585-350-211
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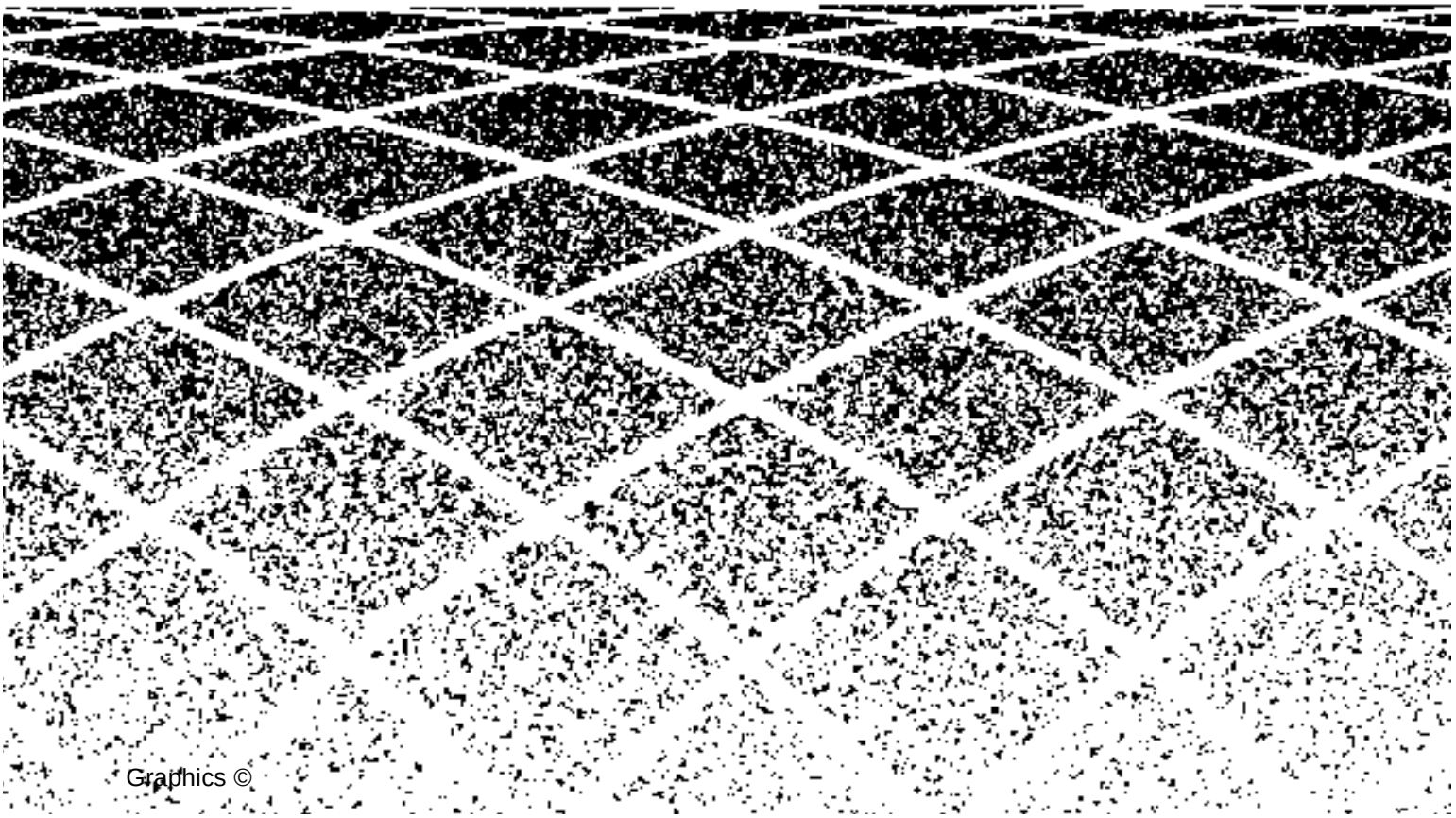
October, 1993

Conversant VIS
486 CPU Upgrade Kit
for MAP/100 and MAP/100C



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About This Book

Purpose

This book, *486 CPU Upgrade Kit for MAP/100 and MAP/100C*, 585-350-211, describes the procedures for upgrading both a MAP/100 and MAP/100C from a 386 CPU system to a 486 CPU system.

Intended Audiences

This book is intended primarily for the technician. Secondary audiences include the following: customer, field support, customer support, and factory assemble, load, and test (ALT) personnel.

How This Book Is Organized

This book is organized into the following chapters:

- About This Book

  This chapter is designed as a preface to the rest of the book, including such information as the book purpose, its intended audiences and organization, use, conventions, trademarks and service marks, security and safety requirements, and related resources. This chapter also explains how to make comments about the book.

- Chapter 1, "Getting Started"

  This chapter describes warnings about the MAP/100 and MAP/100C, how to avoid electrostatic damage to hardware items, how to unpack the kit, the importance of saving packing materials, items in the kit, and tools you need.

- Chapter 2, "Getting Inside the Platform"

  The first half of this chapter describes how to open the MAP/100 by removing the dress covers of the chassis and opening and removing the front doors, as well as how to access the peripheral bay and card cage.

  The last half of this chapter how to open the MAP/100C by opening the front door, as well as how to access the peripheral bay, card cage, power supply, and cooling fan panel.

- Chapter 3, "Upgrading Circuit Cards"

  This chapter serves as an introduction to the circuit cards that you will be upgrading as part of this upgrade kit. This chapter also includes “General Steps for Circuit Card Installation” which applies to the installation of all circuit cards, though additional steps may be required for some.

  There are two separate sections for installing cards in the MAP/100 and the MAP/100C.

- Chapter 4, "Performing the Upgrade"

  This chapter describes the procedures to upgrade your system from 386 to 486, and to install the Remote Maintenance card. The first half of this chapter describes how to upgrade your hardware in the MAP/100. The last half of this chapter describes how to upgrade your hardware in the MAP/100C.

- Index

  This section provides an alphabetical listing of principal subjects covered in this book.

Trademarks and Service Marks

The following trademarked products are mentioned in this book:

- CONVERSANT is a registered trademark of AT&T.
- AUDIX and Voice Power are registered trademarks of AT&T.
- UNIX is a registered trademark of UNIX System Laboratories, Inc.

Related Resources

The following books are expected to be used in conjunction with this book:

- *MAP/100 Voice Processing Hardware Installation*, 585-350-107
- *MAP/100C Voice Processing Hardware Installation*, 585-350-108
- *CONVERSANT VIS Version 4.0 Maintenance*, 585-350-112
- If you are also upgrading your MAP/100 or MAP/100C from ESDI to SCSI, you will need the *CONVERSANT VIS Version 4.0 SCSI DIsk Drive Upgrade Kit for MAP/100 and MAP/100C*, 585-350-212

How to Make Comments About This Book

A reader comment card is behind the title page of this book. While we have tried to make this book fit your needs, we are interested in your suggestions for improving it and urge you to complete and return a reader comment card.

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Getting Started

1

What's in This Chapter

This chapter describes warnings about the MAP/100 and MAP/100C, how to avoid electrostatic damage to hardware items, how to unpack the kit, the importance of saving packing materials, items in the kit, and tools you need.

Heeding Warnings

Warnings and cautions appear throughout this book as needed when describing procedures. These admonishments let you know when the actions you are about to perform can harm you or the equipment unless you follow procedure steps as listed.

The warnings that occur within this book are listed here as well for your information.

⚠ WARNING:
Notify the telephone company immediately if the MAP/100 or MAP/100C is to be permanently or temporarily disconnected from its present line/trunk circuits (Digital circuits ONLY).
If you are turning off the power to the MAP/100(C), you are disconnecting from the line/trunk circuits.

WARNING:
If you disconnect the MAP/100 or MAP/100C from the telephone network on a continuing basis without letting the telephone company know, they can disconnect your service (Digital circuits ONLY).

WARNING:
If any of the telephone equipment is not operating properly, remove it immediately from the telephone lines. Malfunctioning equipment can harm the telephone network.

WARNING:
Shut power off before removing the dress covers or opening any part of the MAP/100 or MAP/100C.

Perform a "soft" shutdown of the VIS operating system, if on-line, before shutting off power to the system. See CONVERSANT VIS Version 4.0 Operations, 585-350-703, for information.

WARNING:
Observe proper electrostatic discharge precautions when handling computer components. Wear a ground wrist strap on your bare skin and connect to a ground.

WARNING:
The manufacturer(s) does not accept liability for a damaged unit if the unit is not returned in the original packing materials and carton. The carton has been designed to ensure product warranty and to prevent damage.

WARNING:
Do not use the dress covers of the MAP/100 as a way to lift it.

Avoiding Electrostatic Discharge Damage

The human body can collect thousands of volts of destructive static electricity from ordinary activities, for example, walking on a rug, handling synthetic materials, or wearing synthetic clothes. When this static electricity discharges onto another surface at a different voltage potential, it is called *electrostatic discharge* or *ESD*.

A person cannot feel ESD below approximately 3500 volts. However, only 30 volts is needed to damage ESD-sensitive electronic components.

Circuit cards and packaging materials that contain ESD-sensitive components are often marked with a yellow and black warning symbol. Proper grounding techniques prevent the discharge of damaging static electricity from your body into these ESD-sensitive components during handling.

There is no quick method of testing for ESD damage. Components that are damaged may simply fail after a brief period of normal operation.

To avoid damaging ESD-sensitive components, follow these rules:

- Handle ESD-sensitive circuit cards only after you have attached a wrist strap to the bare skin of your wrist. Attach the other end of the wrist strap to a ground that terminates at the system ground, such as any unpainted metallic chassis surface.
- Handle a circuit card by the faceplate or side edges only. Do *not* touch components, leads, or connector areas (gold finger pins).
- Hold a short circuit card by the faceplate only. See Figure 1-1.
- Hold a larger circuit card as shown in Figure 1-2. Ensure palm is not in contact with the board wiring side.
- Keep circuit cards away from plastics and other synthetic materials such as polyester clothing.
- Do *not* hand circuit cards to another person unless that person is grounded at the same potential level.
- Hold devices such as a hard disk, floppy drive, or cartridge tape drive as you would a large circuit card. The ESD sensitive area of these components is located on the bottom surface. Hold these drives on the areas recommended in Figure 1-3.

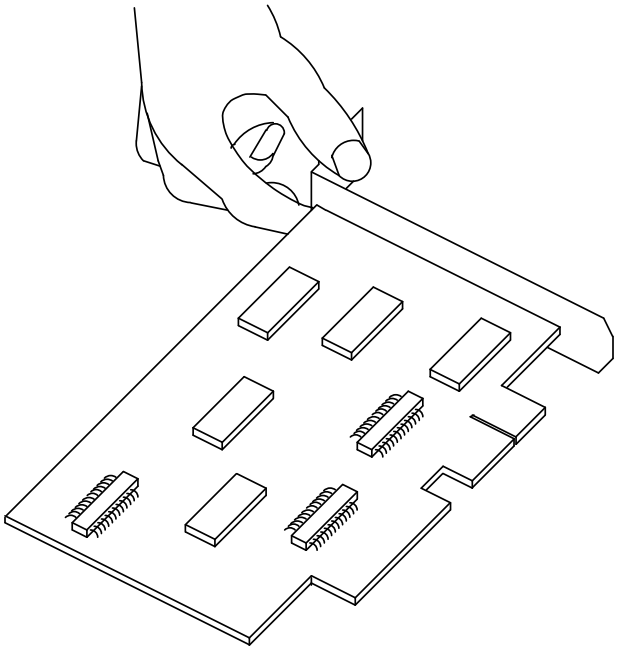

Figure 1-1. How to hold a Short Circuit Card

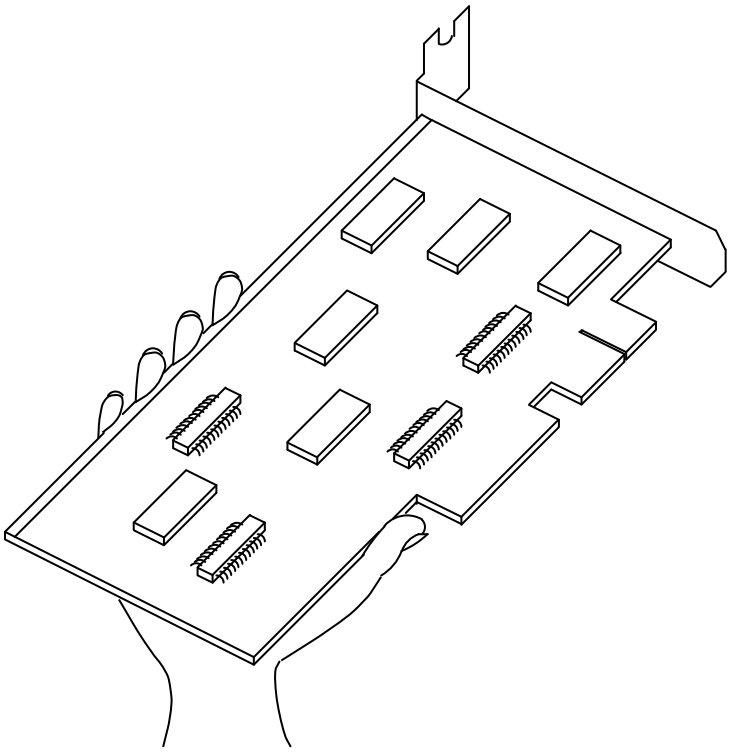

Figure 1-2. How to Hold a Long Circuit Card

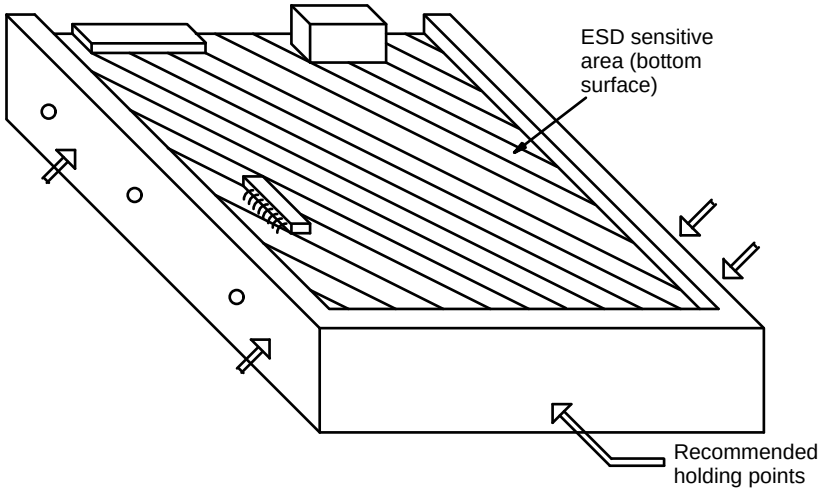

Figure 1-3. Electronic Component ESD Sensitive Area

Unpacking the Upgrade Kit

Save the shipping carton and all packing materials to use in the event the unit needs to be returned to the manufacturer. Packing materials include anti-static bags and bubble wrap as well as cardboard and foam inlays. If you have ordered multiple kits, saving one carton and packing materials should be sufficient.

⚠ CAUTION:
The manufacturer does not accept liability for a damaged unit if the unit is not returned in the original packing materials and carton. The carton has been designed to ensure product warranty and to prevent damage.

If you do need to return a kit, complete the yellow GBCS return repair tag and attach it to the unit. The factory information packet included in the kit carton contains the yellow return repair tag.

Follow the steps listed below to unpack the kit at the job site:

1. At the job site, cut open the top of the box.
2. Remove the top foam packing materials. Save all packing materials in case the kit items must be repacked and transported to a different location.
3. Remove and lay out each item in the container.
4. Use the list below to ensure that you received all the items in the kit.

Inventory of Upgrade Kit Items

The 486 CPU upgrade kit contains the following items:

- one D486DX/50-00-ATT CPU
- one 16 Mbyte SIMM
- one 20” keyboard cable for the MAP/100 (ED5P208-30, G30)
- one 8” keyboard cable for the MAP/100C (ED5P208-30, G39)
- one Remote Maintenance (RMB) card
- one RMB reset cable (ED5P208-30, G31)
- one CPU/RMB keyboard adapter (407005255)
- one internal fan status cable (ED5P28-30, G32)
- one MAP/100 uninterrupted power supply (UPS) status cable (ED5P208-30, G33)
- one MAP/100C fan status circuit card (Part # A20158)
- one MAP/100C fan status discrete wire cable (407023464)
- one copy of this book

Gathering Tools and Test Equipment

To disassemble and reassemble the MAP/100 or MAP/100C hardware, you need the following tools:

- Medium width flat-blade screwdriver
- No. 2 Phillips screwdriver
- Small needle-nose pliers for moving jumpers
- Small wire cutters for cutting cable ties
- Antistatic grounded wrist strap
- Antistatic grounded work mat
- flashlight or auxiliary lighting if in dimly lit area

Locating Key Components in the MAP/100

Use the following sections and diagrams to locate key components on the unit. For additional information describing the MAP/100 hardware, see the system description for your application.

The Front of the Chassis

See the table below for descriptions and functions of components on the front of the chassis that are important for this kit. Figure 1-4 shows the front view of the MAP/100.

Table 1-1. Chassis Front Components

Component	Location	Description	Function
front doors	one on each side	hinged doors	covers peripheral bay - disk drives and cooling fans
power switch	lower right side, behind door	rocker switch	turns MAP/100 on and off
reset switch	lower right side, behind door	button	depress button to reset the MAP/100
Main power available indicator	center, between doors	LED	lights green when power is on
fan status indicator	center, between doors	LED	lights green when fan is working normally
disk activity indicator	center, between doors	LED	covers air intake fan and holds air filter

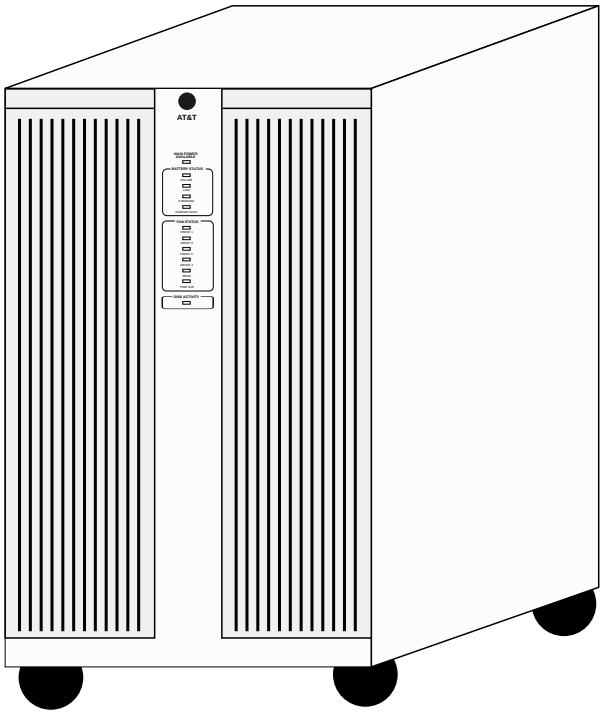

Figure 1-4. Front View of the MAP/100

Locating the Peripheral Drive Devices

Locate the various drives in the peripheral bay behind the right front door.

Table 1-2. Peripheral Bay Drives

Drive	Description	Function	Peripheral Bay Location
Cartridge tape	SCSI 525 Mbyte	Backup & restore load system	8
Floppy	3.5 inch 1.44 Mbtye high density	System config diagnostic testing	9
Hard disk (optional)	1.2 Gbyte SCSI	Disk mirroring	2
Hard disk	1.2 Gbyte SCSI	Stores operating system application software speech data	0

Chassis Cooling System

Four cooling fans are located in front of the circuit card cage area, behind the left front door. Another cooling fan (the chassis fan) is located in the center on the back of the unit. The last fan is located inside the power supply.

The fans maintain air flow in the unit to prevent components from overheating. Overheating can cause a component to malfunction. Maintain clearance around the unit so that air can circulate.

The Back of the Chassis

Figure 1-5 shows the back view of the MAP/100 for AC units. Figure 1-6 shows the back view of the MAP/100 for DC units. See the table below for the location and description of components on the back of the MAP/100 chassis that are important for this kit.

Table 1-3. Chassis Back Components

Component	Location	Description	Function
Video connector	Video circuit card faceplate in slot #16	15-pin female D-subminiature	Connects MAP/100 to monitor
circuit breaker	lower center	rocker switch	Turns off/on incoming power to MAP/100
AC power outlet connector	lower center below circuit breaker (AC units)	3-prong, 5 AMP 110/220V	Connects MAP/100 to monitor via 6-feet monitor power cord
AC power inlet receptacle	Lower center below circuit breaker (AC units)	3-prong 110/220V	Connects the MAP100 with 9-feet power cord
DC power terminal strip	Lower center below circuit breaker (DC units)	3 Screw lugs	Connects MAP/100 to DC power via -48CD dedicated line

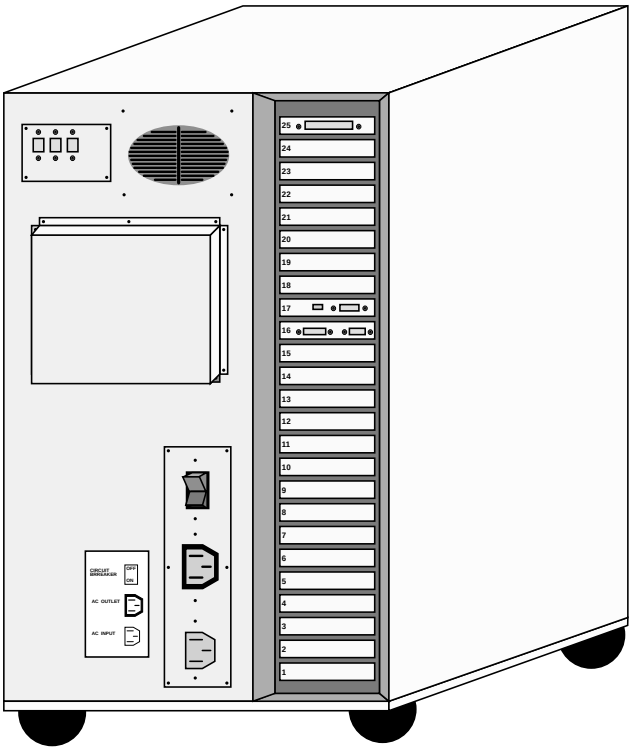

Figure 1-5. Back View of the MAP/100 – AC Units

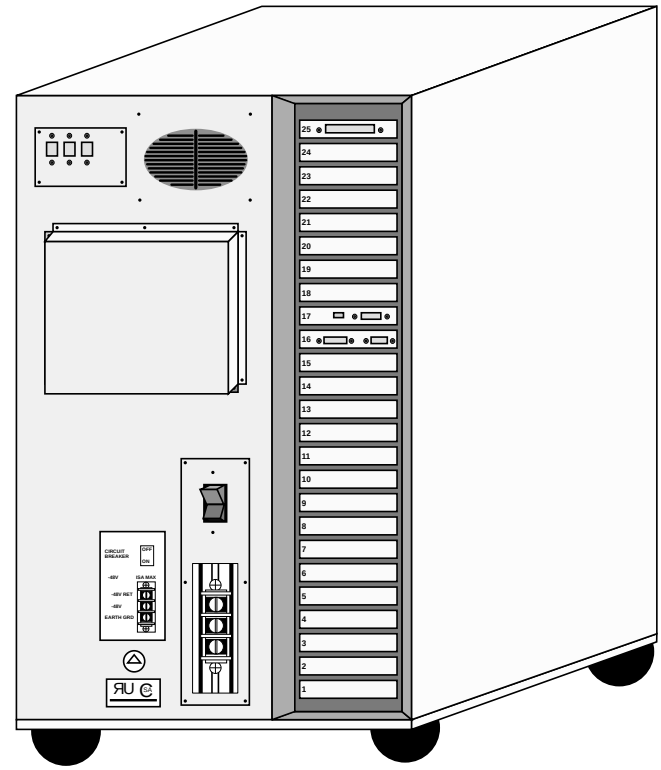

Figure 1-6. Back View of the MAP/100 – DC Units

Locating Key Components in the MAP/100C

Use the following sections and diagrams to locate key components on the unit. For additional information describing the MAP/100C hardware, see the system description for your application.

The Front of the Chassis

See the table below for descriptions and functions of components on the front of the chassis that are important for this kit. Figure 1-7 shows the front view of the MAP/100C.

Table 1-4. Chassis Front Components

Component	Location	Description	Function
front door	upper middle section	hinged on right, has latch fasteners	covers card backplane
peripheral door	bottom middle	hinged on the bottom of the door	covers the disk and tape drive units
power switch	lower right side, below front door	rocker switch	turns MAP/100C on and off
reset switch	lower right side, below front door	recessed button	depress button to reset the MAP/100C
Power indicator	far lower right, below front doors	LED	lights green when power is on
fan status indicator	lower left, below front door	LED	lights green when fan is working normally

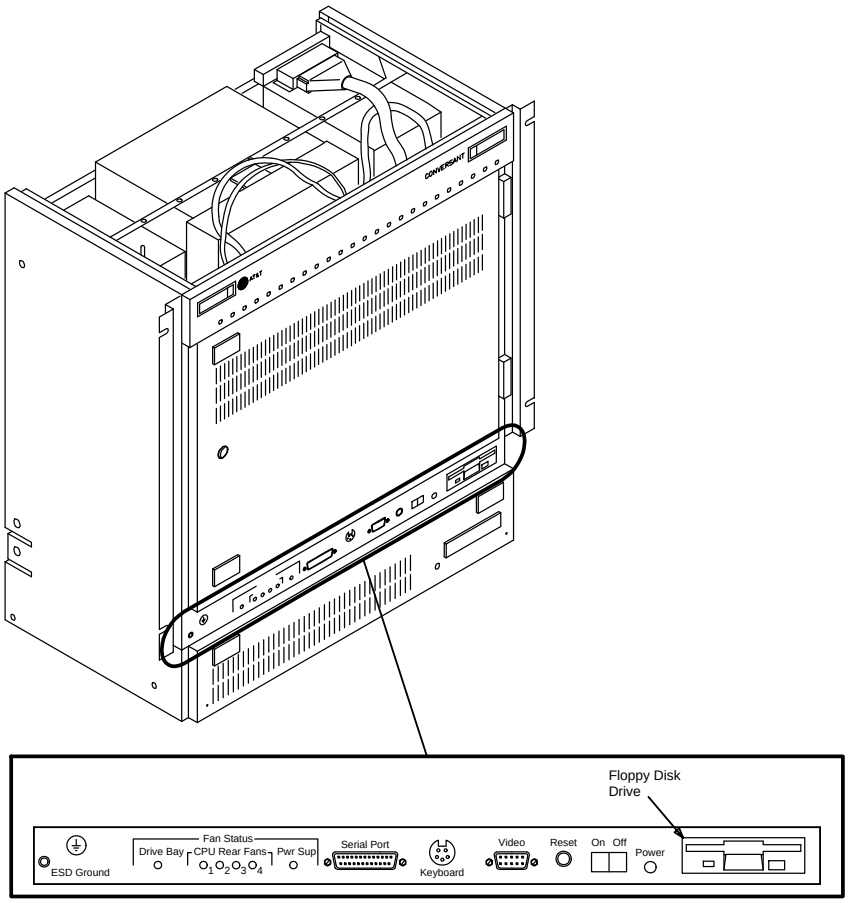

Figure 1-7. Front View of the MAP/100C

Locating the Peripheral Drive Devices

Locate the various drives in the peripheral bay behind the lower front door.

Table 1-5. Peripheral Bay Drives

Drive	Description	Function	Peripheral Bay Location
Cartridge tape	SCSI 525 Mbyte	Backup & restore load system	Lower right – 4
Floppy	3.5 inch 1.44 Mbtye high density	System config diagnostic testing	On control panel - above position 3 of the peripheral bay
Hard disk (optional)	1.2 Gbyte SCSI	Disk mirroring	Lower middle – 2
Hard disk	1.2 Gbyte SCSI	Stores operating system application software speech data	Lower left – 1

Chassis Cooling System

Four cooling fans are located in front of the circuit card cage area, behind the left front door. Another cooling fan (the chassis fan) is located in the center on the back of the unit. The last fan is located inside the power supply.

The fans maintain air flow in the unit to prevent components from overheating. Overheating can cause a component to malfunction. Maintain clearance around the unit so that air can circulate.

The Back of the Chassis

Figure 1-8 shows the back view of the MAP/100C. See the table below for the location and description of components on the back of the MAP/100C chassis that are important for this kit.

Table 1-6. Chassis Back Components

Component	Location	Description	Function
Power supply access door	Top center	Hinged on bottom to swing downward	Covers MAP/100C power supply
Fan panel access door	Center	Hinged on bottom to swing downward	Covers the 4 rear cooling fans
Peripheral bay access door	Bottom center	Hinged on bottom to swing downward	Covers peripheral bay units
Video connector	Lower right below fan panel access door	15-pin female D-subminiature	Connects MAP/100C to monitor
Reset button	Lower right below fan panel access door	Recessed button	Depress button to reset the MAP/100C
Circuit breakers	Upper right corner	Rocker switches	Turns off/on incoming power to MAP/100C
Power on	Upper right corner next to circuit breakers	LED	Lights green when power is on
AC power inlet receptacle	Upper right corner, next to circuit breaker (AC units)	3-prong 110/220V	Connects the MAP100C with 9-feet power cord to supply power
DC power terminal strip	Upper right corner, next to circuit breaker (DC units)	4 Screw lugs	Connects MAP/100C to DC power via -48CD dedicated line

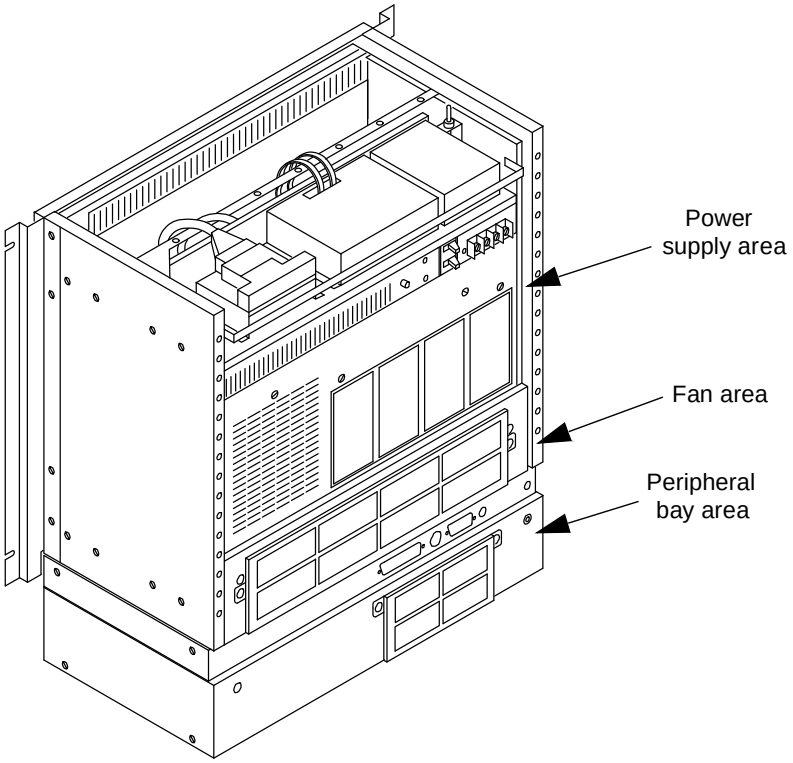

Figure 1-8. Back View of the MAP/100C – DC Units

Getting Inside the Platform

2

What's in This Chapter

The first half of this chapter describes how to open the MAP/100 by removing the dress covers of the chassis and opening and removing the front doors, as well as how to access the peripheral bay and card cage.

The last half of this chapter how to open the MAP/100C by opening the front door, as well as how to access the peripheral bay, card cage, power supply, and cooling fan panel.

⚠ WARNING:
Shut power off before accessing any of the internal parts of your platform.

Do this by following the procedure "Removing Power from the Platform" found in this chapter.

⚠ WARNING:
Notify the telephone company immediately if the system is to be permanently or temporarily disconnected from its present line/trunk circuits. (Digital Circuits ONLY)

Removing Power from the Platform

Remove power from the system as follows:

1. Notify the telephone company that you are taking down the system if you are currently connected to the telephone network. They will ask you which extensions will be affected.

⚠ WARNING:
If you take down the system on a continuing basis without notifying the telephone company, they can shut your operation down.

2. If you are working on an operating VIS, follow these steps to shutdown the system:
    a. Stop the voice system by following the procedure, “Stopping Voice System” found in Chapter 4, “Common Maintenance Procedures,” of *CONVERSANT VIS Version 4.0 Maintenance*, 585-350-112.
    b. Shut the system by following the procedure, “Shutting Down the Operating System” found in Chapter 4, “Common Maintenance Procedures,” of the maintenance book.
3. Turn OFF both the front panel power switch and the circuit breaker(s) on the rear of the unit.
4. Remove the incoming power line. Also disconnect keyboard and video cords.
5. Tag the power plugs with a note indicating that nobody other than yourself should reconnect power to this equipment.

Getting Inside the MAP/100

Use the procedures on the following pages to gain access to various areas of the MAP/100 platform.

Removing the MAP/100 Dress Covers

Removing the MAP/100 dress covers as follows (see Figure 2-1):

1. In one corner of the top dress cover, place your fingertips in the space between the bottom of top cover and top of the side cover. Gently pry off the dress cover by applying upward pressure at each corner.
2. Place your fingertips at the top of the side dress cover. Gently pry off the dress cover by applying outward pressure at each corner.
3. Repeat Step 3 for the other side dress cover, if necessary.

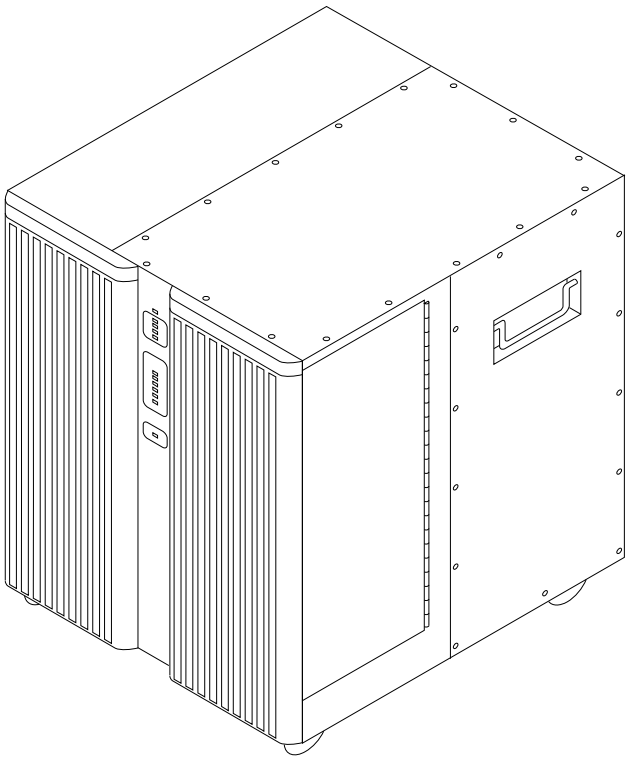

Figure 2-1. MAP/100 – Dress Covers Removed

Opening and Removing the Front Doors

Open and remove the platform's front doors as follows (see Figure 2-2):

1. Open the right door on the front of the unit by placing your finger in the indentation on the bottom right corner of the door. Swing the door out towards you.
2. With the door fully opened, remove it by applying upward pressure to slide it off its hinges. Set the door aside.
3. Open the left door on the front of the unit by placing your finger in the indentation on the bottom left corner of the door. Swing the door out towards you.
4. With the door fully opened, remove it by applying upward pressure to slide it off its hinges. Set the door aside.

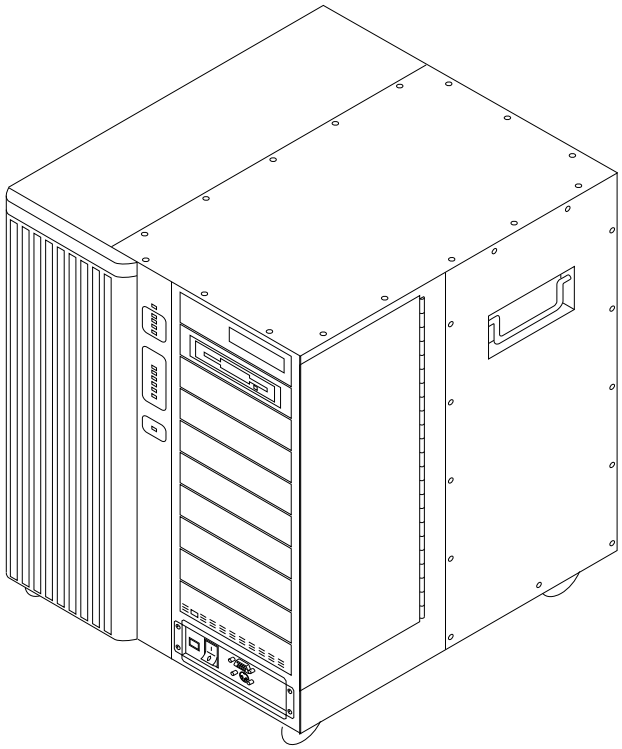

Figure 2-2. MAP/100 – Front Door Removed

Accessing the Peripheral Bay

Access the peripheral bay and power supply as follows (see Figure 2-3):

1. Remove the top and right-side dress covers.
2. Remove the right front door.
3. Loosen the four ¼-turn fasteners around the perimeter of the peripheral bay.

   NOTE:
   Notice the label placed on the side plate of the unit before loosening any of the ¼-turn fasteners. It reads:

   ATTENTION
   This panel is retained with ¼-turn fasteners. Maximum tightening torque: 6 in-lbs. (0.68 N-M)

   Excessive force will permanently damage these fasteners.

4. Loosen the seven ¼-turn fasteners around the perimeter of the peripheral bay access door and open the door. See Figure 2-3.

   Grasp the peripheral bay steel framework and carefully pull the entire peripheral bay out while observing that no cable “hang-ups” occur (observe cables through the side door). Proceed pulling the assembly forward until it is against its mechanical stop.

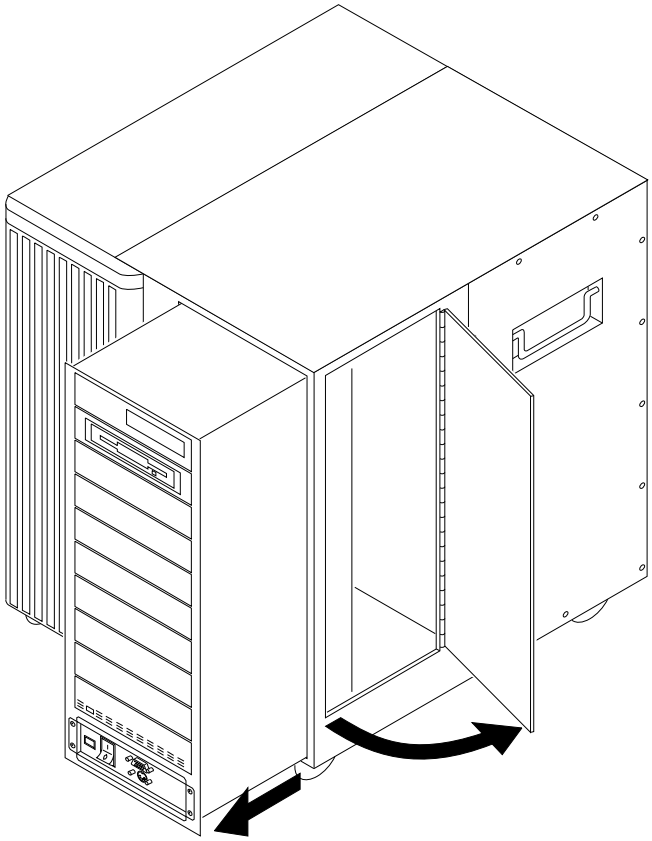

Figure 2-3. MAP/100 – Peripheral Bay Open

Accessing the Top of the Power Supply

Access the top of the power supply as follows:

1. Remove the top and right-side dress covers.
2. Remove the 17 flat-head screws from the perimeter of the top panel. See Figure 2-4.
3. Carefully remove the panel. You now have access to the cable and connector of the uninterrupted power supply (UPS) and power distribution panel.
4. Grasp the power supply and battery module (PS&BM) external pull handle and pull the PS&BM from the unit until it rests against the safety stop while observing any cable “hang-ups” through the open peripheral bay side door.

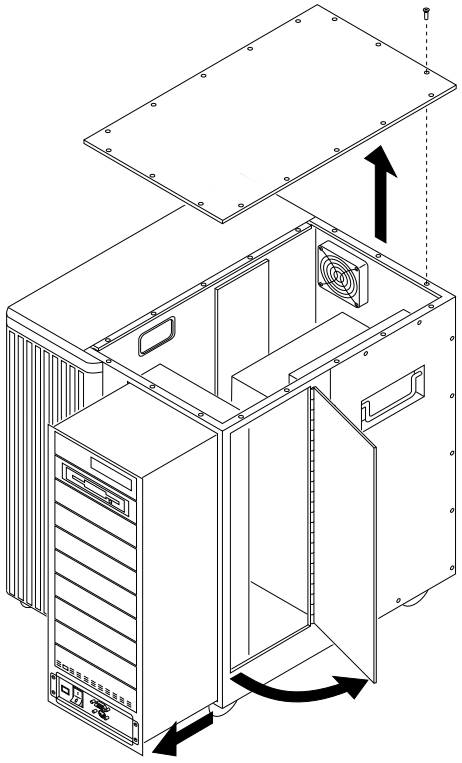

Figure 2-4. MAP/100 – Accessing the Top Connectors of the Power Supply

Accessing the Card Cage

Access the card cage as follows:

1. Remove the top and left-side dress covers.
2. Loosen the eight ¼-turn fasteners around the card cage access door and open the door (Figure 2-5).

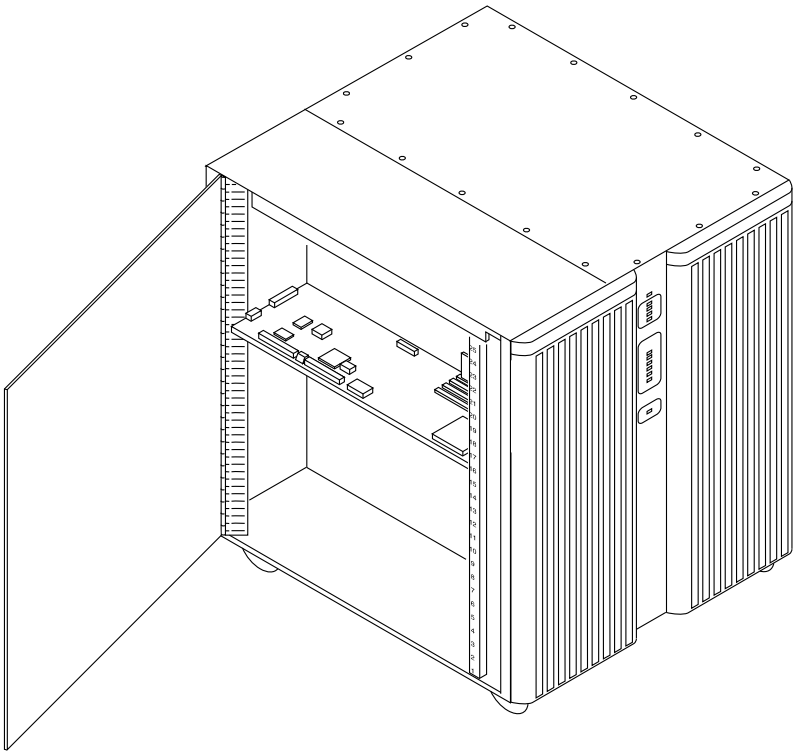

Figure 2-5. MAP/100 – Card Cage Access Door

Replacing the Dress Covers

For each of the side covers, align the holes on the back of the cover with the pegs on the MAP/100 and push the cover on by applying inward pressure at each of the corners.

For the top cover, align the holes on the bottom of the cover with the pegs on the MAP/100 and push the cover on by applying downward pressure at each of the corners.

Replacing the Front Doors

Replace the platform's front doors as follows:

1. With the door in a fully open position, align the hinge pins on the door with the hinges on the chassis.
2. Slide the hinge pins downward into the hinges and close the door.
3. Complete Step 1 through 3 for each door.

Getting Inside the MAP/100C

Use the procedures on the following pages to gain access to various areas of the MAP/100C platform.

Opening the Front Door

Open the front door as follows:

1. Loosen the ¼-turn latch on the chassis front door.
2. Disengage the slide latches on the left side of the door.
3. Use the indentations around the slide latches to swing the door open to the right. Open the door as wide as its hinges will allow. See Figure 2-6.

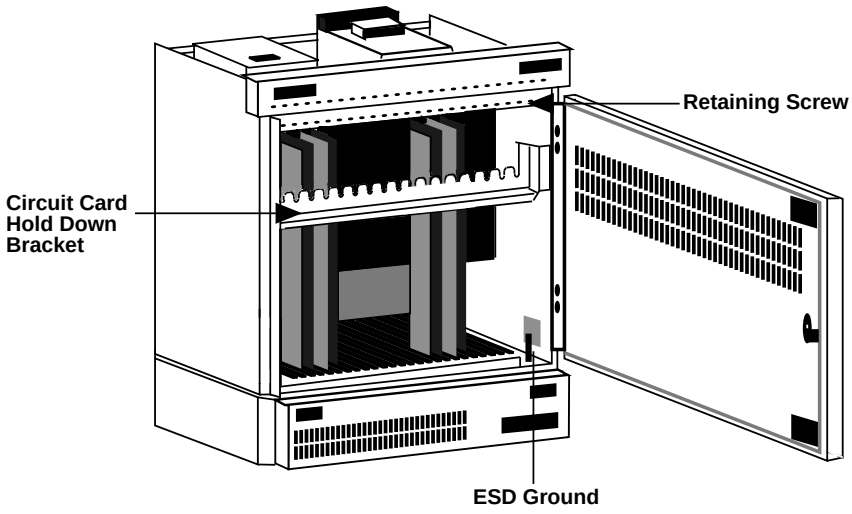

Figure 2-6. MAP/100C – Front Door Open

Removing the Circuit Card Hold-Down Bracket

Remove the hold-down bracket as follows:

1. Pull in on the knurled knob at the left of the bracket.
2. Pull in a rotating motion from the left until the end of the bracket clears the side of the MAP/100C.
3. Pull the bracket outward and to the left.

Accessing the Peripheral Bay in Front

Open the front peripheral bay access door as follows:

1. Disengage the slide latches on the left and right corners of the door.
2. Use the indentations around the slide latches to swing the door downward toward you. See Figure 2-7.

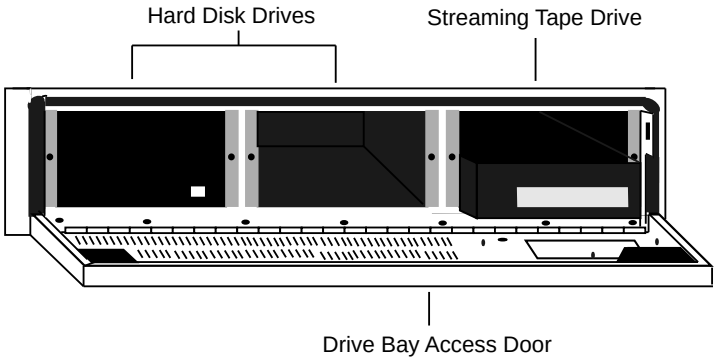

Figure 2-7. MAP/100C Front View – Peripheral Bay Door Open

Accessing the Peripheral Bay in Back

Open the rear peripheral bay access door by letting it fall downward toward you. Use Figure 2-8 as a reference.

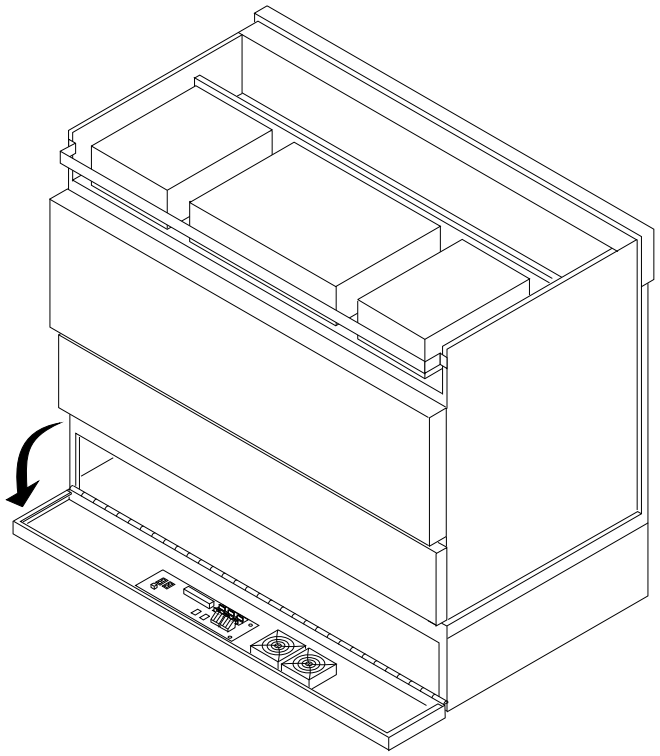

Figure 2-8. MAP/100C Back View – Peripheral Bay Door Open

Accessing the Card Cage

Access to the card cage as follows:

1. Open the front door, as described earlier.
2. If you are going to be installing/removing a circuit card, remove the circuit card hold-down bracket by pulling the spring-loaded release and pulling the bracket toward you out of the unit. Set it aside.

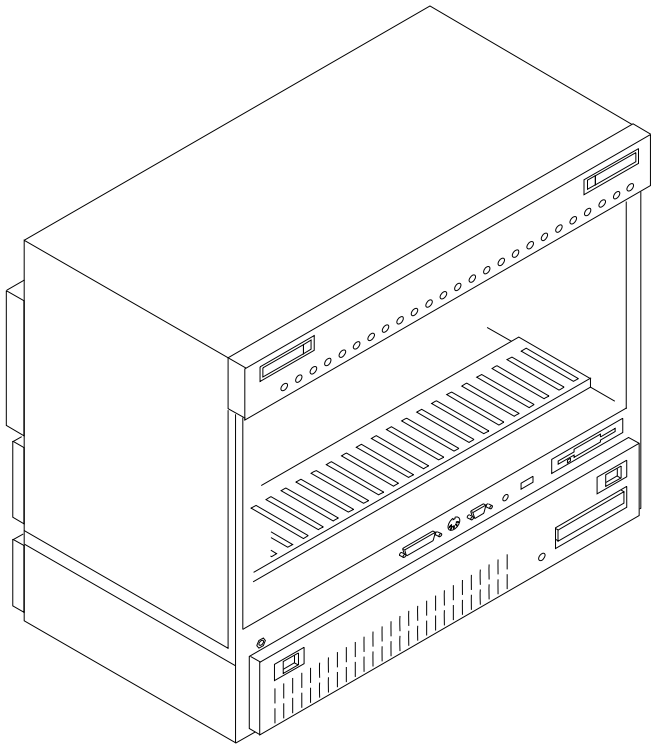

Figure 2-9. MAP/100C – Inside Card Cage

Accessing the Power Supply

Access the power supply as follows:

1. Loosen the two captive screws on the power supply access door on the rear of the unit (Figure 2-9).
2. Open the door and let it fall downward toward you.

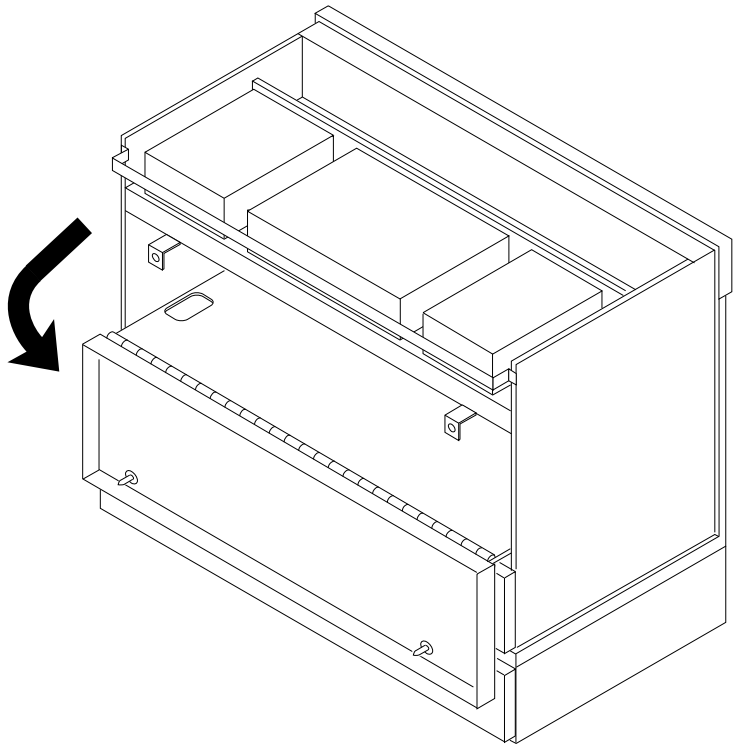

Figure 2-10. MAP/100C – Power Supply Access Door

Accessing the Cooling Fan Panel

Access the fan panel by loosening the two captive screws on the fan panel access door on the rear of the unit. Open the appropriate door by letting it fall downward toward you (Figure 2-11).

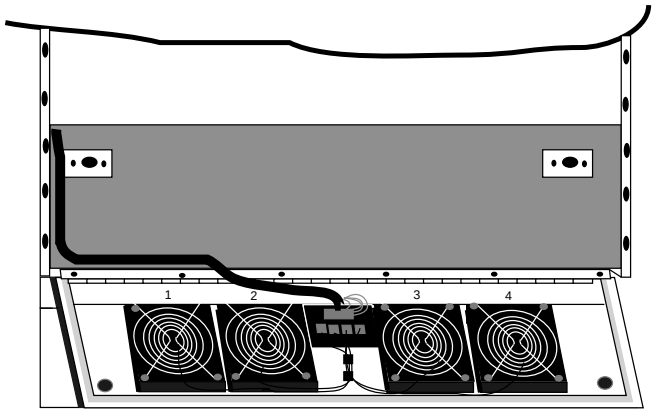

Figure 2-11. MAP/100C – Fan Panel Access Door

Upgrading Circuit Cards

3

What's in This Chapter

This chapter serves as an introduction to the circuit cards that you will be upgrading as part of this upgrade kit. This chapter also includes "General Steps for Circuit Card Installation" which applies to the installation of all circuit cards, though additional steps may be required for some.

There are two separate sections for installing cards in the MAP/100 and the MAP/100C.

General Steps for Circuit Card Installation

⚠ WARNING:
Observe proper ESD precautions when handling computer components. Wear a ground wrist strap on your bare skin and connect to a ground. See Chapter 1, "Getting Started" for more details.

Follow the procedure below whenever you install a circuit card of any kind. You can then follow the specific procedure for cable connection or special settings for that card type in the following chapters.

NOTE:

Read Chapter 4, “Running the Configuration Program,” of your *Voice Processing Hardware Installation* book and run the configuration software program before installing any card, unless you are replacing a card. You will need the output from the configuration program in order to install your hardware. Your system arrived with output from this program in the shipping carton.

Refer to this configuration data sheet in order to check addresses of existing cards. Also, when removing a card, set address switches and jumpers of the new card matching to the old card.

Installing a Circuit Card in the MAP/100

Follow the steps below to install any circuit card. Get specifics for each card in following chapters.

1. Verify that the new or replacement card is on site and appears to be in usable condition, that is, no obvious shipping damage, etc.
2. Refer to the output from the configuration program for this system to confirm that it is the correct type of card for that slot.

   This is not necessary if you are replacing a card and not adding one.
3. If you are currently connected to the telephone network, notify the telephone company that you are disconnecting. They will ask you which extensions are affected.

WARNING:

If you disconnect the MAP/100 from the telephone network on a continuing basis without letting the telephone company know, they can disconnect you permanently (Digital Circuits ONLY).

4. Perform a “soft” shutdown, if you have been operating the MAP/100 as a fully loaded system.

   Remove the configuration floppy disk, if you have had the MAP/100 operating only in order to run the configuration program.
5. Turn OFF both the front panel power switch and the circuit breaker in the rear and remove the incoming line. Also disconnect keyboard and video cords.
6. Tag the power plugs with a note indicating that nobody other than yourself should reconnect power to this equipment.
7. Remove the dress covers and open the card cage. See Chapter 2, "Getting Inside the Platform", for more information.

8. Carefully remove any internal connecting cables attached to the circuit card or peripheral to be replaced or installed.

   Use pull tabs when available to reduce damage to the circuit card connector pin fields.

9. If a new card is being installed, removing the filler for the appropriate slot and save the retaining screw.
10. Align the circuit card faceplate and the edge of the circuit card with the with the circuit card guide and the backplane slot position. The card is now next to the expansion slot. Move the card until it touches the slot.
11. Place your thumbs flat on the edge of the card over the connector and push it into the backplane slot. Firmly push on the card until it is completely seated.
12. Reinstall any internal and/or external cable assemblies that were previously removed, making sure the cable connector pin 1 indicator is mated to the circuit card or pin header.

    Refer to the appropriate circuit card chapter for additional information on cabling and connections specific to the type of card you are installing.

13. Replace the retaining screw by placing it through the card faceplate opening that is similar to the cover plate previously removed.
14. Close the card cage and/or peripheral bay access door, and replace the dress covers if you have completed work inside the platform. See Chapter 2, "Getting Inside the Platform", for more information.

Installing a Circuit Card in the MAP/100C

Follow the steps below to install any circuit card. Get specifics for each card in following chapters.

1. Verify that the card is on site and appears to be in usable condition, (that is, no obvious shipping damage, etc...)
2. Refer to the output from the configuration program for this system to confirm that it is the correct type of card for that slot.

   This is not necessary if you are replacing a card and not adding one.

3. If you are currently connected to the telephone network, notify the telephone company that you are disconnecting. They will ask you which extensions are affected.

WARNING:
If you disconnect the MAP/100C from the telephone network on a continuing basis without letting the telephone company know, they can disconnect you permanently. (Digital circuits ONLY)

4. Perform a “soft” shutdown, if you have been operating the MAP/100C as a fully loaded system.

   Remove the configuration floppy disk, if you have had the MAP/100C operating only in order to run the configuration program.

5. Turn OFF both the front panel power switch and the circuit breaker in the rear and remove the incoming line. Also disconnect keyboard and video cords.

6. Tag the power plugs with a note indicating that nobody other than yourself should reconnect power to this equipment.

7. Open the front door and remove the card hold-down bracket.

   See Chapter 2, "Getting Inside the Platform" for more information.

8. Carefully remove any internal connecting cables attached to the circuit card or peripheral to be replaced or installed.

   Use pull tabs when available to reduce damage to the circuit card connector pin fields.

9. If a new card is being installed, removing the filler for the appropriate slot and save the retaining screw.

10. Align the circuit card face plate and the edge of the circuit card with the circuit card guide and the backplane slot position. The card is now in front of the expansion slot. Move the card away from you until it touches the slot.

11. Place your thumbs flat on the edge of the card over the connector and push it into the backplane slot. Firmly push on the card until it is completely seated.

12. Reinstall any internal and/or external cable assemblies that were previously removed, making sure the cable connector pin 1 indicator is mated the circuit card or pin header.

    Refer to the appropriate circuit card chapter for additional information on cabling and connections specific to the type of card you are installing.

13. Replace the retaining screw by placing it through the card faceplate opening that is similar to the cover plate previously removed.

14. Replace the card hold-down bracket.

15. Close the card cage access door if you have completed work inside the platform.

    See Chapter 2, "Getting Inside the Platform" for more information.

The 486 CPU Circuit Card - 50MHz

In Version V4.0, there are two supported CPU options: 386 and 486. This hardware upgrade kit is designed for MAP/40 customers upgrading from 386 to 486. The information in this chapter pertains to the 486 CPU card *only*. For information about the 386 CPU, refer to *MAP/40 Voice Processing Hardware Installation*, 585-350-109.

⚠ WARNING:
Observe proper electrostatic discharge precautions when handling computer components. Wear a ground wrist strap against your bare skin and connect to an earth ground.

A 486 50MHz CPU circuit can be used in the MAP/100 or MAP/100C platform. The manufacturer packages the central processing unit (CPU) on a single PC/AT compatible circuit card that plugs into the passive backplane. The 486 supports a 16 MB SIMM which is located in the bottom socket on the left side of the card.

To install the 486 CPU, complete the following:

- Verify jumpers that enable or disable the serial and parallel ports
- Verify switch settings
- Refer to "General Steps for Circuit Card Installation" found in this chapter to install the 486 card.
- Connect keyboard and serial port ribbon cables.
- Complete the 486 setup as described in “System Setup” in Chapter 3, “Connecting Peripherals and Powering Up,” of *MAP/40 Voice Processing Hardware Installation*, 585-350-109.

Refer to the figure on the next page for location of jumpers and switches.

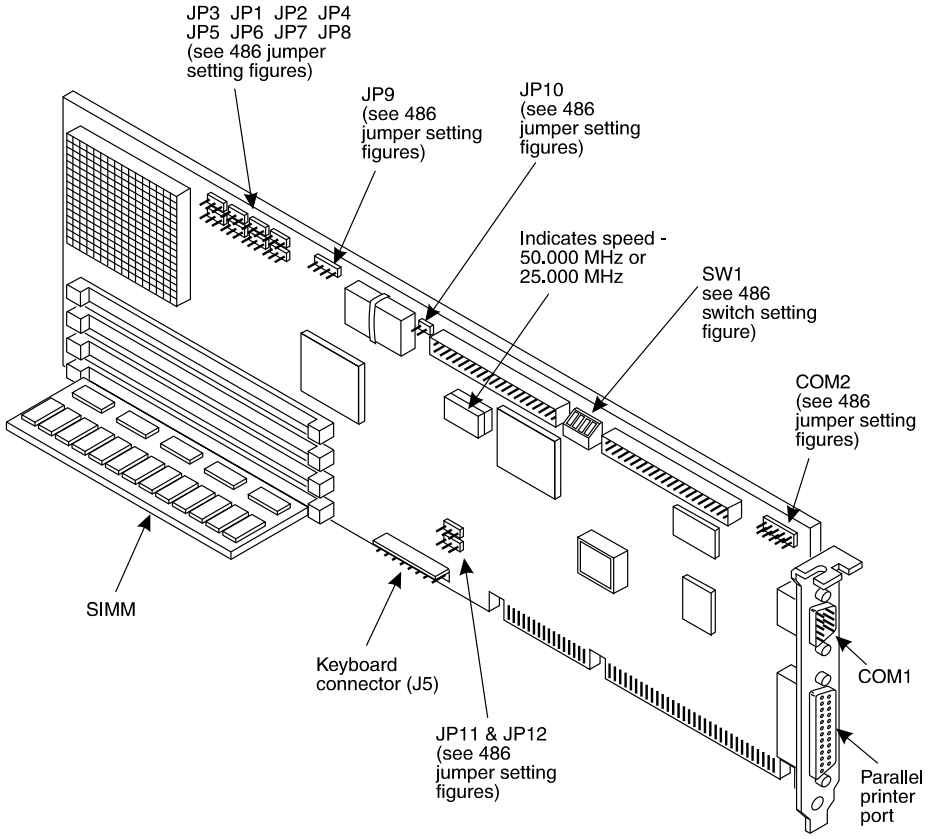

Figure 3-1. 486 CPU Circuit Card and Jumper Locations

Verifying Jumpers on the 486 50MHz CPU

Jumpers on the 486 50MHz should be set as indicated in the figure below.

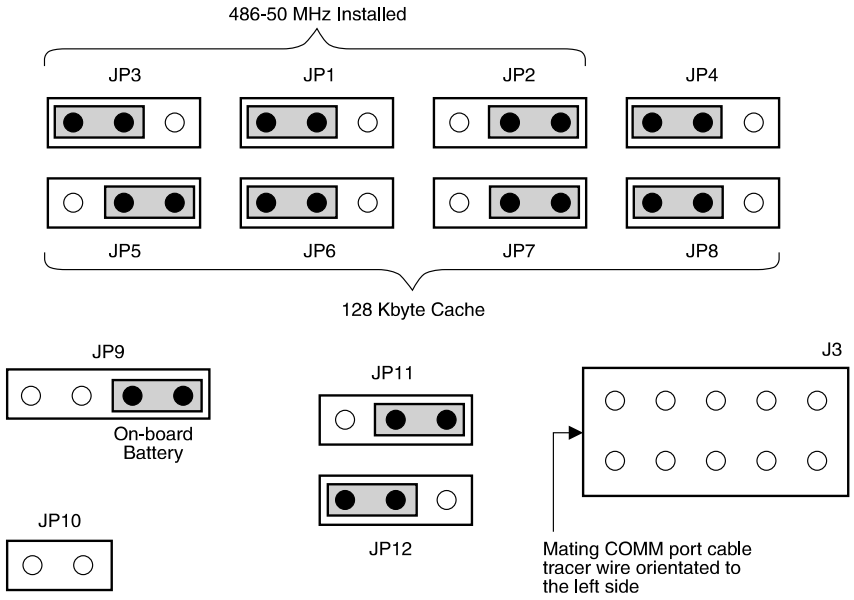

Figure 3-2. Jumper Settings for the 486 50MHz CPU Card

Verifying Switch Settings on the 486 CPU

Switches are set by the manufacturer. Use the figure below to verify correct switch settings on the 486.

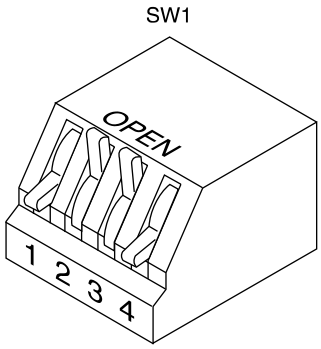

Figure 3-3. Switch Settings for the 486 CPU Card

Making Header Connections for Keyboard and Serial Ports

The platform includes cables that connect to the 486 CPU circuit card. These cables connect to the keyboard port, bottom center, and the second asynchronous port (COM2), top far right. Locate the two pin header connectors on the CPU card. Locate the keyboard and COM2 cables inside the platform. Make these connections after the CPU card is installed.

NOTE:
The COM1 port is hard wired to the faceplate connector.

The header connector numbers are written on the circuit card on the right side of the pin connectors. The header connectors are numbered as follows:

- COM1 – J4 keyed for connection
- COM2 – J3 user red tracer for connection
- Keyboard – J5 keyed for connection
- Parallel port – J6 keyed for connection

NOTE:
The top two pins connectors on the card that are labeled for the hard disk and the floppy controller are not used on the CPU card. Make these connections on the SCSI host adapter controller card.

The Remote Maintenance Card

The Remote Maintenance (RMB) card is PC-AT based. It draws its power from the PC host bus. An optional external AC power adapter is available that plugs into the faceplate of the RMB. This adapter provides power to operate the RMB in situations where the power supply in the system fails.

Performing the Upgrade

4

What's in This Chapter

The first half of this chapter describes how to upgrade your hardware in the MAP/100.

The last half of this chapter describes how to upgrade your hardware in the MAP/100C.

Before You Start the Upgrade

WARNING:
Observe proper electrostatic discharge precautions when handling computer components. Wear a ground strap against your bare skin and connect to an earth ground.

Gather the appropriate tools, the components of the upgrade kit, and a space to place the old components you remove from the MAP/100 (hint: have an empty box to place old components in to avoid mixing them in with the new kit components).

Upgrading the MAP/100 Hardware

Use the following procedures to upgrade your CPU card and install the Remote Maintenance card. These procedures are broken up into sections that are meant to be performed sequentially.

Removing Old Hardware

1. Follow the procedures in Chapter 2 to power down the MAP/100, remove the MAP/100 dress covers, and open the peripheral bay, card cage and power supply.
2. Use a flathead screwdriver to remove the 17 screws holding metal top of the MAP/100. See Figure 4-1.

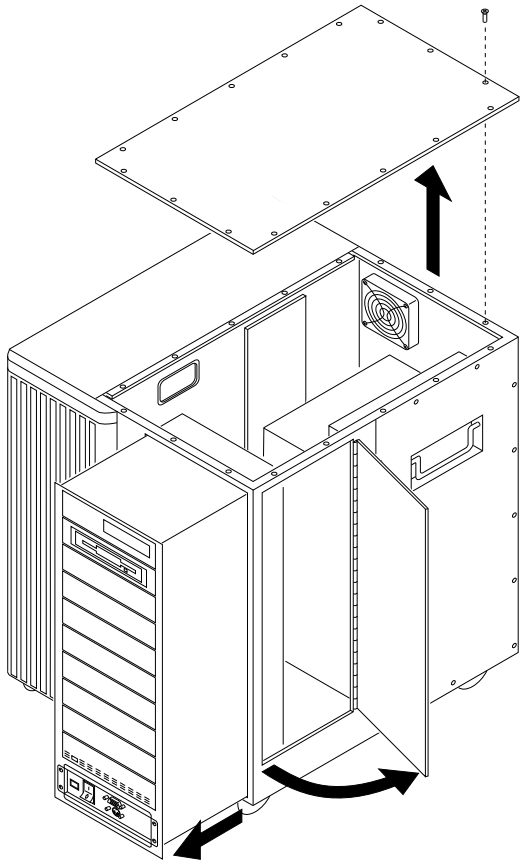

Figure 4-1. Removing the MAP/100 Metal Top

3. With the peripheral side bay door open, remove the four disk bay shelf retaining screws. Slide the shelf unit out through the front.

   You have now exposed the power distribution panel and internal wiring. Go to the card cage side of the MAP/100.

4. Remove the keyboard/reset and communications port cables from the headers of the 386 CPU. Note that the keyboard/reset cable is marked "P303" and the communication port cable is marked "P302." If for some reason your cables are NOT identified, you should mark your communication port cable at this time.

5. Separate the two cables removed from the CPU by carefully cutting and removing the tape or ties holding them together.

6. Remove the 386 CPU card from the MAP/100 following the standard removal procedure found in Chapter 10 of *MAP/100 Voice Processing Hardware Installation*, 585-350-107.

7. Remove the keyboard/reset cable marked "P303" from the backplane connector and set it aside. It will NOT be reused.

8. Go to the peripheral bay side and locate the keyboard/reset connector and cable. The connector is plugged into the rear to the backplane through an opening in the sheet metal in the middle of the platform. It is hidden behind another ribbon cable that also comes out from the opening in the sheet metal.

9. Cut the cable ties. Slide the ribbon cables out of the cable retainers. You now have some slack in the cables to allow for movement during the rest of the assembly process.

10. Unplug the keyboard/reset cable.

11. Remove the two screws from the power distribution panel on either side of the connector and save.

Installing the 486 CPU and Remote Maintenance Card

1. Get the CPU/RMB keyboard adapter and install the headers facing you and in the shape of a "C" (refer to Figure 4-3). Install it using the two screws removed to the hold the adapter to the power distribution panel. Do not tighten the screws at this time.

2. Plug the keyboard cable connector onto J1 of this cable adapter. The cable is just long enough to allow this installation. It may take some patience to get it installed properly.

3. Use the cable tie to dress diagonally around the connector and adapter.

4. Plug the new 486 keyboard cable onto J4. Plug the RM card reset cable onto J3. Refer to Figure 4-2 and Figure 4-3 for the proper orientation.

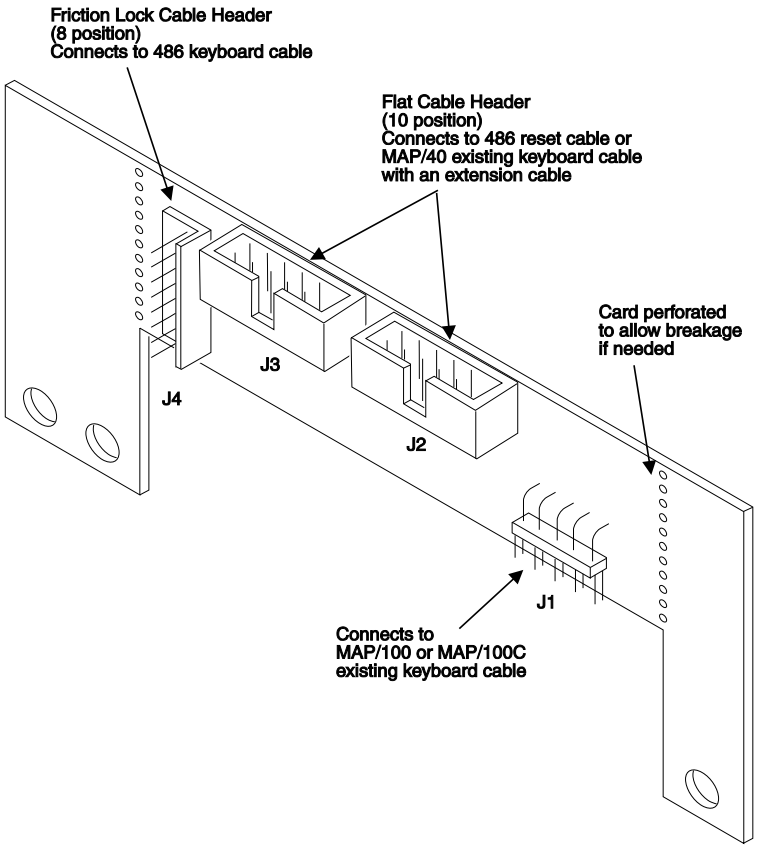

Figure 4-2. CPU/RMB Keyboard Adapter

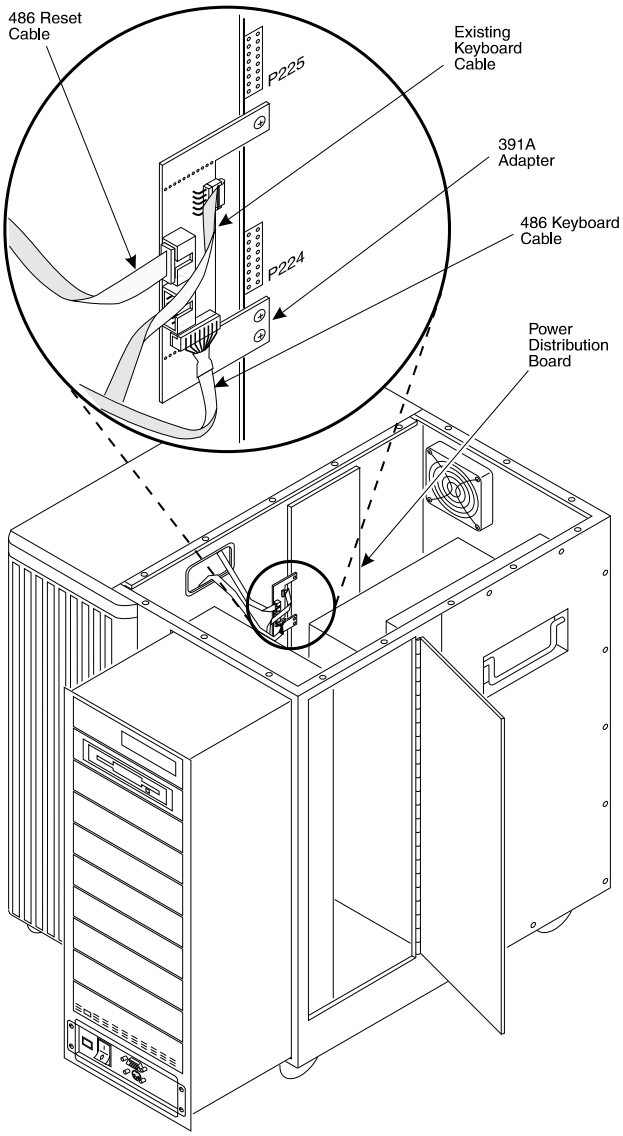

Figure 4-3. CPU/RMB Keyboard Adapter Installed with Cabling

5. Tighten the screws holding the cable adapter.
6. Dress the 486 keyboard/reset and RMB reset cables up through the into portal into the card cage area (see Figure 4-3).
7. Tie the cables with the two cables ties retainers which held the original ties. You must do this to secure the cables.

8. Slide the ribbon cable back into the cable retainer, as in its original position.
9. Assemble the RMB uninterrupted power supply (UPS) cable to the platform's UPS and UPS status cable as shown in Figure 4-4.

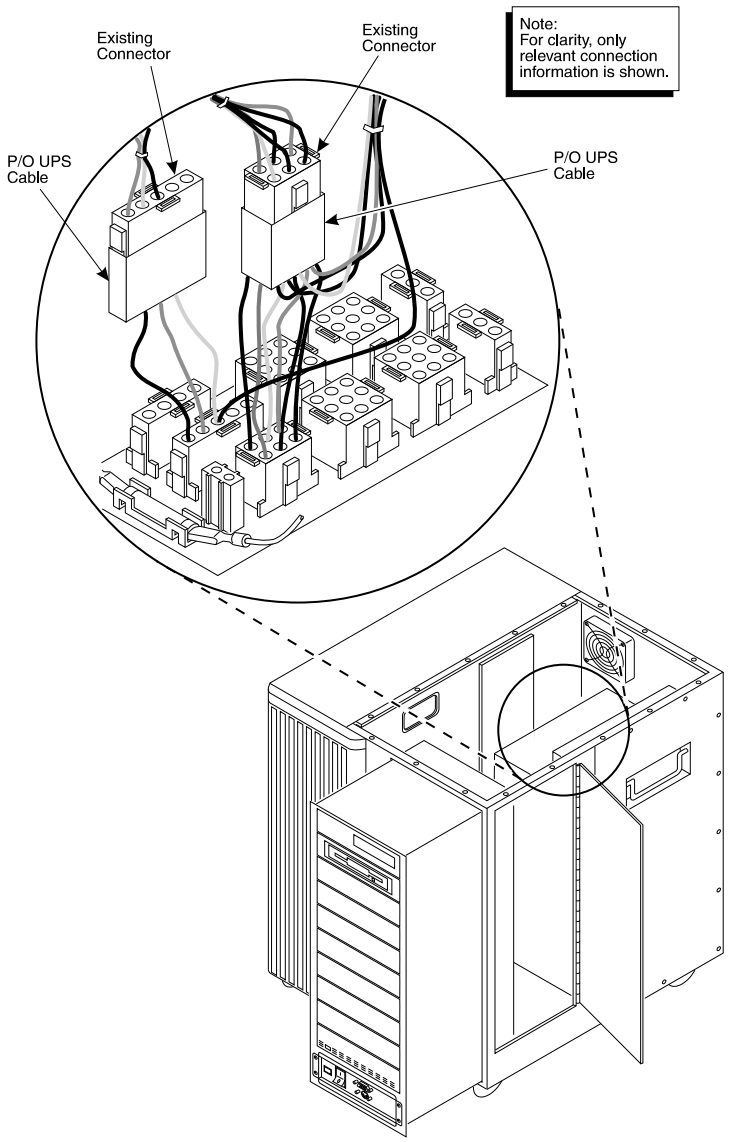

Figure 4-4. Uninterrupted Power Supply Connections

10. Unplug the cables from positions J502 and J504; insert the mating connectors of the RM card UPS cable into the vacated positions.
11. Plug the removed cable connectors into the mating connectors of the RM card UPS cable. Dress this cable through the same portal, as in Step 6, into the card cage.
12. Assemble the RM card fan status cable to the power distribution panel as shown in Figure 4-5. Disconnect the cable (P216) from position J216; plug the RM card fan status connector into the mating connector of the RM card fan status cable (refer to Figure 4-5). Dress this cable with the cables already described.

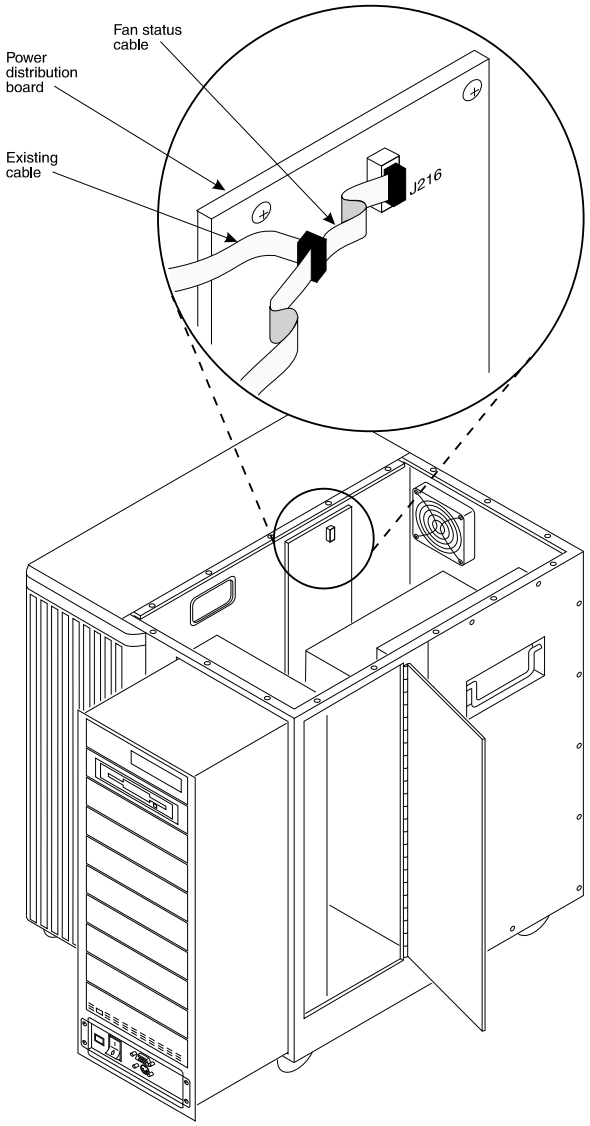

Figure 4-5. Fan Status Cable

13. Refer to Chapter 3 to verify all the jumpers and switches are set correctly on the 486 CPU and RMB cards. Familiarize yourself with the location and types of connectors (headers).
14. From the card cage side, find the 4 cables that you pushed through the portal.
15. Identify the 3 cables for the RMB (reset, UPS, and fan status) and the 1 keyboard/reset cable for the 486 CPU.
16. Insert the RMB into slot #18 and attach the 3 cables. Secure the card with a screw through the faceplate. Refer to "General Steps for Circuit Card Installation" in Chapter 3 for more information about the correct way to install a circuit card.
17. Insert the CPU part way into slot #16 and attach the keyboard/reset cable. Complete the insertion, attach the communications port cable with the tracer wire oriented away from the faceplate. Secure the card with a screw through the faceplate. See Figure 4-6.
18. Connect any external cables (modem, serial and/or alarms to the RMB; serial and/or parallel to the CPU).
19. Recheck all cable dressing (routing) and connections.

Finishing Up

Go to Chapter 2 and reverse the process you used to get into the MAP/100. There are also procedures to replace the dress panels.

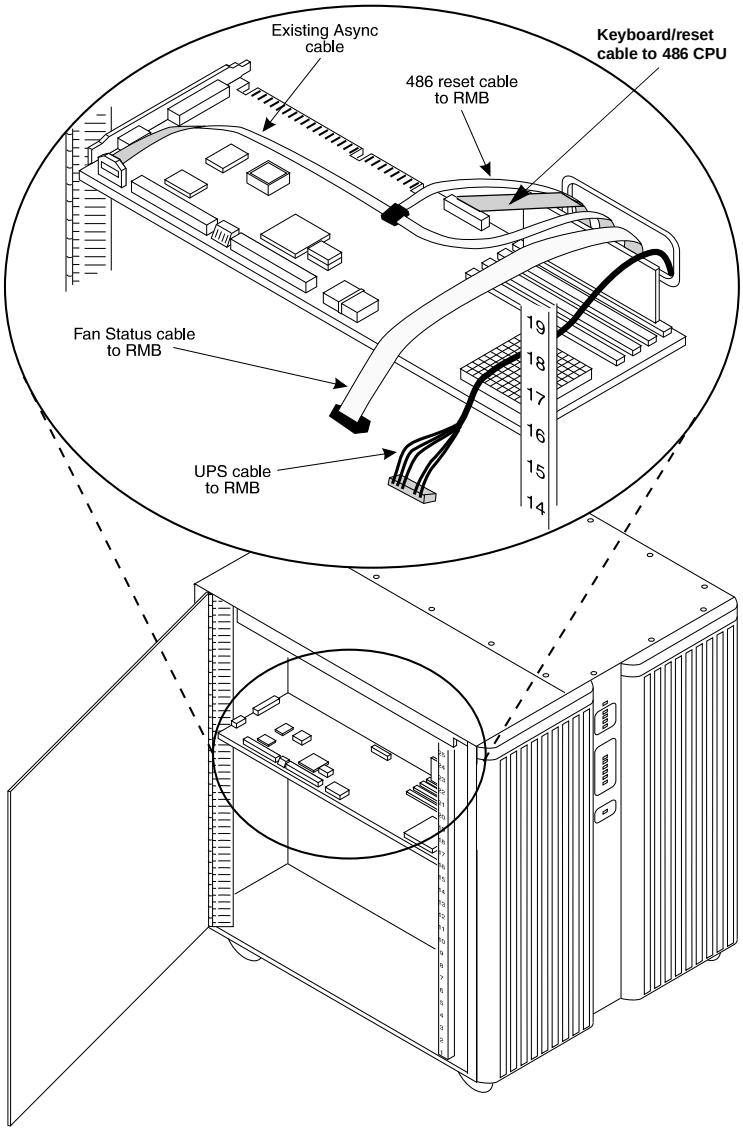

Figure 4-6. 486 Card Installed with Cabling Attached

Upgrading the MAP/100C Hardware

Use the following procedures to upgrade your CPU card and install the Remote Maintenance card. These procedures are broken up into sections that are meant to be performed sequentially.

Removing Old Hardware

1. Follow the procedures in Chapter 2 to power down the MAP/100C, open the front door, the peripheral bay, card cage and power supply.
2. Go to the front of the MAP/100C.
3. Remove the keyboard/reset and communications port cables from the headers of the 386 CPU. Note that the keyboard/reset cable is marked "P303" and the communication port cable is marked "P302." If for some reason your cables are NOT identified, you should mark your communication port cable at this time.
4. Remove the 386 CPU card from the MAP/100C following the standard removal procedure found in Chapter 10 of *MAP/100C Voice Processing Hardware Installation*, 585-350-108.
5. Remove any other full or ¾-length cards in slots 15 through 21 to allow easier assembly for some of the upgrade kit parts.

   NOTE:
   Be sure to record the card type and slot location of each card, as well as any external cable connections. You will need all this information for reinstallation at the end of this upgrade.

6. Separate the two cables removed from the CPU by carefully cutting and removing the tape or ties holding them together.
7. Remove the keyboard/reset cable marked "P303" and reroute it to the floor of the card cage.

Installing the CPU/RM Card Keyboard Adapter

1. Familiarize yourself with the keyboard adapter card. Refer to Figure 4-7.

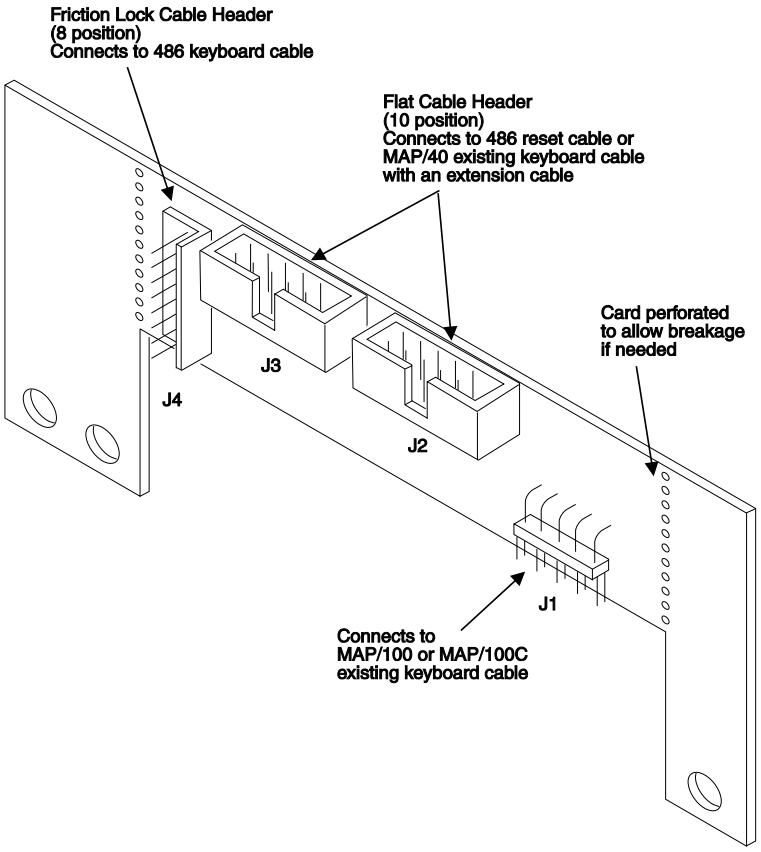

Figure 4-7. CPU/RMB Keyboard Adapter

2. Plug the new CPU/RMB cable adapter into the cable connector (marked "P303") and onto J1 of the keyboard adapter.
3. Plug the new 486 keyboard cable into J4. Refer to Figure 4-8 for the correct orientation.
4. Plug the new RMB reset cable connector onto J3, referring again to Figure 4-8.
5. Remove the 2 screws from the bottom of the backplane, under positions J15 and J20. You will not reuse these screws.

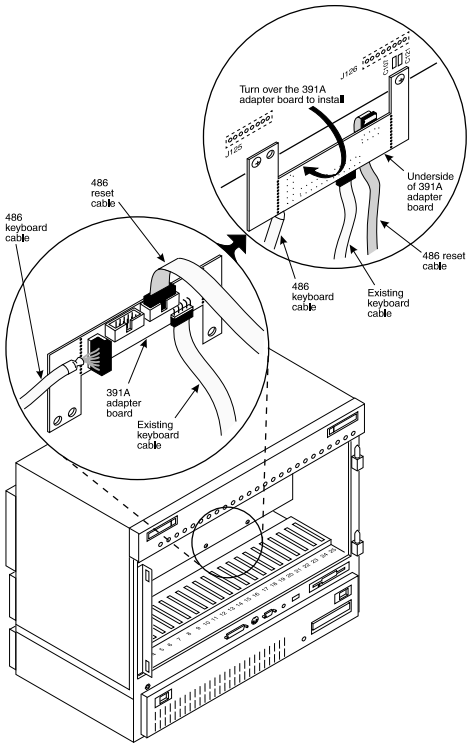

Figure 4-8. CPU/RMB Keyboard Adapter Installed in the MAP/100C

6. Get the CPU/RM card cable adapter and install the headers facing away from you and in the shape of a “U”. Install it using the two screws supplied to the hold the adapter to the backplane.
7. Fold the excess keyboard/reset cable together (lying in the bottom of the card cage) and secure it with a cable tie.

Installing the 486 CPU and Remote Maintenance Card

1. Go to the rear of the unit and open the peripheral bay door and locate the 2 fans and fan monitoring circuit cables.
2. Disconnect the cable connectors and 6-color coded wires noting their position. Remove the fan monitoring circuit card from the door by removing the screws; save these screws. See Figure 4-9.
3. Assemble the new fan monitoring circuit cable card using the screws removed from the old one.
4. Add the new drive bay fan status cable to connector J14 of the new fan monitoring circuit card. See Figure 4-9.

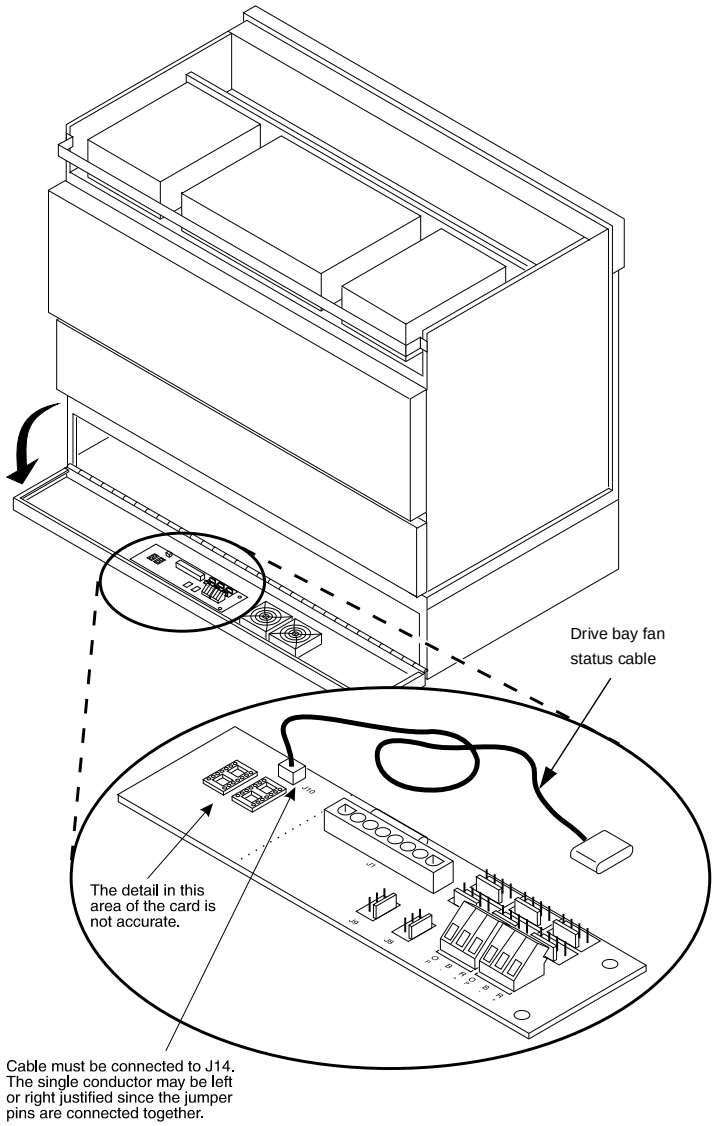

Figure 4-9. Fan Monitoring Circuit Card and Cabling

5. Route this drive bay fan status cable through the portal into the card cage area by removing the floor plate at the bottom of the card cage. See Figure 4-10.
6. Open the power supply door and continue routing this cable up to the power distribution panel and connect it to the unused header (J210) at the top of the panel on the left side, as shown in Figure 4-11.
7. Locate the power distribution panel inside the top rear door behind the power supply cabling.
8. Remove the power supply using the following steps:
    a. With the power supply door already open, remove the two screws on the bottom of the power supply that secure it to the unit (Figure 4-10).

Figure 4-10. Removing the Power Supply

b. Pull the power supply unit forward slightly.

c. Disconnect the input power connection on the right of the unit.

d. Detach the three orange connectors and one white connector on the left side of the power supply unit.

e. Carefully pull the power supply out of the unit

9. Assemble the RMB fan status cable to the power distribution panel as shown in Figure 4-11. Disconnect the cable (P216) from position J216; plug the RMB fan status cable into the vacated position. Connect the removed cable connector to the mating connector on the RMB fan status cable.
10. Dress this cable through the portal at the lower left into the card cage.
11. Reinstall the power supply cabling.

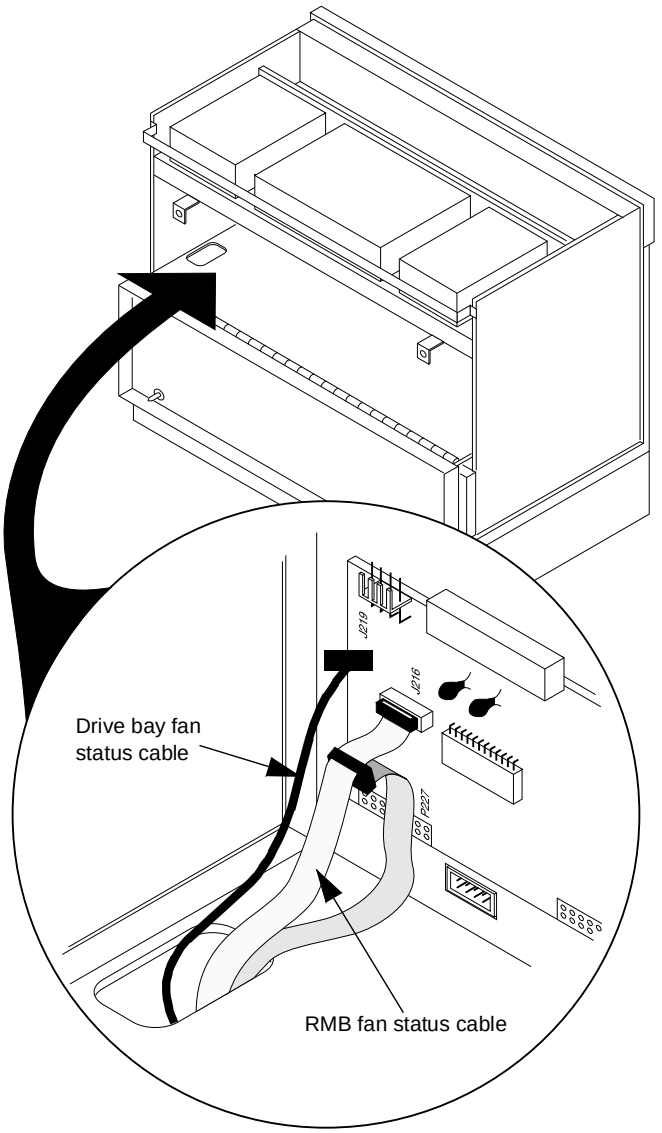

Figure 4-11. Fan Status Cabling

12. Reinstall the power supply using the following steps:
    a. Reattach the connectors to the left side of the replacement power supply unit (three orange and one white).
    b. Install the power input connection on the right side of the unit.
    c. Slide the unit back into position, realigning it with the “ears.” Carefully push the unit back until it locks into place.
    d. Replace the screws removed from the bottom of the power supply unit.
    e. Close the power supply access panel door. Tighten the captive screws.
13. Refer to Chapter 3 to verify all the jumpers and switches are set correctly on the 486 CPU and RMB cards. Familiarize yourself with the location and types of connectors (headers).
14. From the card cage side, find the 3 cables; one that you dressed down from the power distribution panel, and the other 2 are from the CPU/RM card adapter.
15. Identify the 2 cables for the RMB (reset and fan status) and the 1 keyboard/reset cable for the 486 CPU.
16. Insert the RMB into slot #18 and attach the 2 cables. Secure the card with a screw through the faceplate. Refer to "General Steps for Circuit Card Installation" in Chapter 3 for more information about the correct way to install a circuit card. See Figure 4-8 for the correct connections.
17. Insert the CPU part way into slot #16 and attach the keyboard/reset cable. Complete the insertion, attach the communications port cable “P302” and secure the card with a screw through the faceplate. The tracer wire should be oriented away from the faceplate. Again, see Figure 4-8 for the correct connections.
18. Connect any external cables (modem, serial and/or alarms to the RM card; serial and/or parallel to the CPU).
19. Recheck all cable dressing (routing) and connections.

Finishing Up

Go to Chapter 2 and reverse the process you used to get into the MAP/100C.

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