



MPEG BOARD UPGRADE

# Installation Manual

071-0169-01

SEPTEMBER 2000

**PROFILE FAMILY**  
VIDEO FILE SERVERS

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# Grass Valley Group Product Support

You can get technical assistance, check on the status of problems, or report new problems by contacting our Product Support Group.

## United States and Canada

Monday–Friday 5:30AM–5:00PM Pacific Time  
(800) 547-8949

## Europe

Monday–Friday 9:00AM–5:30PM

France	01 45 29 73 00	United Kingdom	01628 405830
Germany	49 221 1791 234	Other	+44 1753 218 777
Italy	02 25086606		

## Asia and South America

Australia	02-9888 0100	Japan	81-3-3448-3111
- from overseas	61-2-9888 0100	Korea	82-2-528-5299
Beijing	86-10-62351230	Mexico	52-5-666-6333
	ext. 711	Singapore	65-356-3900
Brazil	55-11-3741-8422	Taiwan	886-2-27571571
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## World Wide

**24-hour Emergency Hotline (530) 478-4148** (Contract and warranty customers)

**World Wide Web** <http://www.grassvalleygroup.com/support/>

**FTP Site** <ftp.grassvalleygroup.com>

**E-mail** [profile-users@grassvalleygroup.com](mailto:profile-users@grassvalleygroup.com)



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## General Safety Summary

Review the following safety precautions to avoid personal injury and prevent damage to this product or any products connected to it.

*Only qualified personnel should perform service procedures.*

While using this product, you may need to access other parts of the system. Read the general safety summary in other system manuals for warnings and cautions related to operating the system.

### Injury Precautions

**Do Not Operate  
Without Product  
Covers in Place**

To avoid electric shock or fire hazard, do not operate this product with covers or panels removed.

**Do Not Operate in  
Wet/Damp  
Conditions**

To avoid electric shock, do not operate this product in wet or damp conditions.

**Do Not Operate in an  
Explosive  
Atmosphere**

To avoid injury or fire hazard, do not operate this product in an explosive atmosphere.

**Avoid Exposed  
Circuitry**

To avoid injury while serving, remove jewelry such as rings, watches, and other metallic objects. Do not touch exposed connections and components when power is present.

## Product Damage Precautions

### **Use the Proper Voltage Setting**

Ensure that the line selector is in the proper position for the power source before applying power.

### **Provide Proper Ventilation**

Prevent product overheating by providing proper ventilation.

### **Do Not Operate If You Suspect Product Failures**

If you suspect there is damage to this product, have it inspected by qualified service personnel.

## Safety Terms and Symbols

### **Terms in This Manual**

These terms may appear in this manual:



**WARNING:** Warning statements identify conditions or practices that can result in personal injury or loss of life.



**CAUTION:** Caution statements identify conditions or practices that can result in damage to the equipment or other property.

### **Terms on the Product**

These terms may appear on the product:

**DANGER** indicates a personal injury hazard immediately accessible as you read the marking.

**WARNING** indicates a personal injury hazard not immediately accessible as you read the marking.

**CAUTION** indicates a hazard to property, including the product.



## Symbols on the Product

The following symbols may appear on the product:



DANGER high voltage



Protective ground (earth) terminal



ATTENTION – refer to manual

## Service Safety Summary



**WARNING:** *These instructions are for use by qualified service personnel only. To avoid personal injury, do not perform any servicing unless you are qualified to do so. Refer to all safety summaries before performing service.*

### Do Not Service Alone

Do not perform internal service or adjustment of this product unless another person capable of rendering first aid and resuscitation is present.

### Disconnect Power

To avoid electric shock, disconnect the main power by means of the power cord.

### Use Care When Servicing With Power On

Dangerous voltages or currents may exist in this product. Disconnect power and remove battery (if applicable) before removing protective panels, soldering, or replacing components.

To avoid electric shock, do not touch exposed connections.

## **Certifications and Compliances**

### **FCC Emission Control**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this installation manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his or her own expense. Changes or modifications not expressly approved by Grass Valley Group can affect emission compliance and could void the user's authority to operate this equipment.

### **Canadian EMC Notice of Compliance**

This digital apparatus does not exceed the Class A limits for radio noise emissions from a digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

### **EN55022 Class A Warning**

For products that comply with Class A. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.



## Certification

Category	Standard
Safety	<i>Designed/tested for compliance with:</i> <b>UL1950</b> – Safety of Information Technology Equipment, including Electrical Business Equipment (Third Edition, 1995) <b>IEC 950</b> – Safety of Information Technology Equipment, including Electrical Business Equipment (Second edition, 1991) <b>CAN/CSA C22.2, No. 950-95</b> – Safety of Information Technology Equipment, including Electrical Business Equipment <b>EN60950</b> – Safety of Information Technology Equipment, including Electrical Business Equipment (includes Appendix ZB)

# ***MPEG Board Upgrade Installation***

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## **Introduction**

***NOTE: Profile system software version 2.4 or higher must be installed and tested before you install any MPEG boards. For more information, see “System Software Requirements” on page 2.***

These instructions explain how to install MPEG circuit boards in an MPEG-ready (Option MG) PDR200 Video File Server. Instructions are also included for installing MPEG boards in a PDR200 that is not MPEG-ready. The MPEG field kit comes with either of two boards, shown in Table 1.

**Table 1.** MPEG board nomenclature

<b>MPEG Board</b>	<b>Features</b>	<b>Nomenclature</b>
Encoder	1 encoder, 2 decoders	P2MPG12
Decoder	4 decoders	P2MPG04

In general, three configurations are possible when installing MPEG boards:

1. In an MPEG-ready Option MG PDR 200 (serial number B030000 or above). For instructions, see “Installing Boards in an Option MG Unit” on page 12.
2. In a non-Option MG unit (serial number B030000 or above). Refer to the instructions in “Installing Boards in a non-Option MG Unit” on page 16.
3. In a early, non-MPEG ready unit (serial number B029999 or below). See instructions under “Installing Boards in an Early PDR 200 Unit” on page 18.

***NOTE: It is strongly recommended that you read these instructions thoroughly before attempting any part of the installation. The installation process takes from three to five hours.***



Depending on the field kits you have ordered and how you plan to configure your system, you most probably will be adding other boards, such as serial digital I/O boards or an Audio Signal Processing Board (ASPB). For example, if you install two decoder boards, you will need four serial digital I/O boards to output eight video channels. In such a case, it is also likely that you will install an additional ASPB for a total of 32 channels of embedded audio. There is no reason not to install all the field kits while the Profile chassis is open.

When this manual refers to slot numbers, such as J8 and J12, refer to the label on the back of the Profile unit to find where the physical slots are (see to Figure 10 on page 29).

## **System Software Requirements**

The Profile system software installed in the Profile system *must* be version 2.4 or higher to support MPEG boards. This software should have been ordered and received along with this MPEG field kit. To check the software version installed in your Profile system, open the VrdPanel application and choose **Help | About VdrPanel**. The software version is listed in the displayed window. If you do not have version 2.4 or higher software, contact your Grass Valley Group representative.

***NOTE: After you install 2.4 or higher software, you must update the firmware of some Profile circuit boards with an in-system programming (ISP) procedure described in the appropriate software release notes and in the Profile utilities chapter of the Profile Family User Manual.***

## Master and Slave EDR Memory Requirements

The Master Enhanced Disk Recorder (EDR) board and Slave EDR board (if present) must be upgraded to 64 megabytes of memory with the EDR Memory Upgrade kit. If you ordered your PDR200 recently, the Master and Slave may already have 64 megabytes of memory each. To see the amount of memory you have on the Master and Slave EDR boards, check the Profile log for messages regarding memory size or choose **Start | Programs | PDR Debug Tools | PDR Diagnostics | Master EDR** from the Windows NT 4.0 desktop. If your system does not have the required memory, you will need two service kits— one kit for the Master and one for the Slave—each with two 32-megabyte SIMMs.

If you have a large file system, it is recommended that you upgrade the local i960 memory to 32 megabytes. You will need one kit for this upgrade, containing one 32-megabyte SIMM, replacing the existing 16-megabyte SIMM.

***NOTE:** You should have obtained service kits for these memory upgrades at the same time you received the MPEG field kit. If you have not installed these memory upgrades, install them first thing when doing the MPEG upgrade; if for some reason you have not obtained the kits, contact your Grass Valley Group representative.*

## Slave EDR Requirements

You may or may not have a Slave EDR board installed in your system. Table 2 lists the cases where you need a Slave and when you don't.

**Table 2.** Slave EDR requirements

<b>MPEG Configuration</b>	<b>Slave Needed</b>
Two encoder boards	Yes
Two decoder boards	No
One encoder, one decoder	Yes, but only with Fibre Channel; otherwise No
One encoder only	Yes, but only with Fibre Channel; otherwise No



## Kit Contents

This upgrade kit includes the following:

- An MPEG board.
- A five-slotted PCI Interconnect board.
- Sharcnet cables for digital embedded audio.
- Five antistatic bags for board storage.
- Replacement tie wraps for bundling cables.
- A set of stick-on identification labels.
- This installation manual.

## Tools Required

Tools required to install the board are (not supplied in this kit):

- A Torx tool with T10 and T15 tips.
- Electrostatic discharge (ESD) wrist grounding straps.

## Electrostatic Precautions



***CAUTION: All Profile system circuit boards have components that are highly sensitive to electrostatic discharge (ESD). To protect these components from damage and to maintain product reliability, take the following precautions when handling the circuit board:***

- ***Handle all circuit boards in a static-protected area capable of controlling static charge on conductive materials, people, and nonconductive materials. Static-protected areas include nonstatic table tops and nonstatic floor mats.***
- ***While out of the chassis, place boards in the ESD static-shielded bags (provided with this kit) until you install them.***
- ***Wear ESD grounding straps when handling boards outside of their ESD static-shielded bags.***
- ***Handle the circuit boards only by the edges and avoid touching the printed wires on the back of the circuit board as much as possible.***

## Installation Procedures

The procedures that follow take you step-by-step through the installation of MPEG boards. You can install the board with the Profile chassis fully extended on the rack slides if the instrument rack is adequately anchored to prevent tipping, and if there is sufficient slack in the cables connected to the rear panel to allow the chassis to fully extend on the slides. If you decide to keep the chassis in the rack during the installation, it is a good idea to loosen any screws that need to be removed from the back of the Profile unit *before* sliding it forward on the racks. You will have to read the appropriate installation procedure first to determine which screws must be loosened.



***WARNING: Unless the instrument rack is adequately anchored, the rack could tip when the chassis is extended on the rack slides. To avoid possible injury, make sure the rack is secured firmly before extending the Profile chassis on the rack slides.***

During the installation, you will be instructed to removed the three-slotted PCI Interconnect board and replace it with the five-slotted board provided in this field kit. The center slot on the five-slotted PCI board must be aligned with the Master EDR board and the MPEG boards must be aligned with the outside slots of the PCI board, that is, J8 and J12. See Table 3 for all PCI board locations.

**Table 3.** PCI board locations

Board	Slot
Master EDR	J10
Slave EDR (if present)	J11
Fibre Channel (if present)	J9
MPEG encoder (preferred)	J8
MPEG decoder (preferred)	J12



## Removing the Profile Unit from the Instrument Rack

If you cannot or do not want to install MPEG boards with the Profile chassis extended on the rack slides, use the following procedure to remove the unit from the instrument rack:

1. Remove all cables connected to the rear of the Profile unit. If you have not done so already, label all cables before removing them to make it easier to reconnect them later.
2. Loosen the front-panel retaining screw (❶ in Figure 1).
3. Grasp the handles and pull the chassis out (❷ in Figure 1) until the slides latch. This holds the Profile chassis firmly in position.

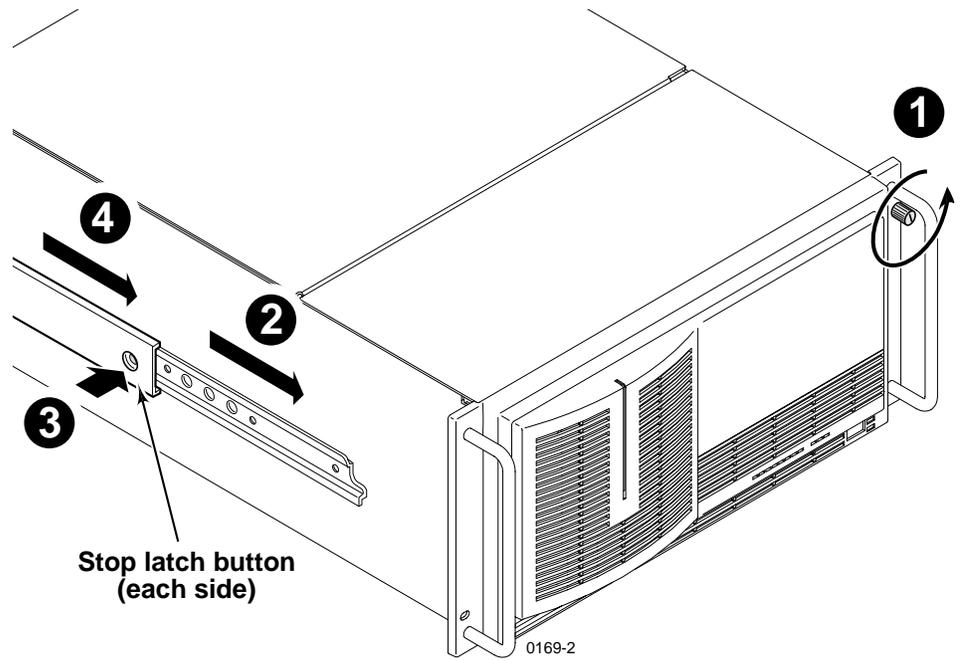


**WARNING:** *To avoid personal injury, at least two people must remove the Profile chassis from the rack—it is too heavy for one person to lift.*

4. With a person on each side of the unit, press in both track stop latch buttons (❸ in Figure 1) and carefully slide the Profile chassis free of the tracks (❹ in Figure 1).
5. Place the Profile unit on an ESD-protected work surface.

**NOTE:** *Now is probably a good time to clean the front filter of your Profile unit. With a strong vacuum, you can clean the filter through the front cover.*

*Removing the Profile Unit from the Instrument Rack*



**Figure 1.** Removing the Profile unit from the instrument rack



## Removing the Chassis Covers

To remove the chassis covers from the Profile unit:

***NOTE: The front chassis cover must be removed first because it overlaps the rear cover.***

1. Turn Profile system power off and remove the power cord.
2. Loosen the front panel retaining screw and pull the chassis out from the rack until the slide sections latch. If the rack is not anchored firmly, remove the chassis from the rack (see the instructions under “Removing the Profile Unit from the Instrument Rack” on page 6).
3. Use the Torx tool with the T10 tip to remove the top screws from the front chassis cover (❶ in Figure 2) and use the T15 tip to remove the round-headedside screws. Set the cover aside.

***NOTE: Store the chassis screws in a container so that you do not lose them. They must all be reinstalled as they are required to meet the EMI specifications for the disk recorder.***

4. Use the Torx tool with the T10 tip to remove the rear chassis cover (❷ in Figure 2). Set the cover aside.

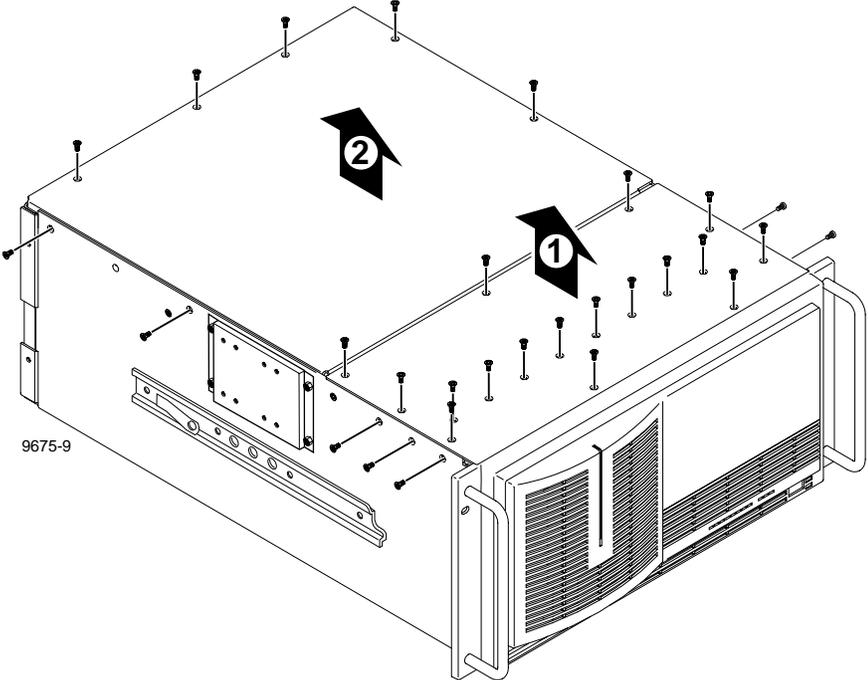


Figure 2. Removing the front and rear chassis covers



## **Removing the Circuit Board Hold-down Brackets**

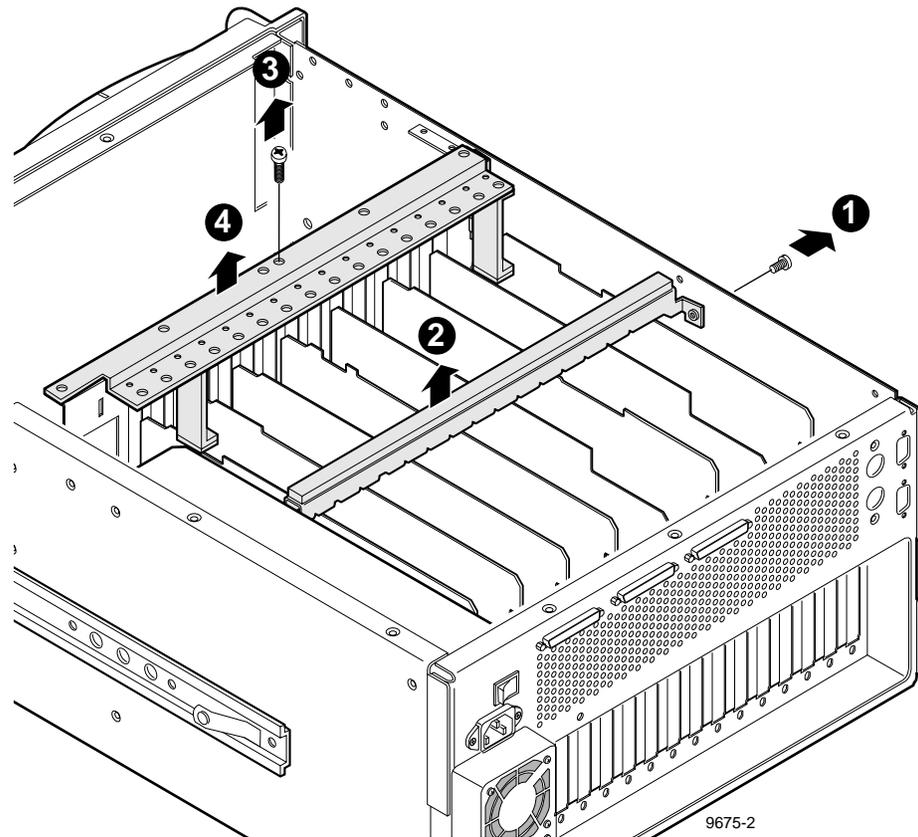
There are two hold-down brackets located in the circuit board area of the chassis that must be removed in order to install other boards.

To remove the board hold-down brackets:

1. Use the Torx tool with the T10 tip to remove the exterior screw (❶ in Figure 2) that secures the rear board hold-down bracket.
2. Lift the bracket (❷ in Figure 2) up and out of the chassis and set it aside.
3. Use the Torx tool with the T10 tip to remove the interior screw (❸ in Figure 2) that secures the front board hold-down bracket.
4. Lift the bracket (❹ in Figure 2) up and out of the chassis and set it aside.

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*Removing the Circuit Board Hold-down Brackets*



**Figure 3.** Removing the circuit board hold-down brackets

***NOTE:*** Now would be a good time to do the memory upgrades mentioned in “*Master and Slave EDR Memory Requirements*” on page 3.



## Installing Boards in an Option MG Unit

To install one or two MPEG boards in an MPEG-ready PDR 200 (Option MG with serial number B030000 or above):

1. Remove the three-slotted PCI Interconnect board and remove all cables connected Profile boards, such as SCSI, Sharcnet, or audio clock cables (look at Figure 7 on page 23 if you need help identifying the Sharcnet and audio clock cables). Label each cable before removing it and draw a simple diagram to make it easier to reconnect the cables later. Remove any cable tie wraps, if necessary.



**CAUTION:** *Be certain to label the SCSI cables before removing them so that you can reconnect them properly. If the A and C SCSI cables are reversed, the file system will be corrupted.*

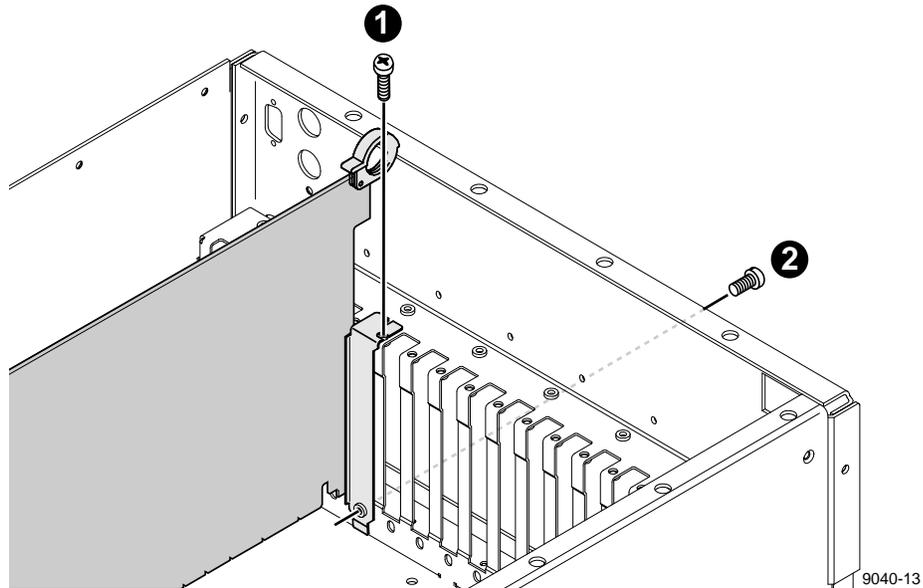
2. Remove the slot cover for slot J8. If you are installing two MPEG boards, also remove the slot cover for J12.



**CAUTION:** *Forcing the board into the slot may result in bent connectors on the mother board. Carefully follow the instructions in step 3 to avoid damaging hardware.*

3. Install an encoder board (P2MPG12) in slot J8 and a decoder board (P2MPG04) in J12. If you are installing two encoder boards or two decoder boards, slot order doesn't matter. To install the boards correctly:
  - Align the board with the connectors on the motherboard. Make sure that the board is in the board guide at the front edge.
  - With the extractor on the front end of the board in the up position, press down on the board firmly until it is seated.
  - As you push the board into the connectors, you will feel the board engage first one, then another set of contacts in the connector. The board is properly seated when the top of the rear mounting bracket is resting on the rear chassis wall shelf.

4. Install the slot cover screws. Use the Torx tool with the T15 tip to install the mounting screws in the top of the slot cover inside the chassis (1 in Figure 4) and through the rear panel at the bottom of the slot cover (2 in Figure 4).

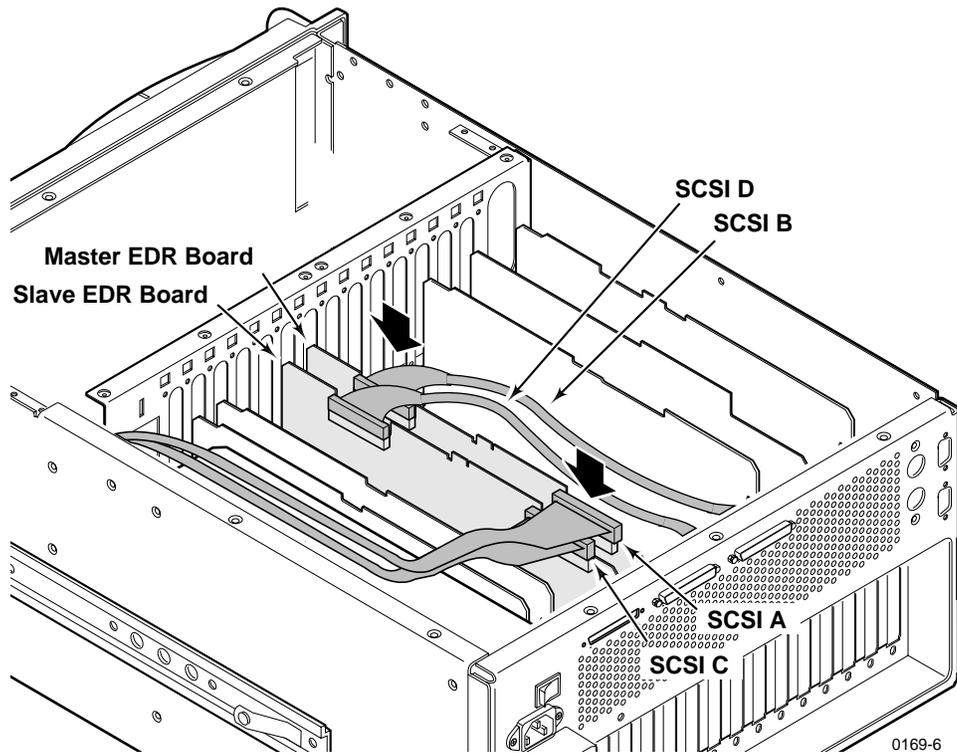


**Figure 4.** Screw locations for board mounting slot cover



## MPEG Board Upgrade Installation

5. Connect the SCSI cables, as shown in Figure 5.
6. Install the five-slotted PCI Interconnect board. This board is a high-speed bus used to move data between boards with PCI connectors. Align the center keys on the PCI Interconnect board with the keys on the Master EDR board in slot J10. Using appropriate pressure, press down firmly on the interconnect board to ensure that it is properly seated (see Figure 6).



**Figure 5.** Reconnect the SCSI cables

7. Connect the audio clock and Sharcnet cables according to the diagram you drew earlier or see “Audio Clock and Sharcnet Cabling” on page 21.
8. If you plan to install additional video I/O or audio boards, do so now using the instructions provided with each field installation kit.
9. Follow the reassembly instructions under the heading “Reassembling the Profile Chassis” on page 28.



**WARNING:** To avoid personal injury from electrical shock and/or damage to disk drives, do not apply power until all covers are in place and secured.

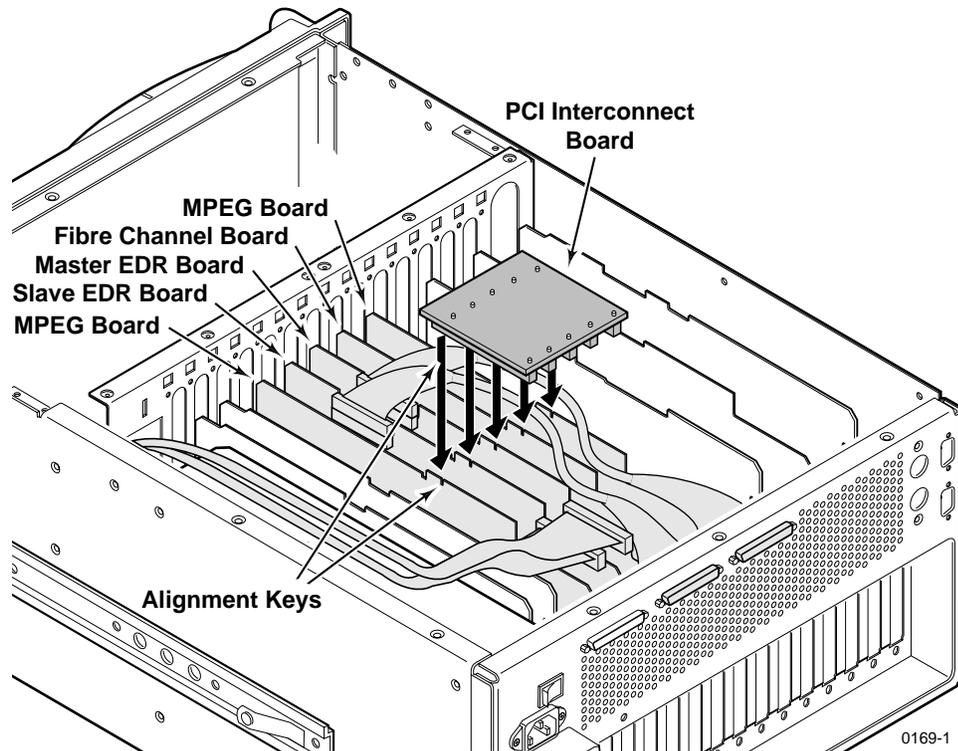


Figure 6. Installing the five-slotted PCI Interconnect board



## Installing Boards in a non-Option MG Unit

A non-Option MG PDR200 (with serial number B030000 or above) already has the Master and Slave EDR boards in the correct slots (see Table 3 on page 5), but it is possible that you have analog composite or serial digital component I/O boards installed in slots J8 or J12. These boards must be removed and installed in other slots in order to install MPEG boards.

To install MPEG boards in a non-Option MG PDR200:

1. Remove the three-slotted PCI Interconnect board and remove all cables connected to Profile boards, such as SCSI, Sharcnet, or audio clock cables (look at Figure 7 on page 23 if you need help identifying the Sharcnet and audio clock cables). Label each cable before removing it and draw a simple diagram to make it easier to reconnect the cables later. Remove any cable tie wraps, if necessary.



**CAUTION:** *Be certain to label the SCSI cables before removing them so that you can reconnect them properly. If the A and C SCSI cables are reversed, the file system will be corrupted.*

2. If there are analog composite or serial digital component I/O boards installed in slots J8 or J12, remove the boards. For complete instructions on removing circuit boards, see “Removing Circuit Boards” on page 18.



**CAUTION:** *Forcing the board into the slot may result in bent connectors on the mother board. Carefully follow the instructions in step 3 to avoid damaging hardware.*

3. Install the MPEG boards. An encoder board (P2MPG12) should go in slot J8 and a decoder board (P2MPG04) in J12. If you are installing two encoder boards or two decoder boards, slot order doesn't matter. To install the boards correctly:

- Align the board with the connectors on the motherboard. Make sure that the board is in the board guide at the front edge.
  - With the extractor on the front end of the board in the up position, press down on the board firmly until it is seated.
  - As you push the board into the connectors, you will feel the board engage first one, then another set of contacts in the connector. The board is properly seated when the top of the rear mounting bracket is resting on the rear chassis wall shelf.
4. Reinstall any video I/O or audio boards that you had to move out to make room for the MPEG boards. (For information of appropriate slots for video and audio boards, see Table 7 on page 34.)
  5. Install the slot cover screws. Use the Torx tool with the T15 tip to install the mounting screws in the top of the slot cover inside the chassis (❶ in Figure 4 on page 13) and through the rear panel at the bottom of the slot cover (❷ in Figure 4 on page 13).
  6. Connect the SCSI cables, as shown in Figure 5 on page 14.
  7. Install the five-slotted PCI Interconnect board. This board is a high-speed bus used to move data between boards with PCI connectors. Align the center keys on the PCI Interconnect board with the keys on the Master EDR board in slot J10. Using appropriate pressure, press down firmly on the interconnect board to ensure that it is properly seated (see Figure 6 on page 15).
  8. Connect the audio clock and Sharcnet cables according to the diagram you drew earlier or see “Audio Clock and Sharcnet Cabling” on page 21.
  9. Follow the reassembly instructions under the heading “Reassembling the Profile Chassis” on page 28.



***WARNING: To avoid personal injury from electrical shock and/or damage to disk drives, do not apply power until all covers are in place and secured.***



## Installing Boards in an Early PDR200 Unit

If you have an early PDR200 (serial number B029999 or below), you can install MPEG boards by following this procedure. It may be necessary to remove some or *all* of the boards in slots J5 through J15 in order to follow the recommendations for MPEG installation. In doing so, you may lose some slots otherwise used for video I/O boards. To reinstall EDR and Fibre channel boards, follow the slot order shown in Table 3 on page 5. Table 3 also shows where the MPEG boards must go.

For further guidance on board placement, refer to Table 7 on page 34. Follow the instructions under “Selecting a Board Location” on page 36. Also, it will be helpful to make a copy of Table 8 on page 35 to chart the placement of boards in their proper slots.

***NOTE:*** *If you decide to keep the chassis in the rack during the installation, it is a good idea to loosen any screws that need to be removed from the back of the Profile unit before sliding it forward on the racks.*

## Removing Circuit Boards

Use the following procedure to remove one or more circuit boards—as many as necessary—from the motherboard, in order to make room installing MPEG boards:

1. Remove all cables connected to the rear of the Profile unit. If you have not done so already, label each cable before removing it and draw a simple diagram to make it easier to reconnect the cables later. Remove any cable tie wraps, if necessary.
2. Remove the three-slotted PCI Interconnect board and remove all cables connected to Profile boards, such as SCSI, Sharcnet, or audio clock cables (look at Figure 7 on page 23 if you need help identifying the Sharcnet and audio clock cables). Label each cable before removing it and draw a simple diagram to make it easier to reconnect the cables later.



***CAUTION:*** *Be certain to label the SCSI cables before removing them so that you can reconnect them properly. If the A and C SCSI cables are reversed, the file system will be corrupted.*

3. It may be necessary remove the top slot cover screw that mounts any adjacent circuit boards to allow more give so board removal is easier (refer to Figure 4 on page 13 for the location of the top screw). Use the Torx tool with the T15 tip to do so.
4. Use the Torx tool with the T15 tip to remove the screws from the top of the slot cover inside the chassis (❶ in Figure 4) and the screw through bottom of the slot cover through the rear panel outside the chassis (❷ in Figure 4).



**CAUTION:** *To avoid damage to the circuit board when removing or installing it:*

- *Do not rock the circuit board from side to side in the EISA bus connector — pull straight up to remove.*
  - *Do not grasp or push on the rear-panel connectors when removing or installing circuit boards in the card slots.*
5. Extract the circuit board:
    - If the circuit board is tall, use the extraction lever on the front of the board and the extraction ring at the back of the board to lift the circuit board free of the connectors on the motherboard.
    - For shorter circuit boards, carefully grasp the board and lift upward to free the circuit board from the motherboard connectors. You might need to remove an adjacent tall board to get enough room for a safe hold on the shorter board.
  6. You may also need to remove slot covers for empty slots to prepare for the installation of new or moved boards. If this is necessary, refer to step 4.
  7. Place removed boards in the supplied antistatic bags. Fold the bags over to protect the boards from any ESD exposure.

## Reinstalling the Boards

Now that you have removed the boards from the chassis, you are ready to reinstall them, along with MPEG boards. See Table 3 on page 5 for placement of EDR, Fibre Channel, and MPEG boards. For information on placing other boards, refer to Table 7 on page 34.



**CAUTION:** *Forcing a board into the slot may result in bent connectors on the mother board. Carefully follow the instructions in step 1 to avoid damaging hardware.*



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## MPEG Board Upgrade Installation

1. Install the MPEG boards. An encoder board (P2MPG12) should go in slot J8 and a decoder board (P2MPG04) in J12. If you are installing two encoder boards or two decoder boards, slot order doesn't matter. Also, reinstall the video I/O and audio boards that you had to move out to make room for the MPEG boards. To install the boards correctly:
  - Align the boards with the connectors on the motherboard. Make sure the board is in the board guide at the front edge.
  - With the extractor on the front end of the board in the up position, press down on the board firmly until it is seated.
  - As you push the board into the connectors, you will feel the board engage first one, then a second set of contacts in the connector. The board is properly seated when the top of the rear mounting bracket is resting on the rear chassis wall shelf.
2. Install the slot cover screws. Use the Torx tool with the T15 tip to install the mounting screws in the top of the slot cover inside the chassis (❶ in Figure 4 on page 13) and through the rear panel at the bottom of the slot cover (❷ in Figure 4).
3. Connect the SCSI cables, as shown in Figure 5 on page 14.
4. Install the five-slotted PCI Interconnect board. This board is a high-speed bus used to move data between boards with PCI connectors. Align the center keys on the PCI Interconnect board with the keys on the Master EDR board in slot J10. Using appropriate pressure, press down firmly on the interconnect board to ensure that it is properly seated (see Figure 6 on page 15).
5. Connect the audio clock and Sharcnet cables according to the diagram you drew earlier or see "Audio Clock and Sharcnet Cabling" on page 21.
6. Follow the reassembly instructions under the heading "Reassembling the Profile Chassis" on page 28.



**WARNING:** *To avoid personal injury from electrical shock and/or damage to disk drives, do not apply power until all covers are in place and secured.*

## **Audio Clock and Sharcnet Cabling**

This section explains how to connect Sharcnet and audio clock cables between Audio Signal Processing Boards (ASPB) and video I/O boards. Each ASPB has four Sharcnet connectors for embedded digital audio, two Sharcnet connectors for interconnection with another ASPB, four audio record clock connectors and two reference clock input connectors. Serial digital I/O boards have two Sharcnet connectors for input and output of embedded audio, and two record clock output connectors. Analog composite I/O boards only have two record clock output connectors, as they do not support embedded audio.

### **General Sharcnet Rules**

Serial digital I/O boards extract embedded audio, route it to the ASPB, and receive audio output from the ASPB to be embedded in the serial digital stream. Beginning with the ASPB in the lowest numbered slot, the fourth Sharcnet connector from the rear panel is connected to the first Sharcnet connector (also from the rear) on the serial digital I/O board in the lowest numbered slot. Next, the sixth connector from the rear on the ASPB is connected to the second connector on the serial digital I/O board.

If you have a second serial digital I/O board, the third connector on the ASPB is connected to the first connector on the second serial digital I/O board; then, the fifth to the second. See an example of Sharcnet cabling for one serial digital I/O board in Figure 7, for two boards in Figure 8, and for four boards in Figure 9.

***NOTE: The Sharcnet connectors on the MPEG boards are not used at this time.***

### **General Audio Clock Rules**

On an ASPB, there is one audio record clock input connection for each bank of four audio channels, so that there are four record clock input connectors for the sixteen audio channels on an ASPB. The first input record clock connector, for the first bank (channels 1 through 4), is the one closest to the rear of the chassis, and the next three connectors follow the sequence for banks 2, 3, and 4. The remaining two connectors are not used.



In general, the video board in the lowest-numbered slot must provide the audio clock signal to the to the first audio bank (and the second bank if the video board has two inputs) on the ASPB. The video I/O board installed in the next higher-numbered slot should provide the audio record clock signals for the next audio banks, and so on until all four audio banks have their record clocks connected.

For example, if you have two analog composite I/O video boards in slots J14 and J15, the audio clock signal from the board in J14 should be connected to the first and second audio record input clock signals on the ASPB while the signals from J15 should be connected to the third and fourth connectors. See serial digital I/O examples of audio clock cabling for one serial digital I/O board in Figure 7 on page 23, for two boards in Figure 8 on page 25, and for four boards in Figure 9 on page 27.

If your Profile unit only has one ASPB, you can connect only four record clocks to it. If your disk recorder has two ASPBs, eight record clocks are available. If your Profile unit has more than four video inputs, you should connect record clocks from video inputs that might record video that is not genlocked to your house reference, such as remote feeds from outside your facility. Any video inputs that are not supplying a record clock to the ASPB should be locked to your house reference, if audio is to be associated with those inputs. Otherwise, audio clock errors could occur during recording.

The first cabling example shows the external audio clock and Sharcnet cabling necessary for a single serial digital I/O board used with a single ASPB. The cable connections are listed in Table 4 and shown in Figure 7.

**Table 4.** Cabling for a serial digital I/O board and an ASPB

Cable Type	From Serial Digital I/O	To ASPB
Sharcnet	Sharcnet In	Sharcnet Out 1
Sharcnet	Sharcnet Out	Sharcnet In 1
Audio clock	Channel A	Audio 1
Audio clock	Channel B	Audio 2

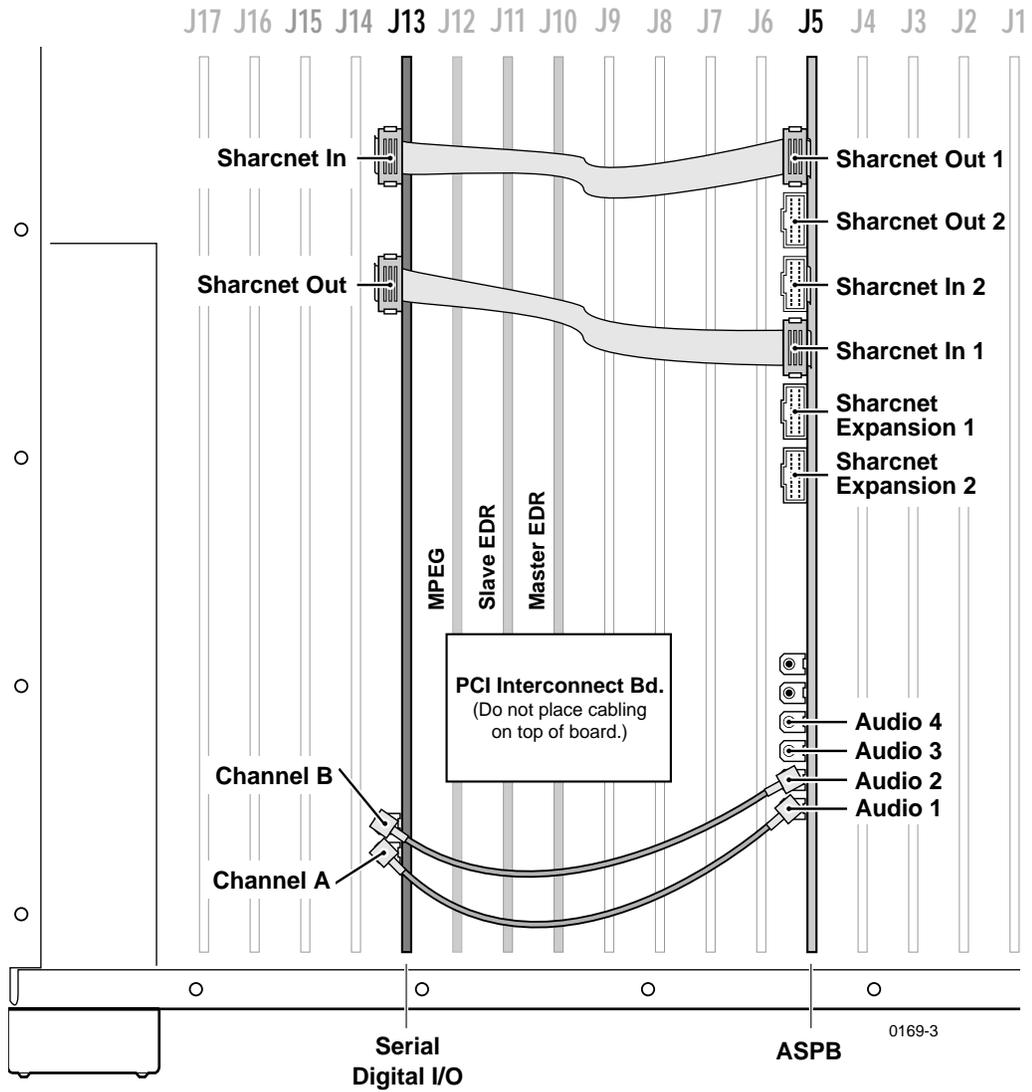


Figure 7. Cabling for a serial digital I/O board and an ASPB



The second cabling example shows the external audio clock and Sharcnet cabling necessary for two serial digital I/O boards used with an ASPB. The connections are listed in Table 5 and shown in Figure 8.

**Table 5.** Cabling for two serial digital I/O boards and an ASPB

<b>Cable Type</b>	<b>Serial Digital I/O Slot</b>	<b>From Serial Digital I/O</b>	<b>To ASPB</b>
Sharcnet	J14	Sharcnet In	Sharcnet Out 1
Sharcnet	J15	Sharcnet In	Sharcnet Out 2
Sharcnet	J14	Sharcnet Out	Sharcnet In 1
Sharcnet	J15	Sharcnet Out	Sharcnet In 2
Audio clock	J14	Channel A	Audio 1
Audio clock	J14	Channel B	Audio 2
Audio clock	J15	Channel A	Audio 3
Audio clock	J15	Channel B	Audio 4

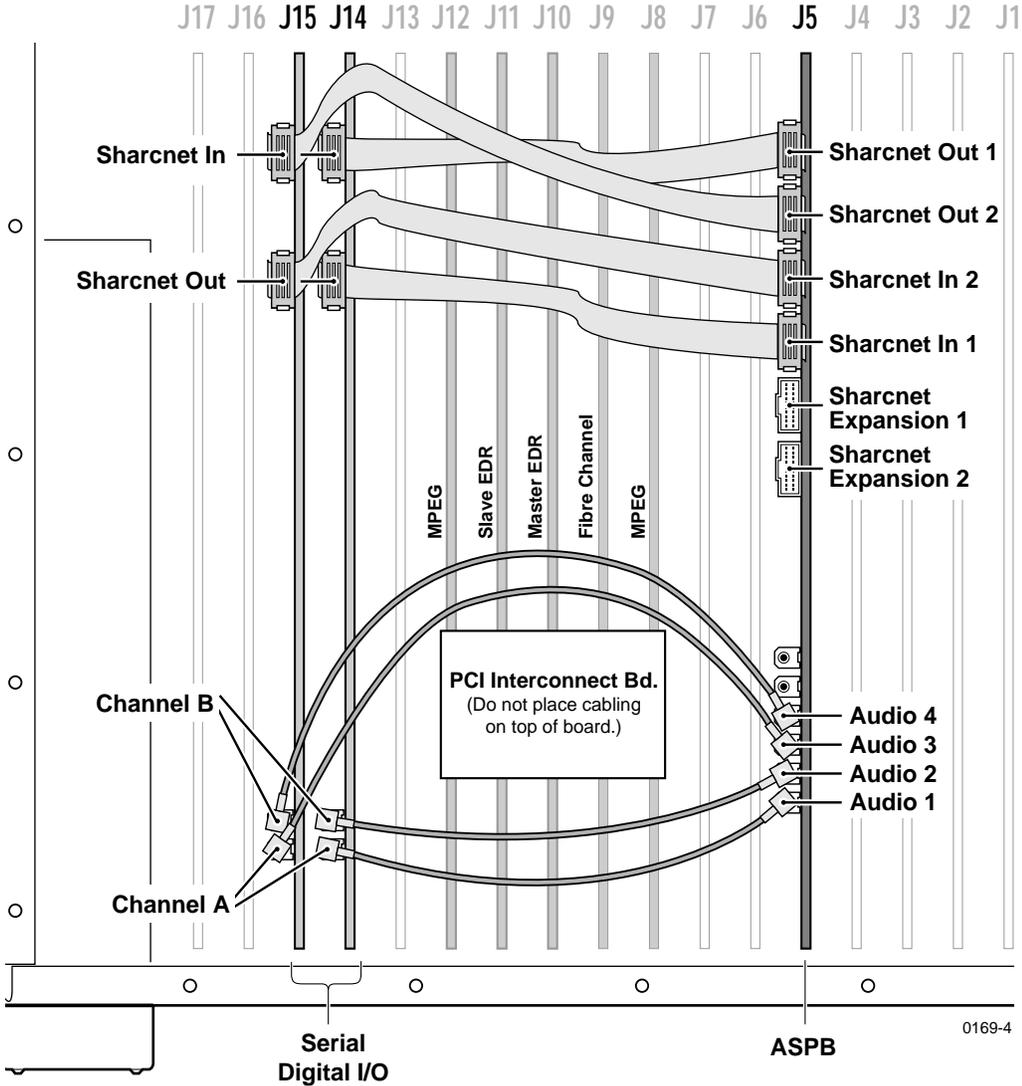


Figure 8. Cabling for two serial digital I/O boards and an ASPB



## MPEG Board Upgrade Installation

This final cabling example shows the external audio clock and Sharcnet cabling for four serial digital I/O boards used with two ASPBs. The connections are listed in Table 6 and shown in Figure 9.

**Table 6.** Cabling for four serial digital I/O boards and two ASPBs

Cable Type	Serial Digital I/O Slot	Serial Digital I/O	ASPB 1 (J5)	ASPB 2 (J7)
Sharcnet	N/A	N/A	Sharcnet Expansion 2	Sharcnet Expansion 1
Sharcnet	N/A	N/A	Sharcnet Expansion 1	Sharcnet Expansion 2
Sharcnet	J6	Sharcnet In	Sharcnet Out 1	N/A
Sharcnet	J6	Sharcnet Out	Sharcnet In 1	N/A
Sharcnet	J13	Sharcnet In	Sharcnet Out 2	N/A
Sharcnet	J13	Sharcnet Out	Sharcnet In 2	N/A
Sharcnet	J14	Sharcnet In	N/A	Sharcnet Out 1
Sharcnet	J14	Sharcnet Out	N/A	Sharcnet In 1
Sharcnet	J15	Sharcnet In	N/A	Sharcnet Out 2
Sharcnet	J15	Sharcnet Out	N/A	Sharcnet In 2
Audio clock	J6	Channel A	Audio 1	N/A
Audio clock	J6	Channel B	Audio 2	N/A
Audio clock	J13	Channel A	Audio 3	N/A
Audio clock	J13	Channel B	Audio 4	N/A
Audio clock	J14	Channel A	N/A	Audio 1
Audio clock	J14	Channel B	N/A	Audio 2
Audio clock	J15	Channel A	N/A	Audio 3
Audio clock	J15	Channel B	N/A	Audio 4

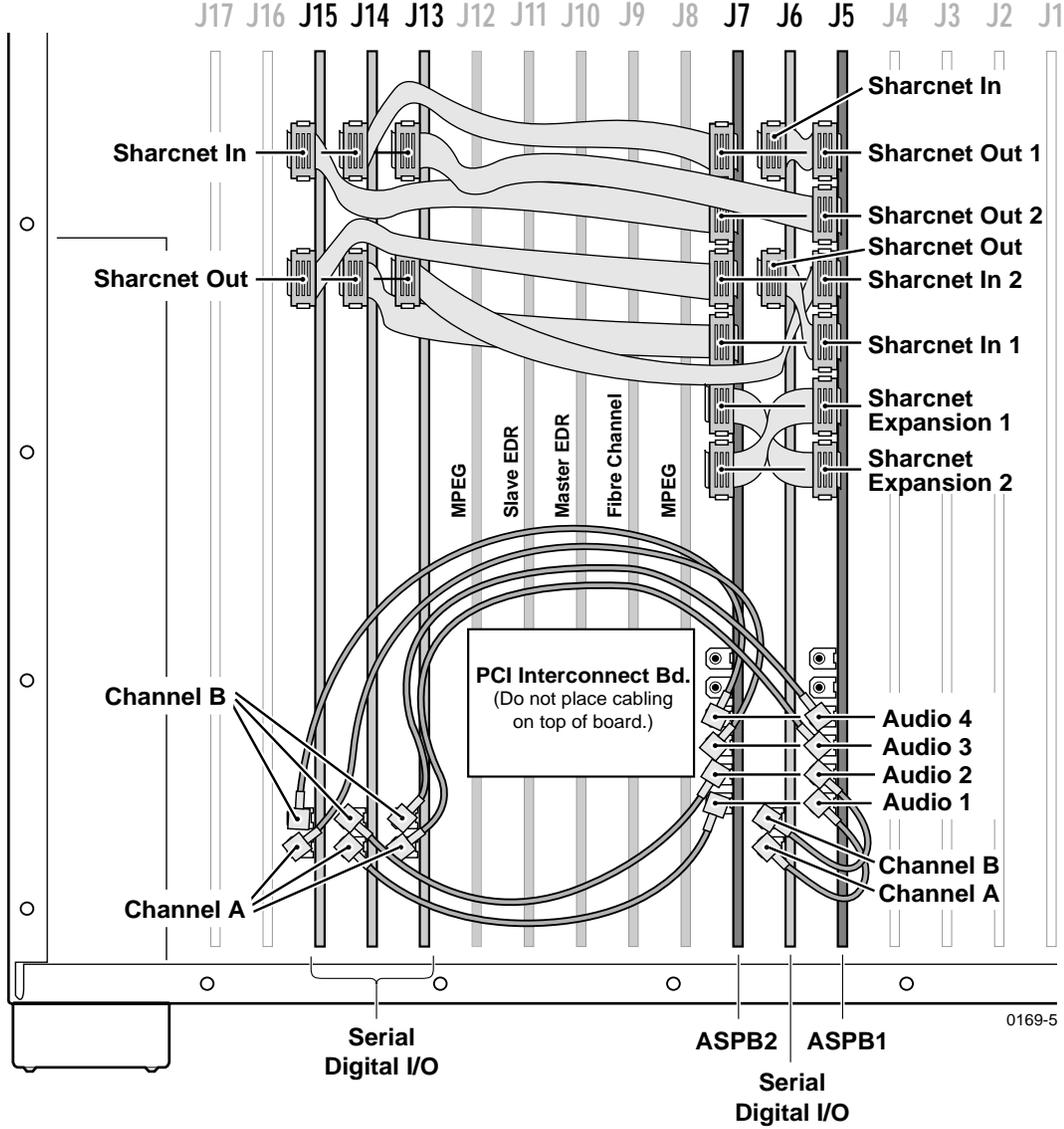


Figure 9. Cabling for four serial digital I/O boards and two ASPBs



## Reassembling the Profile Chassis

To reassemble the Profile chassis:

1. Apply stick-on labels on the Profile chassis rear panel to help identify all new board locations (see Figure 10).
2. Bundle any loose cables with the tie wraps provided.
3. Use the Torx tool with the T10 tip to reinstall the rear board hold-down bracket (see Figure 3 on page 11). Make sure that boards in the chassis fit into the grooves in the bracket.



***CAUTION: To prevent damage to an Analog Composite Monitor board, do not install a short board extension on the front hold-down bracket at the Monitor board location.***

4. If necessary, move or remove any short board extensions on the front board hold-down bracket. Then use the Torx tool with the T10 tip to reinstall the bracket (see Figure 3).
5. Use the Torx tool with the T10 tip to reinstall the rear chassis cover with the screws previously removed.

***NOTE: When reinstalling rear and front chassis covers, start all the screws before tightening them. This ensures that the screw threads are properly aligned, and will help avoid stripping threads or breaking screws.***

6. Use the Torx tool with the T10 and T15 tips to reinstall the front chassis cover with the screws previously removed.
7. Reinstall the Profile chassis in the rack and reconnect as labeled all external cables previously removed.
8. Apply power to the Profile system and check the presence of the MPEG boards with the procedure under “Installation Verification” on page 29.

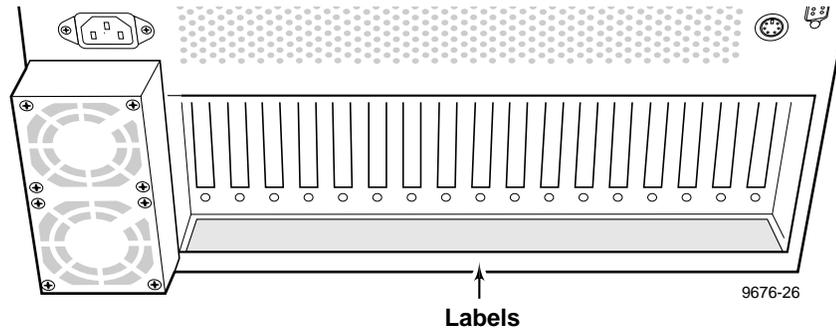


Figure 10. Stick-on label location

## Installation Verification

Verification for installation of the MPEG board consists of:

- Checking the Profile Log for messages about the presence of MPEG boards. On the Windows NT 4.0 desktop, double-click the **Profile Log** icon or choose **Start | Programs | PDR Applications | Profile Log**.
- Using Configuration Manager to see if the system recognizes the newly installed boards. For instructions, see “Using Configuration Manager to Verify Boards” on page 30.
- Using VdrPanel to verify that you can configure MPEG video and audio resources, and then record and play on all available channels. This will help detect any problems with the MPEG boards for video and/or Sharcnet cabling for audio. For information on configuring VdrPanel, as well as recording and playing clips, see the chapter on VdrPanel in the *Profile Family User Manual*.
- Using Media Manager to convert media with the Transcode Utility and to perform media transfers over Fibre Channel, if a Fibre Channel board is installed. For information on the Transcode Utility and copying or moving media over Fibre Channel, see the chapter on Media Manager in the *Profile Family User Manual*.



## Using Configuration Manager to Verify Boards

You can use the Configuration Manager to verify the presence of MPEG encoder and decoder boards. Look at the bottom of the Configuration Manager window to ensure that the abbreviation *MPEG* appears in the slots where they were installed (J8 and J12). Both encoder and decoder boards appear at the bottom of the window. See Figure 11 for an example.

Also, you should be able to see the decoder MPEG host boards listed in the configuration tree. Encoder boards do not appear in the configuration tree since there is no need to configure them with software.

If you have MPEG decoder boards installed in your Profile, you need to obtain a timing signal from a video I/O board to synchronize your output. See the instructions on setting MPEG input timing in the chapter on Configuration Manager in the *Profile Family User Manual*.

To check for recognition of added MPEG boards in a PDR 200:

1. From the Windows NT 4.0 desktop, open the Configuration Manager window by choosing **Start | Programs | PDR Applications | Configuration Manager**.
2. Check the configuration tree and the bottom of the window for the presence of MPEG boards.
3. Choose **File | Exit**.

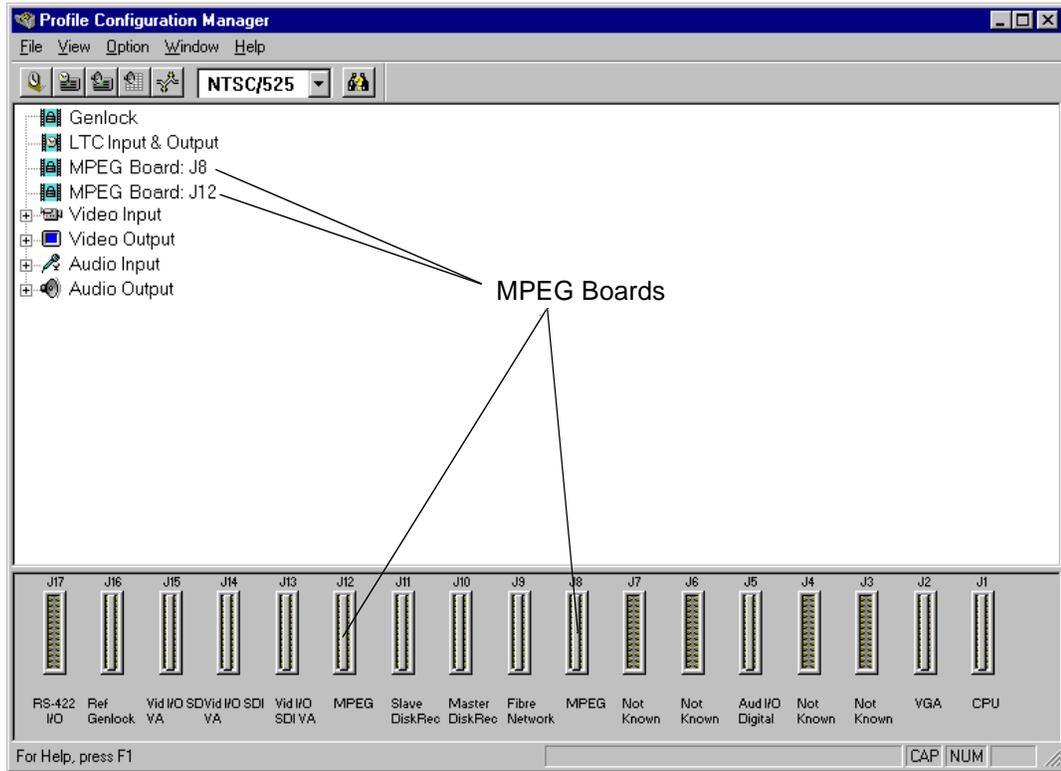


Figure 11. Configuration Manager showing MPEG boards



## **Board Location Guide**

This board location guide is provided to help you install an MPEG board in a PDR 200 Video File Server that is *not* an Option MG, that is, *not* shipped from the factory as MPEG ready. The board layout for an Option MG PDR 200 eases MPEG board installation, but other systems may require that you move existing boards to accommodate the MPEG board. This guide will help you do that.

If you move any circuit boards, remember that some boards must occupy specific slots, while others can be installed in almost any slot as long as their I/O requirements are met (see Table 7 on page 34). The board location guide identifies the video router inputs and outputs of each Profile board currently available, as well as the input and output connections on the video router connectors on the motherboard.

This guide provides a general approach to board location. It explains the relationship between the motherboard and video router connectors and provides tables, charts and examples to assist you in installing boards.

## **Video Router to Motherboard Relationship**

The video router provides and controls video data to twelve connectors on the motherboard. These video data connectors are aligned with the main motherboard connectors for slots J5 through J16. Since the Reference Genlock (Ref Gen) board must occupy J16 to provide the necessary system clocks, this discussion excludes J16.

When choosing a slot for a board, the major constraint for a slot is how the board connects to the video router. Not all boards require the same number of video I/O connections, and not all video data connectors provide the same number of video I/O connections. Therefore, you must know how many input and output connections the board needs, if any, and the slots available that meet those needs.

Table 7 on page 34 lists each of the boards which may be installed in the Profile system and the recommended slots, possible alternatives, and restrictions for each board. If more than one slot is recommended or possible for a board, those slots are listed in the order of preference.

## **Video Router I/O Connections**

Now let's look at the video router connections available at slots J5–J15. Table 8 is a blank board location chart that shows the video router input and output connections. In this table:

- The **Slot** column lists each slot on the motherboard connected to the video router.
- The **Board** column is where you write the boards currently installed and the name of the board you want to install.
- The **Input** column identifies input connections available *to* the installed boards *from* the video router. The numbers in the blocks correspond to the order input connections are assigned at the video router connector.
- The **Output** column identifies output connections available *from* the installed boards *to* the video router. The numbers in the blocks correspond to the order output connections are assigned at the video router connector.
- The shaded blocks in the diagram indicate video router connections shared between slots. A shared connection is available to either slot, but not both at the same time. For instance:
  - The shaded blocks between slots J5 and J6, slots J7 and J8, slots J10 and J11, and slots J12 and J13 indicate shared input connections.
  - The shaded blocks between slots J8 and J9, slots J10 and J11, and slots J12 and J13 indicate shared output connections.



## MPEG Board Upgrade Installation

**Table 7.** Board I/O requirements and restrictions for an MPEG-ready PDR200

Board	Video Router Connection Requirements		Recommended Slots	Other Possible Slots	Comments
	Inputs	Outputs			
CPU	n/a	n/a	J1	None	Reserved for PC card only
VGA	n/a	n/a	J2	None	ISA only
LAN	n/a	n/a	J3	None	EISA only
SCSI	n/a	n/a	J4	None	EISA only
RefGen	n/a	n/a	J16	None	Reference genlock
RS-422	n/a	n/a	J17	None	EISA only
Master EDR	2	2	J10	None	Must be adjacent to Slave EDR and Fibre Channel (if installed). PCI Interconnect required.
Slave EDR	2	2	J11	None	Must be adjacent to Master EDR and MPEG (if installed). PCI Interconnect required.
Analog Composite In	None	1	J14	J15, J7	Must be adjacent to the Analog Composite Decoder
Analog Composite Decoder	None	None	J13	J14, J6	Must be adjacent to Analog Composite In
Four Channel Analog Out	4	None	J6	J7	
Analog Composite I/O	2	2	J14, J15	J6, J7, J13	
Analog Composite Monitor Out	4	None	J6	J7	
Serial Digital I/O	2	2	J14, J15	J6, J7, J13	Cables must be able to reach ASPBs
CAV In	None	1	J6	J7, J13, J14, J15	
MPEG encoder	1	2	J8, J12	None	Must be adjacent to either Slave EDR or Fibre Channel (if installed). PCI Interconnect required.
MPEG decoder	None	4	J12, J8	None	Must be adjacent to either Slave EDR or Fibre Channel (if installed). PCI Interconnect required.
Fibre Channel	None	None	J9	None	Must be adjacent to Master EDR. PCI Interconnect required.
Mix Effects	6	2	J6	J7	Only J6 and J7 have 5 inputs; board must be able to get a shared input (the 6th) from an adjacent slot (J5 or J8)
Audio Signal Processing Board (ASPB)	None	None	J5 (1st) J7 (2nd)	J6, J13, J14, J15	Cables must be able to reach video boards or additional ASPB. Second ASPB necessary for 32 channels of audio.

**Table 8.** Board location chart

Slot	Board	Input	Output
J5		1	1
			2
		2	3
J6		6	2
		5	
		4	
		3	1
		2	
		1	
J7		1	1
		2	
		3	
		4	2
		5	
		6	
J8		2	1
		1	2
			3 4
J9		1	4 3
		2	2
			1
J10		1	1
			2
J11		2	3 4
		4	4 3
		3	2
		2	
J12		1	1
		2	2
		3	
		4	3 4
J13		2	4 3
		1	2
			1
J14		1	1
			2
		2	3
J15		1	1
			2
		2	3



## Selecting a Board Location

Here's how to use the tables to select a location for a board. Make a copy of Table 8 to use as a template for recording information for board placement.

1. Write the board name in Table 8 and, referring to Table 7, put a check mark (✓) in each input and output block used by each board currently installed in your Profile system. Start with the **1** block for each board.
2. Look in Table 7 to see the input and output requirements and both the recommended slot and alternative slots for the board you want to install.
3. Look in Table 7 for a slot with the required video router connections available. Starting with the **1** block, put an **X** in each block that corresponds to an input and output requirement for the newly added board. If the recommended slot is occupied, or there are not enough input or output blocks available, look at the alternative slots.
4. If all input and output requirements for the board match the available ones for the slot, write the board name in the **Board** column for the slot and install the board.

***NOTE:** If you can't find an open slot with the I/O connections which meets the I/O requirements of the board you want to install, you will have to move existing boards. You can use Table 7 and Table 8 to experiment with various board locations before deciding on one.*