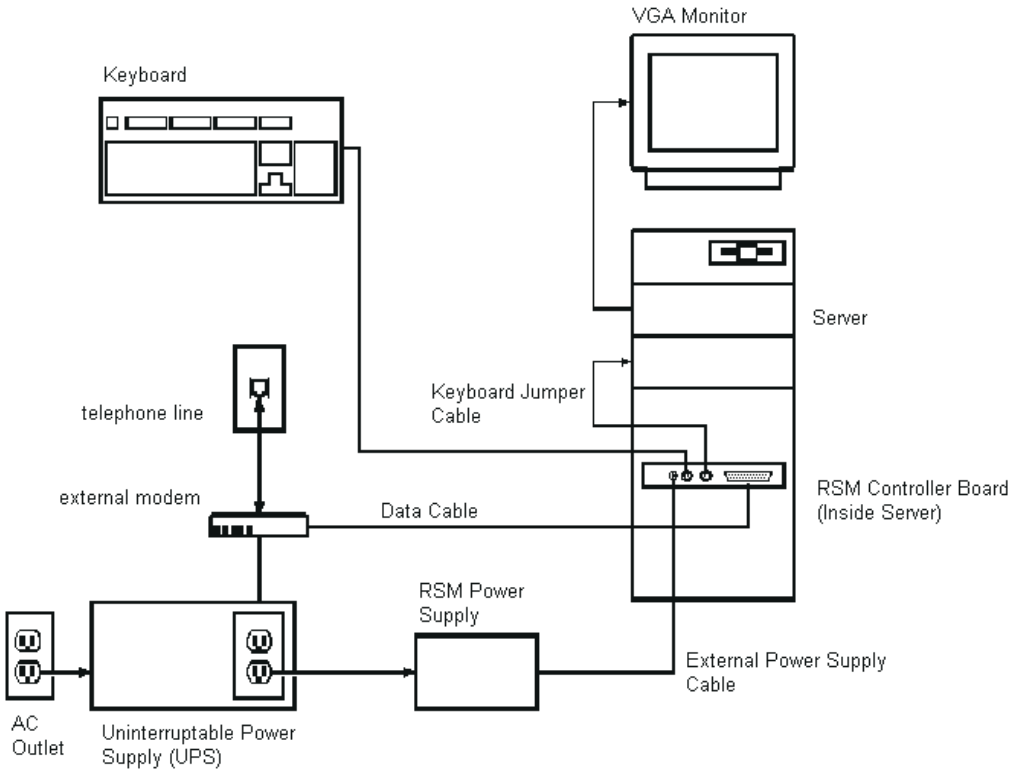


Figure 7. Minimum Configuration

Step 6. Use of an Optional UPS

If the server is *NOT* connected to an uninterruptable power supply (UPS) and you want to maintain communication with the controller during power failures, connect the modem and external power supply ac cords to a UPS.

By connecting the modem and the external power suppply to a UPS, you have ensured that even if building power should fail you will be able to communicate with the controller and the server, and that full alerting and event logging continues until the battery is drained or power is restored.

Step 7. Power-On Sequence

Power up the server in this order:

1. The modem and external power supply
2. The RSM controller power
3. The managed server

This sequence is required to properly initialize the modem with a dialer string that (among other things) initializes Auto Answer.

After you power up the server, observe the controller's LED through the server's vents in the rear of the unit. The LED should begin as red, change to orange, and finally change to a steady *green* indicating normal operation.

If the LED is not *green*, or the server does not boot, refer to "*Troubleshooting the Controller*" section.

Step 8. Install the SCU files

Start the System Configuration Utility (SCU).

Once prompted for the *config file* (!DEC23F0), insert the configuration diskette (labeled AK-Q8U3A-CA) that came with the kit and hit the Enter key. This file also resides in the management workstation's RS_MGR directory.

Select the default BIOS address unless there is a conflict with other installed EISA options such as a SCSI adapter or LAN card.

If "*No BIOS Address*" is selected, you will not be able to place the server in HELD Mode or perform any remote diskette operations.

An IRQ is not required because the controller does not have a NOS driver connection to the operating system.

Step 9. Verify the Connection with the Management Station

Refer to the "*Remote Server Management Station Software User's Guide*" to configure the software for access to the remote server from a management station.

Troubleshooting the Controller 3

Reading the LED Status

After installing the controller and applying power, observe the LED on the controller through the server vents in the rear of the unit. If after the completion of the self-test phase (about 30 seconds), the LED is in any state other than a steady *green*, refer to the table below for the possible cause and suggested solution.

Symptom	Possible Cause	Suggested Solution
Orange	On-board FW initializing	Wait about one minute, then reset the board. If problem persists, perform reset of configuration files.
Red	On-board diagnostic error	Power down and up. (Refer to Step 7 to make sure you are following the correct power-up sequence.) If failure repeats, replace the controller.

The following table lists some other possible situations that may occur during installation.

Symptom	Possible Cause	Suggested Solution
Server will not power up	RSM jumper installed No RSM power	Power up the RSM controller first.
Server will not boot	Reset cable may be incorrectly installed	Check setting of the reset cable.
Cannot dial-up remote server from remote server management station.	Power applied to controller before modem	Repeat the power-on sequence shown in step 7. Also, check modem phones lines and connections.
EISA setup error on server during boot up.	RSM config file.	Add RSM config file, as explained in step 8.

Password Reset/Configuration Files

The controller is shipped from the factory with the security features disabled. Normally the security features on the controller are set from the management station. The security modes and passwords, which are saved in the non-volatile memory on the controller, are restricted to authorized personnel only.

Once the access control passwords have been set and locked, the controller cannot be accessed without the proper passwords.

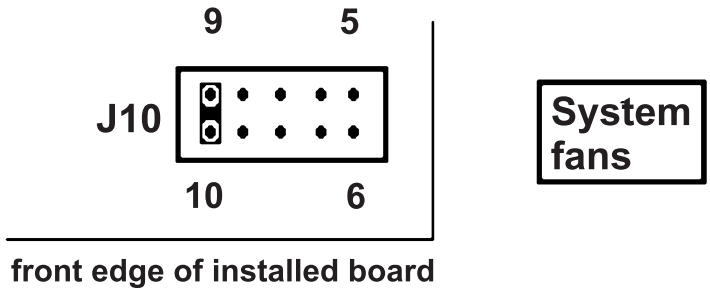
If the passwords have been lost, you can reset the controller to factory settings and delete the compromised event, macro, and script files by doing the following:

Power down the server and remove whatever panels or covers you need to access the EISA bus on which the controller has been installed.

Locate the controller.

Remove the power cable from the controller. (An XL server does not have a power connector.)

Locate connector J10 on the controller. Move the jumper from pins 5 and 6 and place it over pins 9 and 10 as shown below.



Reconnect the power cable to power on the controller. On XL servers, replace any panels or covers that you removed earlier and power on. Before the OS is loaded, power back down.

Observe the LED on the controller. The LED should be a steady *green*.

Disconnect the power cable from the controller. (On XL servers, remove the panels or covers as in step 1 above.)

Remove the jumper from pins 9 and 10. Place it back over pins 5 and 6.

Reconnect the power cable, replace any panels or covers that you removed earlier, and return the server to normal service, being sure to follow the power-on sequence shown in step 7 of Chapter 2.

Select no user or password in the preference Window. Refer to the *Remote Server Management Station Software User's Guide* to set the password.

You must also restore all the customized data in the flash file by downloading the event, script, macro, and security files from the management station.

Hardware Specifications 4

Controller Specifications

Attribute	Specification
Slot requirement	One industry-standard EISA bus master slot
On-board processor	16 MHz 80C186EB
FLASH memory	256 KB
Main memory	512 KB SRAM
Server console monitor and keyboard monitoring	6-pin DIN for keyboard
Internal monitoring sensors	Integrated voltage and temperature
External monitoring sensors	Two inputs: normally open for switch closure
EISA bus signal monitor	Noninvasive monitoring of 16 critical EISA bus signals
Status indicator LED	Red, orange, or green
Serial interface specification	Standard DB25 RS-232, V.24 Baud rate: 300-57.6 Kb (Async)
Operating voltage	5V (+5%, -3%)
Operating current	2.0 A maximum
Power supply noise/ripple	50 mV maximum p-p
External power	5V (+5%, -3%), 0.5A maximum
Dimensions	12.7 cm (5.00 in) high 1.87 cm (0.74 in) wide 34.04 cm (13.40 in) long
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)

External Modem Specifications

Attribute	Specification
Connector	DB25
Protocol	CCITT V.42 (Class 2-4 error control, BTLZ data compression is V.42 bis recommended but not required)
Suggested model	Zoom VFX V.32bis

Controller Slot Locations A

DIGITAL Server Systems

NOTE: DIGITAL Server systems that have PCI on board video controllers in the server are not compatible with the remote console feature of the RSM. An external ISA VGA video controller is required to support the remote console feature.

For DIGITAL Prioris XL Server, use slots 2 through 5.

For DIGITAL Prioris HX 590/590DP, use one of the lower EISA slots and remember to remove jumper **J42**.

For DIGITAL Prioris HX 5100MP, use one of the lower EISA slots and remember to remove jumper **J42**.

For DIGITAL Prioris HX 6000, use one of the lower EISA slots. Set switch 1, position 5 to OFF.

For DIGITAL Prioris ZX 5000MP, use one of the lower EISA slots. Remove Jumper J19 located directly above the RSM control cable on the main logic board daughter card, between the fan and front bezel assemblies.

For DIGITAL Prioris ZX 6000MP, use one of the lower EISA slots and turn switch 5 on the J35 MLB switch block to OFF (down).

For DIGITAL Server 7100 series, use one of the lower EISA slots. Remove Jumper J19 located directly above the RSM control cable on the main logic board daughter card, between the fan and front bezel assemblies.

For DIGITAL Server 5100/5200 series, use one of the lower EISA slots and turn switch 5 on the J35 MLB switch block to OFF (down).

Reset Cable Kits and Installation B

DIGITAL Server Systems

DIGITAL Prioris XL Server

Kit PN: FR-PCXCK-AB

Connect the reset cable to the controller (**F** on Figure 1) and to the pins labeled **RSM Conn (J40)** on the main logic board. This 3-pin connector is located on the right-hand edge of the main logic board directly across from EISA slot 1. Pin 1 is on the left. Refer to the server user's guide if you need further assistance in locating the connector.

DIGITAL Prioris HX 590 and 590DP

Kit PN: FR-PCXCK-AE

Connect the interconnect cable to the controller (**F** on Figure 1) and to the 12-pin connector **DSM Conn (J40)** on the main logic board. Also, remember to remove jumper **J42**.

DIGITAL Prioris HX 5100MP

Kit PN: FR-PCXCK-AE

Connect the interconnect cable to the controller (**F** on Figure 1) and to the 12-pin connector **DSM Conn (J40)** on the main logic board. Also, remember to remove jumper **J42**.

DIGITAL Prioris ZX 5000MP

Kit PN: FR-PCYCK-AF

Connect the interconnect cable to the controller (**F** on Figure 1) and to the 12-pin connector **J18** on the fan and control board. Also, remember to remove jumper **J19**.

DIGITAL Prioris ZX 6000MP

Kit PN: FR-PCYCK-AE

Connect the interconnect cable to the controller (**F** on Figure 1) and to the 12-pin connector J46 on the main logic board. Also, remember to set switch 5 on the J35 switch block of the MLB to OFF (down).

DIGITAL Prioris HX 6000

Kit PN: FR-PCYCK-AE

Connect the interconnect cable to the controller (F on Figure 1) and to the 12-pin connector J29 on the main logic board. Also remember to set switch 1 position 5 to OFF (down).

DIGITAL Server 7100 series

Kit PN: FR-PCYCK-AE

Connect the interconnect cable to the controller (**F** on Figure 1) and to the 12-pin connector J46 on the main logic board. Also, remember to set switch 5 on the J35 switch block of the MLB to OFF (down).

DIGITAL Server 5100/5200 Series

Kit PN: FR-PCYCK-AE

Connect the interconnect cable to the controller (F on Figure 1) and to the 12-pin connector J29 on the main logic board. Also, remember to set switch 1 position 5 to OFF (down).

Pin Assignments C

Controller Connectors

Connector	Type
Modem	25-pin D type (male)
Keyboard input	6-pin mini-DIN
Keyboard jumper	4-pin mini-DIN
Reset	12-pin 2x6 array

RS232 Modem Control Port Signals

Pin	In/Out	Function
1		Ground
2	Out	Transmit Data
3	In	Receive Data
4	Out	Request To Send
5	In	Clear To Send
6	In	Data Set Ready
7		Signal Ground
8	In	Carrier Detect
9		Signal Ground
10	Out	Led 0 Driver Output
11	In	Digital External Input 1
12	In	Digital External Input 2
13	Out	Control Output 1
14	Out	Control Output 2
15	In	Transmit Clock Input
16	In	Analog Input
17	In	Receive Clock
18	In	Terminal Data Receive
19		Signal Ground
20	Out	Data Terminal ready
21	Out	Console Data Transmit
22	In	Ring Indicate
23	Out	Terminal Data Transmit
24	Out	Transmit Clock Output
25	In	Console Data Receive

Controller Keyboard Input Signals

Pin	In/Out	Function
1		Keyboard Data In
2		nc
3		Signal Ground
4	Out	VCC (+5vdc)
5		Keyboard Clock In
6		nc

Controller Reset Signals

Pin	In/Out	Function
1		Signal Ground
2	In	3.3 volt monitoring
3		nc
4		nc
5		Signal Ground
6	Out	Host Server DC Enable L
7	Out	Auxiliary +5V
8		nc
9		Signal Ground
10	Out	Host Server Reset Pulse (Low)
11		Signal Ground
12	Out	Host Server Reset Pulse (Low)

Cable Specifications

RS232 Modem Cable

DB25 Female	DB25 Male
1	gnd
2	3
3	2
4	5
5	4
6	Not used
7	7
8	20
20	8

RS232 Direct Connect Cables -- DB25 to DB9

DB25 Female	DB9 Female
1	gnd
2	2
3	3
4	8
5	7
6	Not used
7	5
8	4
20	1

RS232 Direct Connect Cables -- DB25 to DB25

DB25 Female	DB25 Female
1	gnd
2	3
3	2
4	5
5	4
6	Not used
7	7
8	20
20	8

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