

**Network Multi-PDL Printer  
Unit-M1 /imagePASS-M1**

**INSTALLATION AND SERVICE  
GUIDE**

for Canon digital copiers

A guide for service technicians



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## About this guide

## Preface

The *Installation and Service Guide* is intended for certified Network Multi-PDL Printer Unit-M1 and imagePASS-M1 service technicians installing or servicing a Network Multi-PDL Printer Unit-M1 or imagePASS-M1. If you have not received installation and service certification, you should not attempt to install or service a Network Multi-PDL Printer Unit-M1 or imagePASS-M1. Electronics For Imaging does not warrant the performance of a Network Multi-PDL Printer Unit-M1 or imagePASS-M1 if installed or serviced by non-certified personnel.

## About this guide

**NOTE:** The term “iR-M1” is used in this manual to refer to both the Network Multi-PDL Printer Unit-M1 and imagePASS-M1. The term “copier” is used to refer to the Canon iR 8500 copier.

This guide is divided into the following sections:

- “Preface”  
General information about this guide and about installing the iR-M1.
- Chapter 1, “Introduction”  
General information about the iR-M1.
- Chapter 2, “Preparing for Installation”  
Unpacking and the steps you need to take before you install the unit.
- Chapter 3, “Connecting the iR-M1”  
How to connect the iR-M1 to the copier and the network and verify that the system is working correctly; overview of Control Panel.
- Chapter 4, “Service Procedures”  
Removal and replacement procedures for iR-M1 components.
- Chapter 5, “Troubleshooting Procedures”  
Common problems and ways of correcting them; startup errors.

**NOTE:** iR-M1 customers should not use this technical service documentation. Please don't leave your copy of the *Installation and Service Guide* behind after you make a service call.

## About the illustrations in this guide

The illustrations in this guide reflect the current shipping version of the iR-M1 at the time of publication. Components shown in these illustrations are subject to change. To receive information about any iR-M1 components that do not match illustrations in this guide, contact your authorized service/support center.

## Preface

### Terminology and conventions

The term “network administrator” refers to the person responsible for maintaining the network at the customer site.

The term “Control Panel” refers to the area on the front of the iR-M1 including the green/red activity light and the display window (LCD—liquid crystal display), and the black oval plastic disk surrounding the display window.

The term “system software” refers to the software installed on the iR-M1 hard disk drive.

The term “PC” refers to any IBM PC or compatible computer running Windows.

The term “10BaseT” is used throughout this manual to refer to 10BaseTX.

The term “100BaseT” is used throughout this manual to refer to 100BaseTX.

References to other iR-M1 manuals, such as the *Administrator Guide*, are displayed in italics.

**NOTE:** The note indicator highlights important messages and additional information.



The caution icon indicates a need for special care and safety when handling the equipment.

## Precautions

## Precautions

Always observe the following general precautions when installing and servicing the iR-M1:

**1. Report any shipping damage.**

If there is any evidence of shipping or handling damage to the iR-M1 packing boxes or their contents, save the damaged boxes and parts, call the shipper immediately to file a claim and notify your authorized service/support center.

**2. Never alter an existing network without permission.**

The iR-M1 will probably be connected to an existing Local Area Network (LAN) based on Ethernet hardware. The network is the link between the customer's computer, existing copier, and other equipment. Never disturb the LAN by breaking or making a network connection, altering termination, installing or removing networking hardware or software, or shutting down networked devices without the knowledge and express permission of the network administrator or the shop supervisor.

**3. Never enter an IP address in iR-M1 Network Setup.**

Only the network administrator should enter an IP address on a network device. Assigning a iR-M1 an incorrect IP address can cause unpredictable errors on any or all devices connected to the network.

**4. Always disconnect power before opening the iR-M1 chassis.**

Although iR-M1 circuitry operates on 3.3V DC, 5V DC, and  $\pm 12V$  DC, 100-240V AC is present when the chassis cover is removed. Inside the chassis, the power supply is not encased. Before you service the iR-M1, shut it down completely and unplug the AC power cable from the back.

**5. Handle the iR-M1 glass display window with care.**

If the glass on the user interface board breaks and the liquid crystal inside leaks out, avoid contact with it. If you do come in contact with the liquid crystal, wash it off with soap and water immediately.

Avoid pressing the surface of the glass display window. Applying pressure to the glass display window on the user interface board will cause it to change color.

Use a soft cloth moistened with isopropyl or ethyl alcohol to clean the glass display window. Other solvents, such as water, may damage the polarizer.

## Preface

### **6. Follow standard ESD (electrostatic discharge) precautions while working on the internal components of the iR-M1.**

Static is always a concern when servicing electronic devices. It is highly unlikely that the area around the copier and the iR-M1 is static-free. Carpeting, leather-soled shoes, synthetic clothing fibers, silks, and plastics may generate a static charge of more than 10,000 volts. Static discharge is capable of destroying the circuits etched in silicon microchips, or dramatically shortening their life span. By observing standard precautions, you may avoid extra service calls and save the cost of a new board.

When possible, work on a ground-connected antistatic mat. Wear an antistatic wristband, grounded at the same place as the antistatic mat. If that is not possible:

- Attach a grounding strap to your wrist. Attach the other end to a good ground.
- When you unpack the iR-M1 from the carton for the first time, touch a metal area to discharge the static on your body.
- Before you handle internal components, touch a metal part of the iR-M1.
- Leave new electronic components inside their antistatic bags until you are ready to install them. When you remove components from an antistatic bag, place them on a grounded antistatic surface, component-side up.
- When you remove an electronic component, place it into an antistatic bag immediately. Do not walk across a carpet or vinyl floor while carrying an unprotected board.

### **7. Handle printed circuit boards by opposing edges only, but avoid touching the contacts on the edge of the board.**

### **8. Use care when handling parts of the iR-M1 as some edges on the unit may be sharp. For example, be careful when:**

- Plugging in cables at the back of the unit
- Using the power switch to power on/off the unit

### **9. Never set a cup of coffee—or any liquid—on or near the iR-M1 or the copier.**

## **Tools you will need**

## **Tools you will need**

To install or service the iR-M1, you should bring the following tools:

- ESD wrist grounding strap
- Antistatic mat
- Wire cutters
- #1 and #2 Phillips head screwdrivers (non-magnetic)
- Small flat-blade screwdriver (non-magnetic)
- 3/16" hex nut driver
- Small needlenose pliers
- M3 metric wrench
- Flashlight

Also recommended:

- Ribbon cable connector extractor

You should also bring this guide and any technical notes you may have for the iR-M1.





# 1 Features

## Chapter 1: Introduction

The iR-M1 server adds highly efficient printing capacity to a black and white copier. It is optimized for high-speed network communications, processing, rasterization, and printing of continuous tone black and white and monochrome pages.

### Features

The iR-M1 is an integral part of a printing system that includes networked computers running Windows, Mac OS, and UNIX. The iR-M1 enables users to:

- Take advantage of printing features of Macintosh and Windows 95/98/Me, Windows NT, and Windows 2000 Professional.
- Send images over AppleTalk, TCP/IP, and Novell networks and print to a iR-M1 supported copier.
- Send images through a PC connected to the parallel port and print to a iR-M1 supported copier.
- Spool print jobs and select a printing priority for each job.
- Use iR-M1 user software running on networked PC and Mac OS computers to control spooled print jobs sent to the iR-M1.
- Print text and images in grayscale, and black and white.
- Use resident PostScript and PCL fonts. Fiery Downloader can be used to download additional fonts as needed.

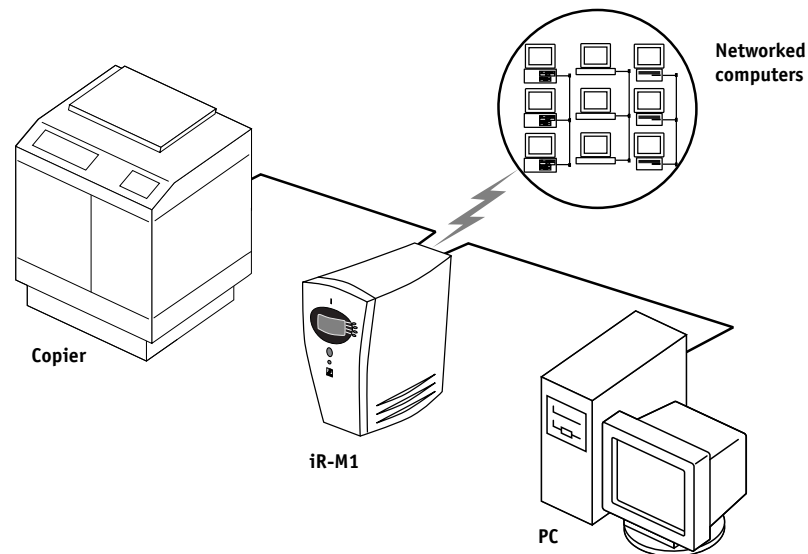


FIGURE 1-1 iR-M1 printing system

# 1 Introduction

## How the iR-M1 operates

The iR-M1 enables the customer to access the copier through the network and use it to print files using advanced spooling and job control functions. Users can print to the iR-M1 from networked PCs, Mac OS computers, and UNIX workstations running TCP/IP. In addition, the iR-M1 parallel port can be used to print directly from a connected PC.

The iR-M1 custom-designed boards and system software are responsible for efficient image processing and printing controls. The main functions of iR-M1 components and software are described below.

The iR-M1 uses a specialized motherboard to process image data for printing images. The motherboard includes an Intel Mobile Pentium III 500MHz CPU. The PostScript Interpreter interprets the page description file. The RipChip™ on the motherboard controls data management and other system functions, freeing up the CPU for efficient image data processing.

High-speed DIMMs (dual in-line memory modules) on the motherboard hold the image data during printing. The iR-M1 is originally configured for a minimum of 128MB of memory.

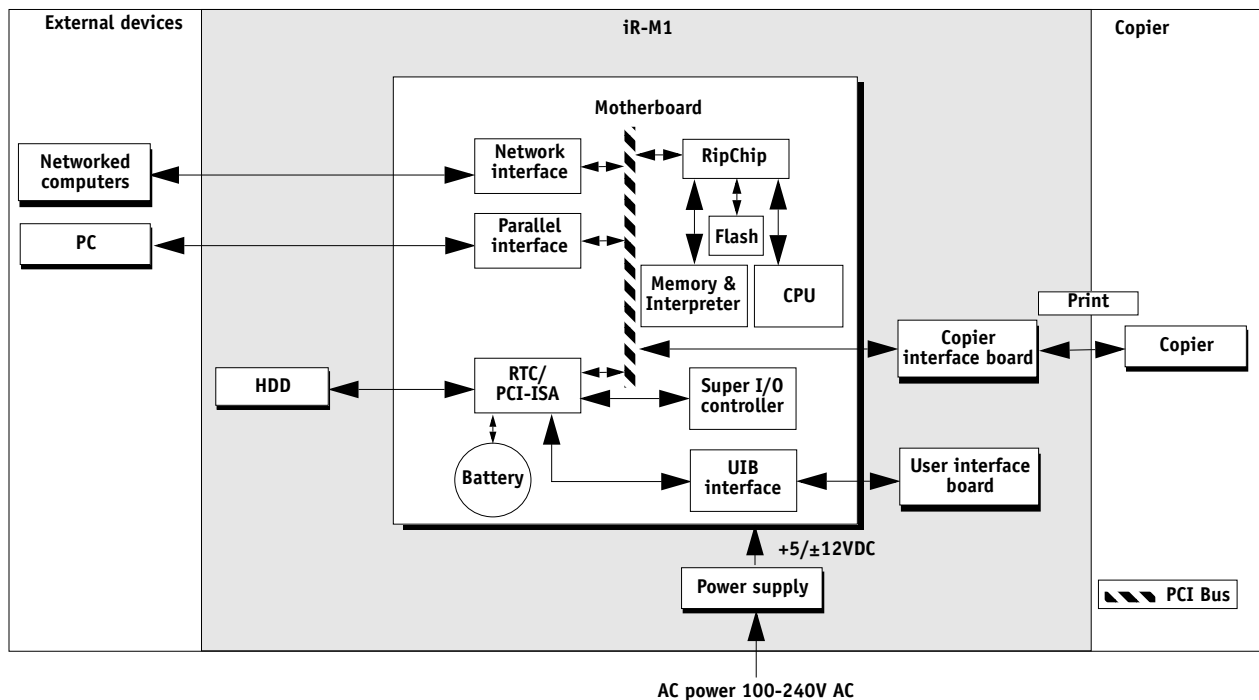


FIGURE 1-2 iR-M1 functional diagram

# 1 Print options

## Print options

The iR-M1's efficient capabilities allow customers to use a variety of applications to create and print pages of text and/or images over a network or through the parallel port. Because the iR-M1 has the ability to print part of a file while processing another part of the file (RIP-While-Print™), it is capable of printing files at full copier speeds.

Users printing over a network can print files directly from the applications in which they were created. The iR-M1 also offers an efficient way to print files that have been saved in PostScript, Encapsulated PostScript (EPS), TIFF, or Portable Document Format (PDF). These files can be downloaded directly to the iR-M1 using Fiery® Downloader™, a remote utility provided with the iR-M1.

Users can print files from a PC directly connected to the iR-M1's parallel port. PostScript files can be printed over the parallel port from Windows, including the MS-DOS window, and from various Windows applications running on the PC.

## User software

iR-M1 user software is provided on the User Software CD. Some of the software can also be installed from the Fiery WebTools Installer (see *Getting Started* for more information on WebTools). The network administrator or the user at the customer site is responsible for installing software onto computers that will use the iR-M1 over a network.

The following software is included on the User Software CD:

Adobe PostScript Printer Driver	Enables users to print to the iR-M1 from Windows 98/Me, Windows NT 4.0, and Mac OS computers; also supports special iR-M1 and PostScript 3 features.  <b>NOTE:</b> Windows 2000 users should use the Microsoft PostScript Printer Driver provided with Windows 2000.
PostScript Printer Description file (PPDs)	Files for use with the PostScript printer driver; they allow the iR-M1 to appear in popular applications' Print and Page Setup dialog boxes. The iR-M1 PPDs provide information about the iR-M1 and the customer's copier model to the application and printer driver the customer is using.
PostScript Fonts (Mac OS only)	PostScript screen and printer fonts that correspond to the 136 PostScript printer fonts installed on the iR-M1 (126 Adobe Type 1 and 10 TrueType). See the <i>Printing Guide</i> for a complete list of fonts.

PCL Printer Driver	Enables users to print to the iR-M1 from Windows 98/Me, Windows NT 4.0, and Windows 2000 computers; supports all special iR-M1 PCL5e print features.
Fiery Downloader	Enables users to print PostScript files, Encapsulated PostScript (EPS) files, TIFF images, and Portable Document Format (PDF) files directly to the iR-M1 without opening the application in which they were created. Fiery Downloader also enables user to manage the printer fonts installed on the iR-M1.
Command WorkStation software	Enables users to control iR-M1 functions from Windows workstations. To use Command WorkStation™, see the <i>Job Management Guide</i> .

### **Fiery WebTools**

The iR-M1 can support Internet or intranet access with Fiery WebTools™. WebTools include Status, WebSpooler, Installer, WebSetup, and WebLink. For more information about WebTools, see the *Administrator Guide* and the *Printing Guide*.

# 2

## Installation sequence

### Chapter 2: Preparing for Installation

This chapter includes the following information:

- Summary of the installation sequence
- Checking the customer site
- Unpacking the iR-M1
- iR-M1 front and back overview

### Installation sequence

Familiarize yourself with Chapters 2 and 3 of this guide before you attempt an installation. The installation sequence described in this chapter is designed to make your job as easy as possible. Installation problems are easier to avoid and diagnose if you proceed from the component to the system level and verify functionality at each stage. Figure 2-1 on page 2-2 outlines the recommended installation procedure for connecting the iR-M1 to the copier.

Because the iR-M1 is a node on the customer's computer network, make sure that you coordinate your scheduled installation with the network administrator at the customer site. Refer the network administrator to the *Administrator Guide* for network Setup information.

# 2 Preparing for Installation

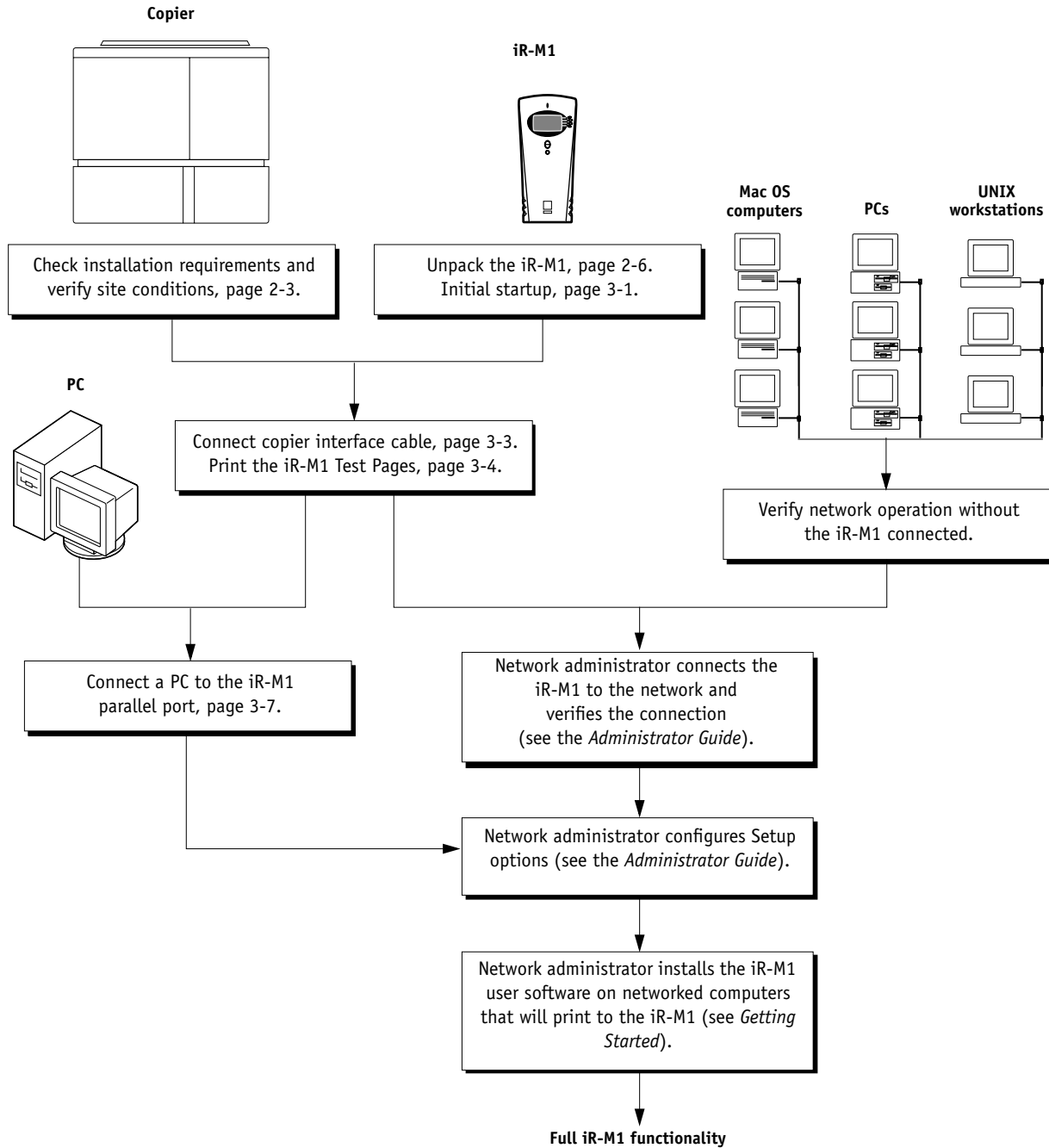


FIGURE 2-1 Recommended installation steps and references

# 2

## Checking the customer site

### Checking the customer site

Before you install the iR-M1, check site conditions and inform the customer of any installation requirements.

#### Copier model

**What copier model is installed?**

**Is there space near the copier for the iR-M1?**

Make sure there is space for the iR-M1. You may need to move the copier out from the wall for easier access.

**Does the copier require service or adjustment?**

Copy the copier test page before you install the iR-M1.

If the copied image indicates that the copier needs adjustment, inform the customer. After getting approval, complete the copier service needed.

#### Power

**Is there a dedicated grounded electrical outlet near the copier for the iR-M1?**

Locate the grounded electrical outlet that will supply power to the iR-M1. The iR-M1 and the copier should not run on the same circuit. Use a surge suppressor for the iR-M1.

- *Do not* use a 3-prong adapter in a 2-hole ungrounded outlet.
- *Do not* use an extension cord.
- *Do not* plug the iR-M1 into a circuit with heating or refrigeration equipment (including water coolers).
- *Do not* plug the iR-M1 into a switchable wall outlet. This can result in the iR-M1 being turned off accidentally.

# 2

## Preparing for Installation

### Network

- Did the customer order the Token Ring network option?

**Is the network connection ready and tested for iR-M1 installation?**

To verify that the network is functioning before you attach the iR-M1:

- Ask the network administrator to print a document on a shared printer over the network.
- Ask the network administrator to verify the computer and network requirements as specified in *Getting Started*.

### Parallel port

**Is there space for both the iR-M1 and the PC that will be connected to the iR-M1?**

**If system software installation is required and will be done over the parallel port:**

- Can the parallel port on the PC be configured for ECP mode?
- Is the PC running Windows 95/98/Me?

### System contact person

- Will the person responsible for the computers and the network be available at the time set for installation? Get a name as a contact.



# 2

## Checking the customer site

### Setting customer expectations

If the site is ready, installation takes about one hour. The customer should be informed of the following:

- Some nodes on the network may be unavailable for up to one hour.
- The copier may be unavailable for up to one hour.
- The network administrator needs to be available during the installation for network connectivity.

Equipment downtime and impact on the network can be minimized if the network administrator installs a network connector for the iR-M1 and confirms network functionality with the connector in place before the date scheduled for the iR-M1 installation.

- The network administrator should have a networked computer available during the installation. The appropriate software should already be installed. Documentation for the networked computer and the network operating software should be available.
- The network administrator should install the user software shipped with the iR-M1 onto networked PC and Mac OS computers that will print to the iR-M1. User documentation is provided with the iR-M1.

**NOTE:** This guide covers iR-M1 installation and service. It provides general information on connecting the iR-M1 to the customer's network. Network Setup and configuration information goes beyond the scope of this guide. For network Setup and configuration information, the network administrator should refer to the *Administrator Guide*.

# 2

## Preparing for Installation

### Unpacking the iR-M1

The iR-M1 is assembled and shipped from the factory in a box that includes all necessary cables and documentation, as shown in Figure 2-2 on page 2-7.

---

#### TO UNPACK THE iR-M1

**1. Open the box and remove any packing materials.**

Save the original boxes and packing materials. If you need to transport the iR-M1 at a later date, the original box and packing material will ensure safe shipment.

**2. Remove the contents from the top container. Inspect the contents for visible damage. The contents should include the following items:**

- Bags containing the power cable and copier interface cable.
- iR-M1 media package (includes the user documentation).

**3. Give the media package to the customer or the network administrator.**

Let the customer or network administrator know that in order to take full advantage of the iR-M1, user software must be installed on all computers that will print to it.

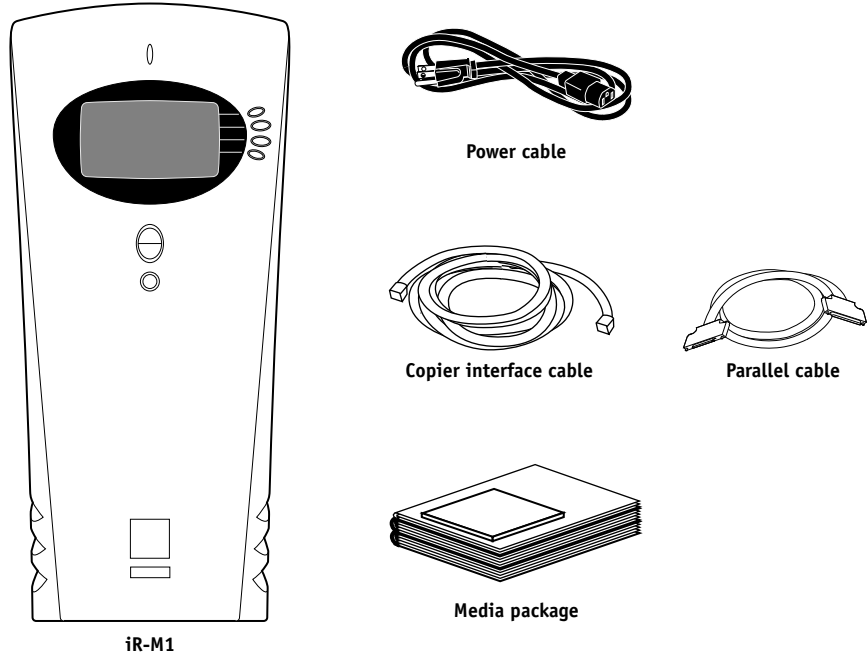
**4. Set aside the remaining components from the top container.**

**5. Remove the top container and any packing materials. Set aside the packing material in case you need to reship the unit.**

**6. Carefully lift the iR-M1 out of the box.**

If you notice shipping damage to any iR-M1 component, be sure to save the shipping container in case the carrier needs to see it. Call the carrier immediately to report the damage and file a claim, then call your authorized service/support center. Be ready to furnish the serial number, printed on the bottom of the chassis.

# 2 Unpacking the iR-M1



**FIGURE 2-2** Contents of the iR-M1 shipping box

# 2 Preparing for Installation

## iR-M1 panels

Once you have unpacked the iR-M1, you can familiarize yourself with the front and back of the iR-M1 before you install it.

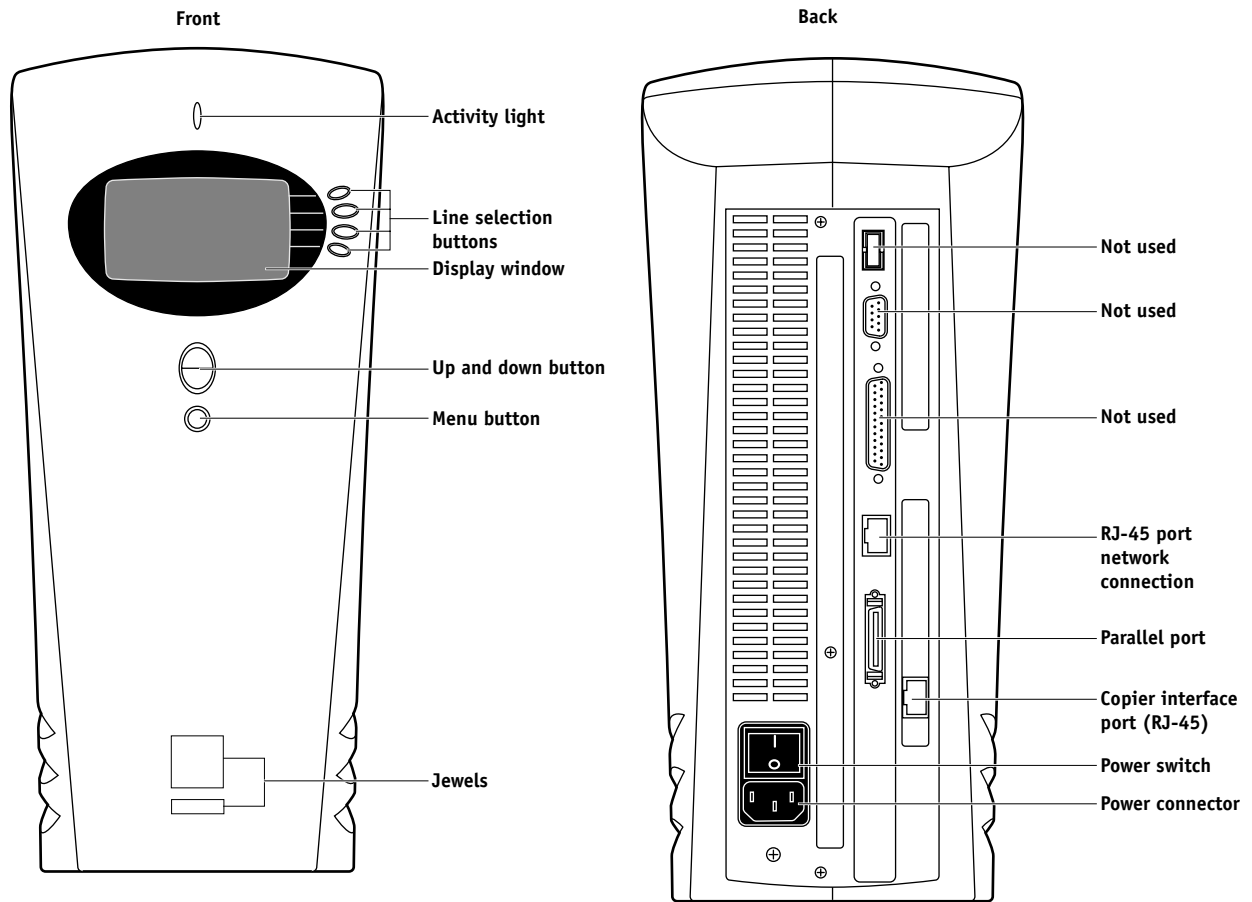


FIGURE 2-3 Front and back panels

# 3 Preliminary checkout

## Chapter 3: Connecting the iR-M1

This chapter includes the following information:

- Connecting power and checking out the iR-M1 (see below)
- Connecting the iR-M1 to the copier (page 3-3)
- Printing the Test Pages (page 3-4)
- Connecting to the network (page 3-5)
- Connecting a PC to the parallel port (page 3-7)
- Shutting down and restarting the iR-M1 (page 3-15)

This chapter also includes information on Control Panel screens and icons.

### Preliminary checkout

When you have just unpacked or serviced a iR-M1, power it on before you connect it to the copier and the network. Diagnostics are run automatically during startup; the iR-M1 is checked for internal problems.

---

#### TO CONNECT POWER AND START THE iR-M1

1. **Connect the recessed end of the iR-M1 power cable to the power connector on the back panel of the iR-M1.**
2. **Make sure that the iR-M1 power switch is in the Off position (press 0), and plug the other end of the power cable into a wall outlet.**

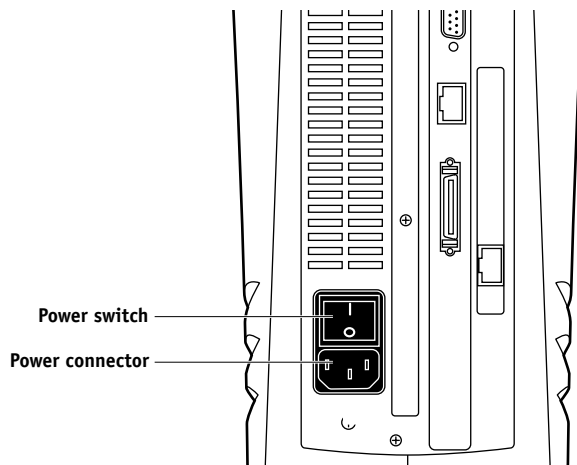


FIGURE 3-1 Connecting the power cable

# 3

## Connecting the iR-M1

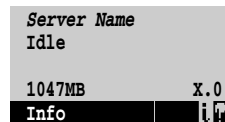
3. Power on the iR-M1 using the switch at the back of the iR-M1. The power supply automatically senses the correct voltage.
4. To confirm that the iR-M1 is operating properly allow iR-M1 startup to proceed without interruption while you watch the Control Panel. Do not press any buttons on the Control Panel.
5. If the Select Language screen is displayed, select the language for the Control Panel.

The language screen is displayed the first time you start the iR-M1 after unpacking it. Once you select the language the system reboots and begins initializing the system in that language.

To select a language different from the one initially highlighted on the Control Panel, use the up and down buttons to scroll through the list and select OK when the desired language is highlighted.

6. Allow the system to proceed to Idle to confirm that the iR-M1 is operating correctly.

Once the iR-M1 reaches the idle state, you are ready to connect it to the copier and the network. Setup options should be configured after making these connections. It is the network administrator's responsibility to configure Setup according to the network and user environment. Refer the network administrator to the *Administrator Guide* for Setup information.



Server Name	
Idle	
1047MB	X.0
Info	i

# 3

## Connecting to the copier

### Connecting to the copier

After successfully starting the iR-M1 by itself, you are ready to connect the iR-M1 to the copier. The iR-M1 communicates with the copier through the copier interface cable.

---

#### TO CONNECT THE iR-M1 TO THE COPIER

1. Power off the iR-M1 as described on page 3-15.
2. Power off the copier.
3. Locate the copier interface cable. Connect one end of the cable to the iR-M1 interface port on the copier.
4. Connect the other end of the copier interface cable to the iR-M1 copier interface port.

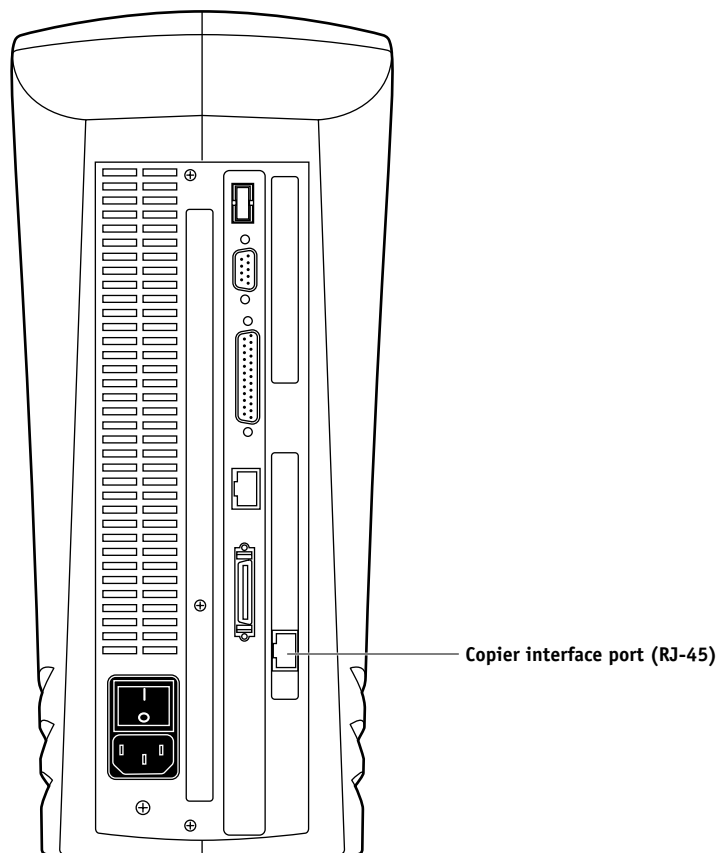


FIGURE 3-2 iR-M1 copier interface port connection

# 3

## Connecting the iR-M1

### Verifying the connection

After you connect the iR-M1 to the copier, print the Test Page to verify that the connection between the iR-M1 and the copier is good.

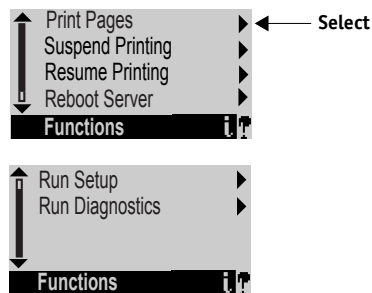
### Printing the iR-M1 Test Pages

Before connecting the iR-M1 to the network, print the Test Pages to verify that it is connected properly to the copier. The PS and PCL Test Pages are PostScript files that reside on the iR-M1 hard disk drive. Print both pages to make sure the connection is operating.

---

#### TO PRINT THE TEST PAGE FROM THE CONTROL PANEL

1. **Power on the copier and allow it to warm up.**
2. **Power on the iR-M1 using the power switch on the back panel.**  
Messages will appear on the Control Panel as the iR-M1 runs through its Start-up diagnostics.
3. **Before proceeding, make sure that the copier is not in use.**
4. **At the Idle screen, press the menu button (see “Using the Control Panel” on page 3-9). The Functions menu displays.**



5. **Press the line selection button to the right of Print Pages and then select PS Test Page.**  
The iR-M1 sends the PS Test Page to the copier and displays the RIP and Print status screens so you can monitor the job.
6. **Press the line selection button to the right of Print Pages again and then select PCL Test Page.**  
The iR-M1 sends the PCL Test Page to the copier and displays the RIP and Print status screens so you can monitor the job.
7. **Examine the quality of the Test Pages from the copier.**



# 3

## Installing additional options

### Installing additional options

If the customer has purchased additional options, install those before connecting the iR-M1 to the network. For installation instructions, see the documentation included in each option kit. After installing options, print a Test Page to verify that the system is operating properly. Checking the installation at each stage allows you to pinpoint the cause of problems should they occur.

### Connecting to the network

Ethernet support is built into the iR-M1 motherboard providing connectivity to Ethernet networks. Supported Ethernet cabling includes unshielded twisted pair for 10/100BaseT.

The motherboard in the iR-M1 has one external Ethernet network RJ-45 port for 10/100BaseT twisted pair (see Figure 3-3). For network configuration information, see the *Administrator Guide*.

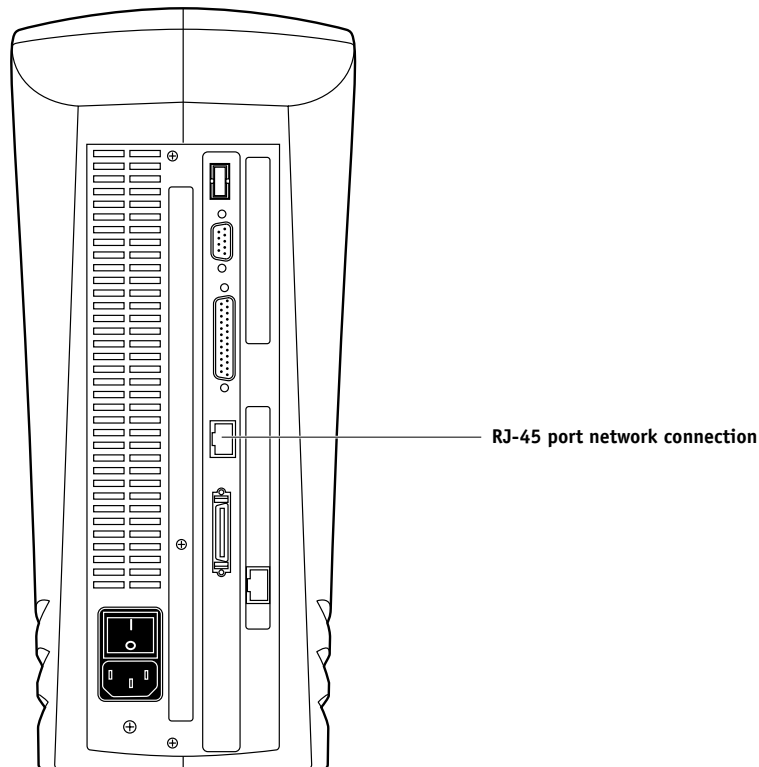


FIGURE 3-3 iR-M1 Ethernet network port

Token Ring compatibility is available with the optional Token Ring kit (see the documentation included with that kit for more information).

# 3

## Connecting the iR-M1

---

### TO CONNECT A TWISTED PAIR CABLE TO THE iR-M1

1. **Power off the iR-M1 as described on page 3-15.**
2. **Connect the network cable to the Ethernet network port on the back of the iR-M1 (see Figure 3-3 on page 3-5).**

A Category 5 unshielded twisted pair (UTP) network cable must be used for 10/100BaseT.

3. **Configure Setup options.**

It is the network administrator's responsibility to configure Setup according to the network and user environment. Default settings in Setup are adequate although they may not be optimal for the user's environment. Refer the network administrator to the *Administrator Guide* for Setup information.

4. **After configuring Setup options, verify the network connection.**

Once the network connection has been made and the iR-M1 has the correct Setup configuration, the iR-M1 should be available on the network.

The network administrator should perform any additional Network setup, verify the network connection, verify that the iR-M1 appears in the list of printers, and print a few test documents from a networked computer that will use the iR-M1. See the *Administrator Guide* for more information.

# 3

## Connecting a PC to the parallel port

### Connecting a PC to the parallel port

The IEEE 1284-C parallel port on the back of the iR-M1 provides a high-speed interface for connecting directly to the parallel port of a stand-alone or networked PC through the parallel cable. The parallel cable used to connect these devices is included in the iR-M1 shipping box.

---

#### TO CONNECT THE iR-M1 TO A PC

1. Power off the iR-M1 as described on page 3-15.
2. Connect the parallel cable to the parallel port on the back panel of the iR-M1.

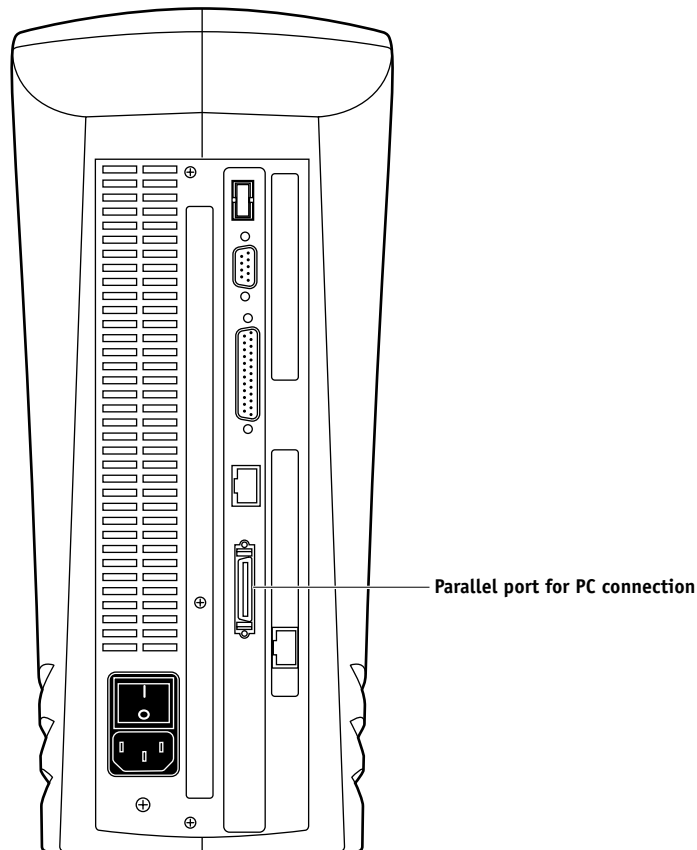


FIGURE 3-4 iR-M1 parallel port

# 3

## Connecting the iR-M1

- 3. With the PC powered off, connect the other end of the parallel cable to the parallel port of the PC.**

If there is more than one parallel port on the back of the PC, ask the network administrator to indicate the preferred parallel port to use for the iR-M1.

**NOTE:** If the PC will be used for installing system software, make sure it meets the requirements specified in “iR-M1 system software” on page 4-36.

- 4. Power on the PC and the iR-M1.**

- 5. Configure Setup options.**

It is the network administrator’s responsibility to configure Setup according to the network and user environment. Default settings in Setup are adequate although they may not be optimal for the user’s environment. Refer the network administrator to the *Administrator Guide* for Setup information.

- 6. After Setup options are configured, verify the parallel port connection.**

Once the parallel port connection has been made and the iR-M1 has the correct Setup configuration and has reached the Idle state, the network administrator should print a few test documents from the PC connected to the iR-M1. See the *Administrator Guide* for more information.

# 3 Using the Control Panel

## Using the Control Panel

This section describes the Control Panel on the front of the iR-M1. Once you install the iR-M1 and verify that it starts up correctly, you can use the Control Panel to access and monitor different functions of the iR-M1.

The current status of the iR-M1 and Setup information are displayed in the iR-M1 display window. iR-M1 activity can be monitored in the display window and iR-M1 functions (such as printing a Test Page and installing or updating system software) can be controlled locally using the buttons on the Control Panel.

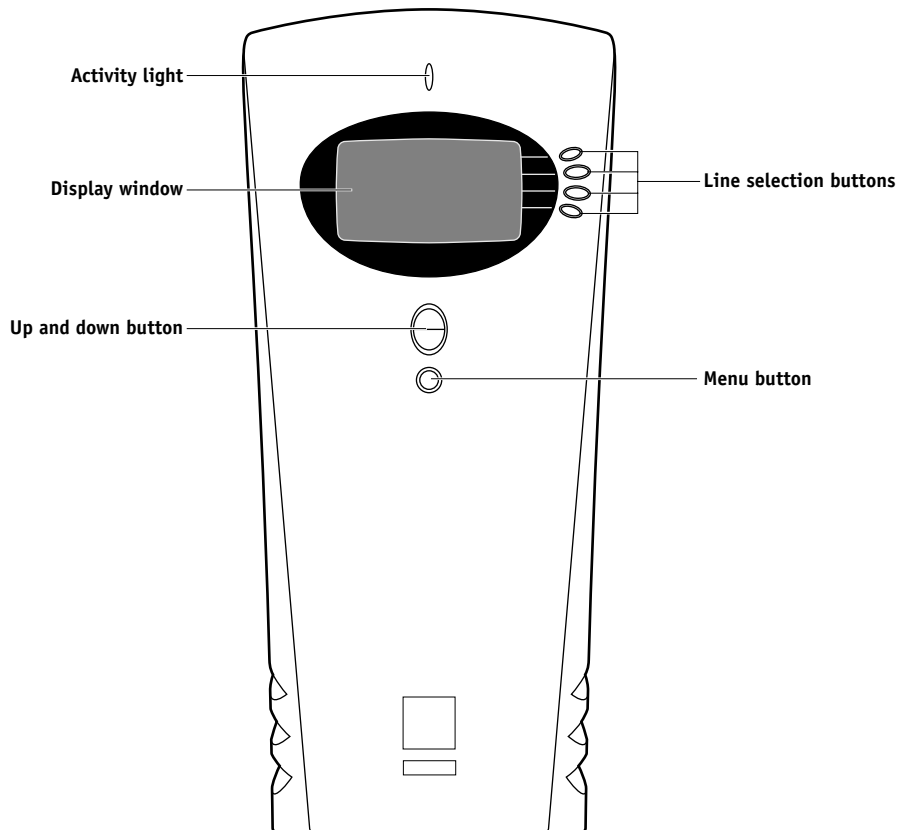


FIGURE 3-5 Control Panel

# 3

## Connecting the iR-M1

### Activity light

The activity light indicates the current iR-M1 activity. If the light is:

Solid red	The iR-M1 has just been powered on and is about to begin Start-up diagnostics, or there is an error that prevents the iR-M1 from processing or printing.
Flashing red	There is an error causing printing to be disabled, but the iR-M1 is still processing. When the error is cleared, the light changes to green.
Solid green	The iR-M1 is idle.
Flashing green	The iR-M1 is performing Start-up diagnostics, processing or printing a job, or communicating with a remote computer.
No light	The iR-M1 may be powered off or in Diagnostic Sets mode.

### Buttons

Line selection buttons	There are four line selection buttons on the right side of the Control Panel. Use these buttons to select the command displayed on the corresponding line of the display window. A special character ► pointing to a line selection button appears in the display window next to each command.
Up and down button	Use this button to scroll to different screens in multi-screen lists, to select Setup options from a list, and to select alphanumeric characters.
Menu button	Press this button to view other display screens. There are several different display screens, showing different types of information about the iR-M1.

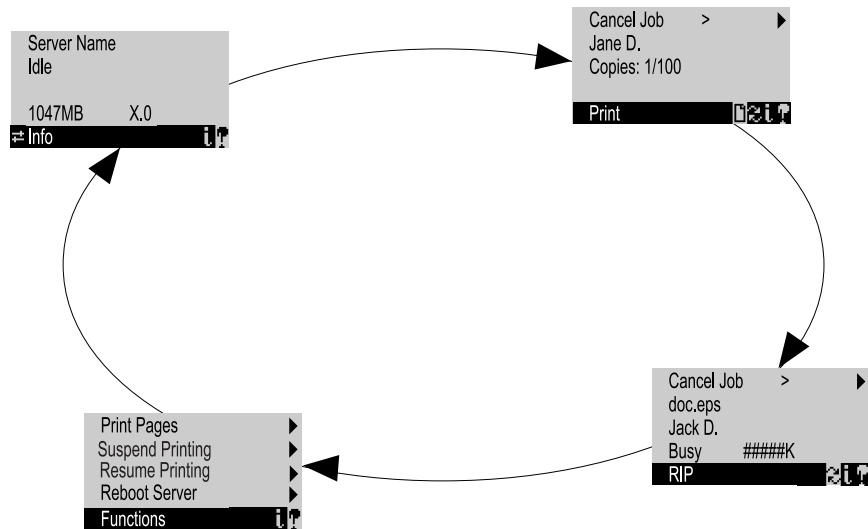
# 3 Using the Control Panel

## Control panel screens and icons

When the iR-M1 is in Print mode, pressing the menu button cycles among four screens: three status screens (Info, RIP, and Print) and the Functions menu (see Figure 3-6). When the iR-M1 is idle, pressing the menu button cycles between the Info screen and the Functions menu.

The bottom line of the screen displays the name of the current screen with the icon for that screen highlighted. Icons for other active screens are also displayed but are not highlighted.

The iR-M1 screens display the following information:






**FIGURE 3-6** Control Panel screens during printing

If an error occurs, the Alert screen is displayed with a message describing the error.

# 3




## Connecting the iR-M1

The display window screens and icons are:

Icon	Window screen	Description
	Alert Status	If there is a problem during printing or processing, the Alert Status screen is activated, displaying an error message. For information on error messages, see the <i>Job Management Guide</i> .
	Info Status	The Info Status screen displays information about the iR-M1 configuration and current activity. This screen is always available, and it appears in the display window when no other screen is selected. It displays the following information:  Server Name—The name entered for the iR-M1 during Setup.  Status—The current status of the iR-M1. The iR-M1 status can be: Idle, Initializing, Busy, Processing, or Printing.  Number of MB—The space in megabytes available on the iR-M1 hard disk.  Version—The system software version running on the iR-M1.
	Print Status	When the iR-M1 is printing, the Print Status screen is activated. This screen displays the following:  Cancel Job—Press the top line selection button to cancel the job currently printing.  User name—The name of the user who sent the job that is currently being printed.  Copies/Total—The number of copies of the current job that have been printed so far, and the total number of copies of this job that were requested.



# 3 Using the Control Panel

<b>Icon</b>	<b>Window screen</b>	<b>Description</b>
	RIP Status	<p>When the iR-M1 is processing a job, the RIP Status screen is activated. This screen displays the following:</p> <p>Cancel Job—Press the top line selection button to cancel the job currently processing. The iR-M1 cancels the job before printing begins.</p> <p>Document name—The name of the document currently processing.</p> <p>User name—The name of the user who sent the job that is currently being processed.</p> <p>Kilobytes—The amount in kilobytes of the job that has been processed so far.</p>
	Functions menu	<p>The Functions menu is always available, but it appears in the display window only when the user has pressed the Menu button to select it (the icon is a finger pointing down to press a button). If necessary, use the up and down button to scroll through the list of menu commands. Press the line selection button to the right of a command to select it.</p>
	Network icon	<p>The Network icon appears in the lower left corner of the display window when the iR-M1 is communicating over the network. The Network icon does not correspond to a screen, and it can appear while any screen is displayed.</p>

# 3

## Connecting the iR-M1

### Functions menu

The Functions menu allows you to perform a variety of administrative functions that do not affect print jobs of other users. To choose an option, use the up and down button to scroll through the list, then press the line selection button next to the option you want to select.

The following options are available from the Functions menu:

Print Pages—Enables the user to print special pages from the iR-M1. The following pages can be printed from the submenu:

- PS Test Page Prints a iR-M1 PostScript Test Page to confirm that the iR-M1 is properly connected to the copier and provides black and white and grayscale samples to troubleshoot problems with the copier or the iR-M1. The following information also displays: iR-M1 server name (defined in Setup), printer model, date and time printed, and compression information (see “Printing the iR-M1 Test Pages” on page 3-4).
- PCL Test Page Prints a iR-M1 PCL Test Page to confirm that the iR-M1 is properly connected to the copier and provides black and white and grayscale samples to troubleshoot problems with the copier or the iR-M1. The following information also displays: iR-M1 server name (defined in Setup), printer model, date and time printed, and compression information (see “Printing the iR-M1 Test Pages” on page 3-4).
- Configuration Prints the Configuration page, which gives the current server and device configuration. This page lists general information about the hardware and software configuration of the iR-M1, the current settings for all Setup options, and the Ethernet address (if applicable) of the iR-M1.
- Job Log Prints the log of the last 55 jobs. For more information on the fields in the Job Log and on printing it in other forms, see the *Job Management Guide*.
- PS Font List Prints a list of all the PostScript fonts resident on the iR-M1 HDD.
- PCL Font List Prints a list of all the PCL fonts resident on the iR-M1 HDD.

# 3

## Shutting down and restarting the iR-M1

**Suspend Printing**—Disconnects the iR-M1 from the copier to interrupt the current print job so that you can use the copier to make copies. After you make the copies, select **Resume Printing** and the copier resumes processing and printing jobs.

**Resume Printing**—Reconnects the copier to the iR-M1 to resume printing after the print job was interrupted to make copies (used with **Suspend Printing**).

**Reboot Server**—Shuts down all iR-M1 activity properly and then restarts.

## Shutting down and restarting the iR-M1

The iR-M1 will usually be left on all the time at the customer site. Remember that when the iR-M1 is powered off, network access to the copier is interrupted. Always obtain permission from the network administrator to take the iR-M1 off the network.

There are three ways to shut down the iR-M1:

- **Restart Server**—Resets the iR-M1 without shutting it down completely (soft reset).
- **Shut Down System**—Shuts down the iR-M1 and indicates when it is safe to power off the iR-M1 using the power switch on the back panel.
- **Reboot System**—Shuts down and then reboots the iR-M1 (hard reset).

You should shut down the system when you need to service the iR-M1 or the copier, and before you remove or attach any cables to the iR-M1.

---

### TO SHUT DOWN THE iR-M1

**1. Make sure that the iR-M1 Info screen reads Idle.**

When **Printing** or **Ripping** appears on the iR-M1 Control Panel, the iR-M1 is currently processing a print job. Wait until the job is complete and **Idle** appears in the Info screen.

**2. Press the menu button once, then select **Reboot Server**. At the next screen, select **Shut Down System**.**

**Shutdown in progress** appears on the Control Panel. About 30 seconds later, the message **It is now safe to power off the system** appears.

**3. Power off the iR-M1 using the power switch on the back panel.**

# 3

## Connecting the iR-M1

---

### TO RESTART THE iR-M1

1. **If the iR-M1 is already on, make sure that the iR-M1 Info screen reads Idle.**

When Printing or Ripping appears on the iR-M1 Control Panel, the iR-M1 is currently processing a print job. Wait until the job is complete and Idle appears in the Info screen.

2. **Press the menu button once, then select Reboot Server from the Functions menu. At the next screen, select Restart Server.**
- 

### TO REBOOT THE SYSTEM

1. **If the iR-M1 is already on, make sure that the iR-M1 Info screen reads Idle.**

When Printing or Ripping appears on the iR-M1 Control Panel, the iR-M1 is currently processing a print job. Wait until the job is complete and Idle appears in the Info screen.

2. **Press the menu button once, then select Reboot Server. At the next screen, select Reboot System.**

# 4

## Overview

### Chapter 4: Service Procedures

Generally, the iR-M1 requires no regular service or maintenance. Use the procedures in this chapter to inspect, remove, reseal, and replace major hardware components and install system software.

### Overview

This chapter includes the following service information:

- Accessing internal components (page 4-3)
- Cable connections (page 4-8)
- Circuit boards (page 4-13)
- Replaceable parts on the motherboard (page 4-20)
- Fans (page 4-22)
- Power switch (page 4-25)
- Power supply (page 4-28)
- Hard disk drive (page 4-32)
- Front panel components (page 4-34)
- System software service (page 4-36)

See Figure 4-1 on page 4-2 for an overview of components. Replacement parts are available from your authorized service representative.



Inside the chassis, the power supply is not encased. Before you service the iR-M1, power it off completely and unplug the AC power cable from the back. When performing the service procedures described in this chapter, follow all precautions listed in “Precautions” on page xiii.

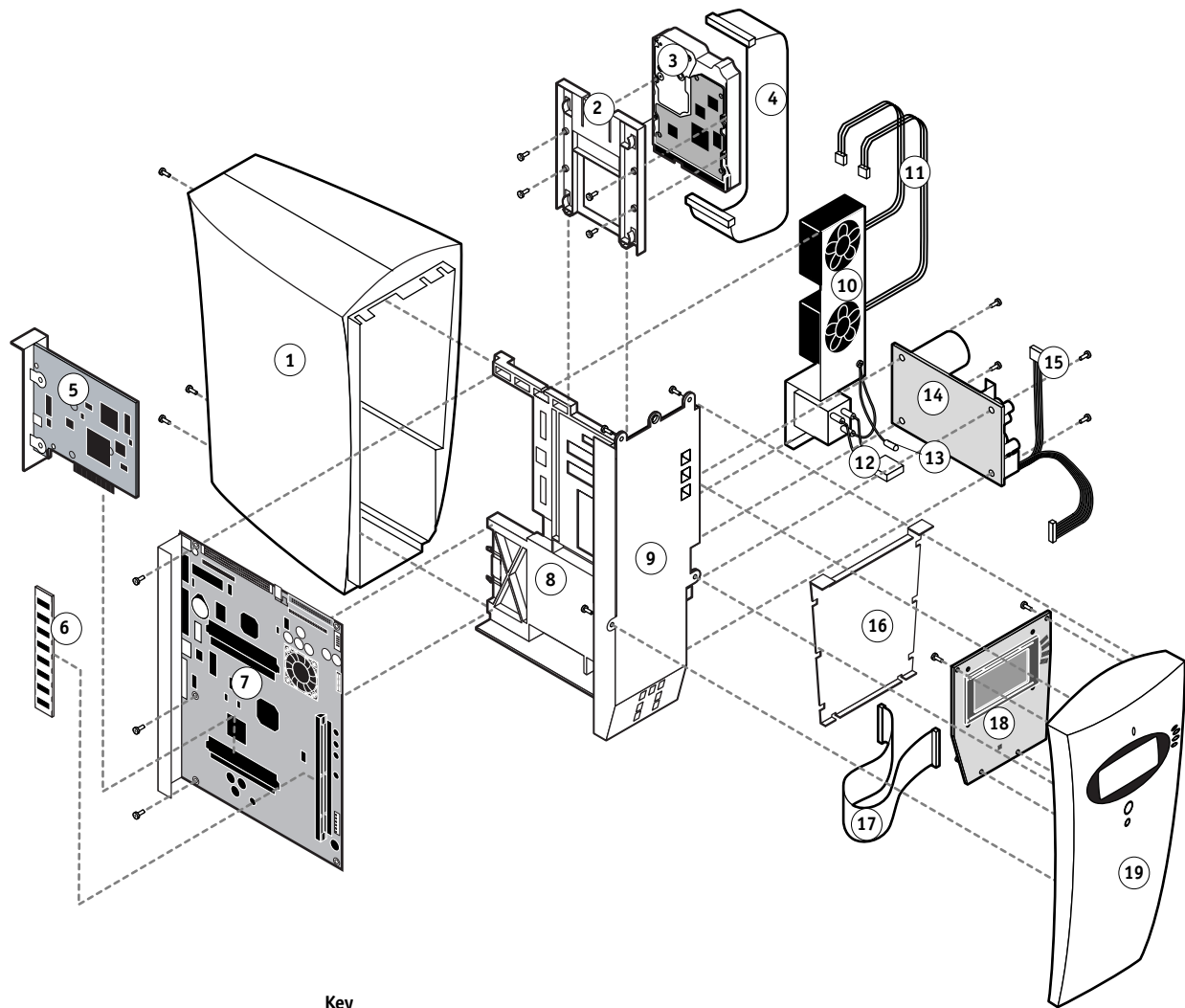
**NOTE:** The tools required to service the iR-M1 are listed in “Tools you will need” on page xv.

### System software service

iR-M1 system software is installed on the HDD at the factory. Use the system software service kit to reinstall system software when you:

- Replace the HDD
- Upgrade to a more recent version of the system software (for information on installing system software, see “iR-M1 system software” on page 4-36).

# 4 Service Procedures



**Key**

- |                                    |                        |
|------------------------------------|------------------------|
| 1. Chassis cover                   | 11. Fan cables         |
| 2. HDD carrier                     | 12. AC power cable     |
| 3. Hard disk drive (HDD)           | 13. Ground cables      |
| 4. HDD cable                       | 14. Power supply       |
| 5. Copier interface board          | 15. Power supply cable |
| 6. DIMM                            | 16. UIB enclosure      |
| 7. Motherboard                     | 17. UIB cable          |
| 8. Center frame                    | 18. UIB                |
| 9. EMI shield                      | 19. Front panel        |
| 10. Fans and power switch assembly |                        |

FIGURE 4-1 iR-M1 exploded view

# 4

## Accessing internal components

### Accessing internal components

Always use the following procedures when opening the iR-M1 chassis.

---

#### TO SHUT DOWN THE iR-M1

**1. Make sure that the iR-M1 Info screen reads Idle.**

When Printing or Ripping appears on the iR-M1 Control Panel, the iR-M1 is currently processing a print job. Wait until the job is complete and Idle appears in the Info screen.

**2. Press the menu button once, then select Reboot Server. At the next screen, select Shut Down System.**

Shutdown in progress appears on the Control Panel. About 30 seconds later the message It is now safe to power off the system appears.

**3. Power off the iR-M1 using the power switch on the back panel.**

**4. Disconnect all cables from the back of the iR-M1.**

**NOTE:** Always obtain permission from the network administrator before you take the iR-M1 off the network.

# 4 Service Procedures

## TO OPEN THE iR-M1

1. Make sure you have shut down the iR-M1 as described on page 4-3 and removed all the cables from the back.
2. Remove the four screws on the back of the iR-M1 that secure the center frame (with motherboard and devices attached) to the chassis cover (see Figure 4-2).

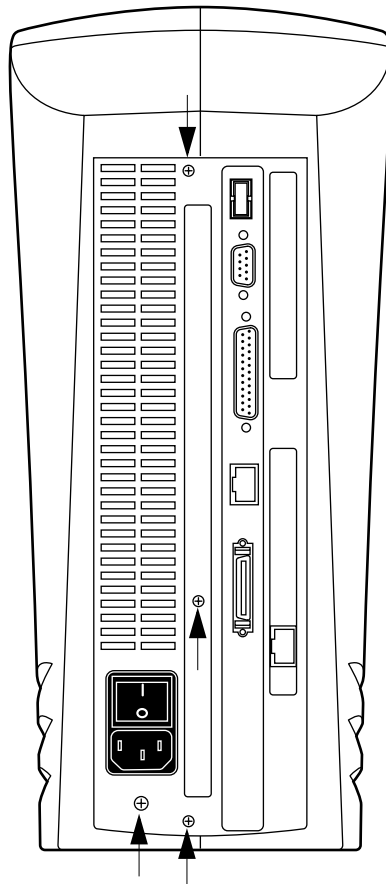


FIGURE 4-2 Opening the iR-M1



# 4 Accessing internal components

3. Place the iR-M1 face up, resting the back panel on protective foam as shown in Figure 4-3.
4. Squeeze the sides near the bottom to release the chassis cover from the front panel tabs as shown in Figure 4-3 (for tab locations, see Figure 4-5 on page 4-7).
5. Grasp the front panel and pull it out of the chassis cover.

The front panel, the motherboard, and all devices are still attached to the center frame.

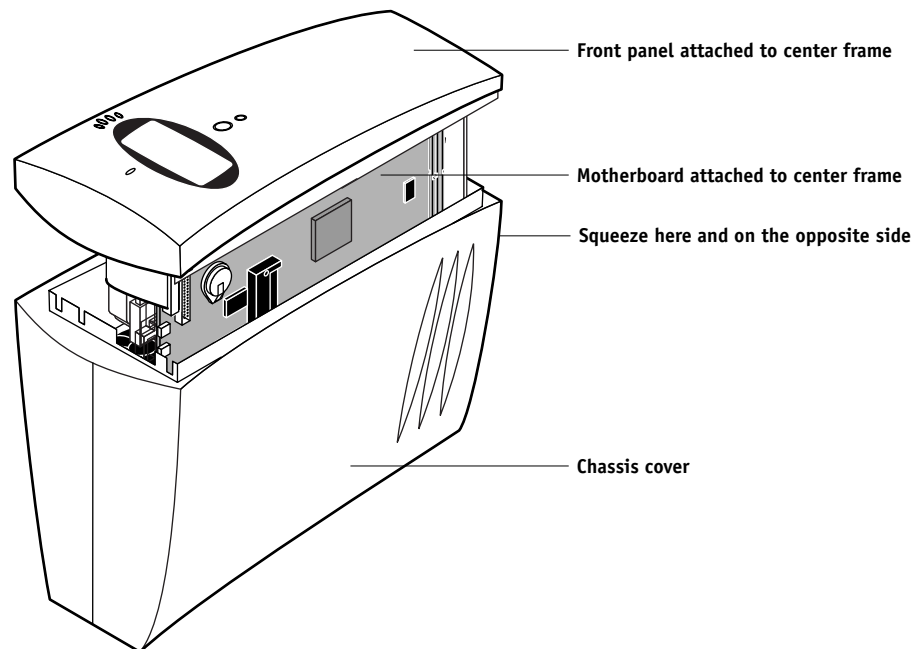


FIGURE 4-3 Removing the chassis cover

6. Place the front panel face down on protective foam and set aside the chassis cover. Most components on the center frame of the iR-M1 are now directly accessible.

Remember to attach an ESD wrist strap before handling internal parts.



Inside the chassis, the power supply is not encased. Before you service the iR-M1, be sure to power it off as described on page 4-3 and unplug the power cable from the back panel.

# 4

## Service Procedures

### Accessing front panel components

To provide stability and easy access to components mounted on the center frame, you may want to remove the front panel so that you can stand the center frame on its main EMI shield during service. Removing the front panel and placing it on foam ensures that it will not get scratched during service. You must remove the front panel from the center frame in order to access front panel components and to replace the power supply. The following procedure describes how to remove the front panel.

#### TO REMOVE THE FRONT PANEL

1. **Power off and open the iR-M1 as described on page 4-3 and page 4-4.**

2. **Remove the four screws that secure the center frame to the front panel.**

At this point, the UIB cable attached to the motherboard keeps the front panel from being completely removed.

3. **Remove the UIB cable from motherboard connector J30.**

4. **Thread the cable through its slot in the EMI shield.**

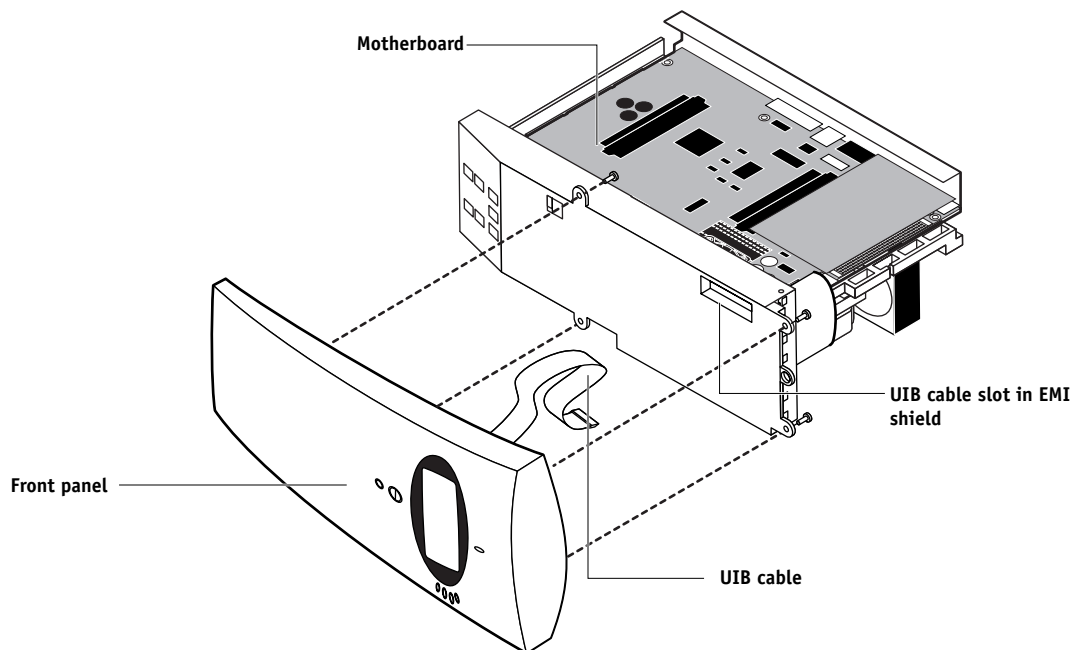


FIGURE 4-4 Removing the front panel

5. **Lift off the center frame and place it face down on the EMI shield.**

6. **Set the front panel face down on protective foam with the UIB enclosure in place.**

If the front panel is not placed face down, the UIB enclosure can fall away from it.

# 4 Accessing internal components

## TO REPLACE THE FRONT PANEL

1. **Make sure all front panel components are installed properly and that the UIB cable is firmly attached to the UIB cable connector.**

For information on installing front panel components, see “To replace the UIB” on page 4-15.

2. **Place the front panel face down on protective foam.**
3. **Place the center frame on top of the front panel. Thread the UIB cable through the UIB cable slot in the main EMI shield and center frame.**
4. **Align the center frame with the four standoffs inside the front panel.**

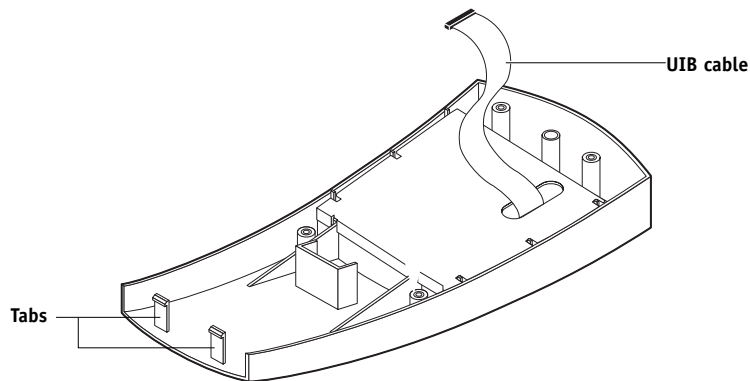


FIGURE 4-5 Inside front panel

5. **Attach the center frame to the front panel with four screws.**
6. **Firmly attach the UIB cable to motherboard connector J30.**  
This connector is keyed for proper insertion.
7. **If no other service is required, reassemble the iR-M1 and verify its functionality as described on page 4-11.**

# 4

## Service Procedures

### Checking internal connections

The most common causes of hardware problems are faulty or loose connections. For example, a blank display screen on the Control Panel may be due to a disconnected UIB cable. Before you conclude that any board or component has failed, first remove, inspect, and reseal all appropriate connections, and then verify that the problem still occurs. See Figure 4-6 on page 4-9 for an overview of internal cable connections.



Before you touch any parts inside the iR-M1 chassis, attach an ESD wrist grounding strap. Touch the metal back panel of the iR-M1 to discharge static electricity.

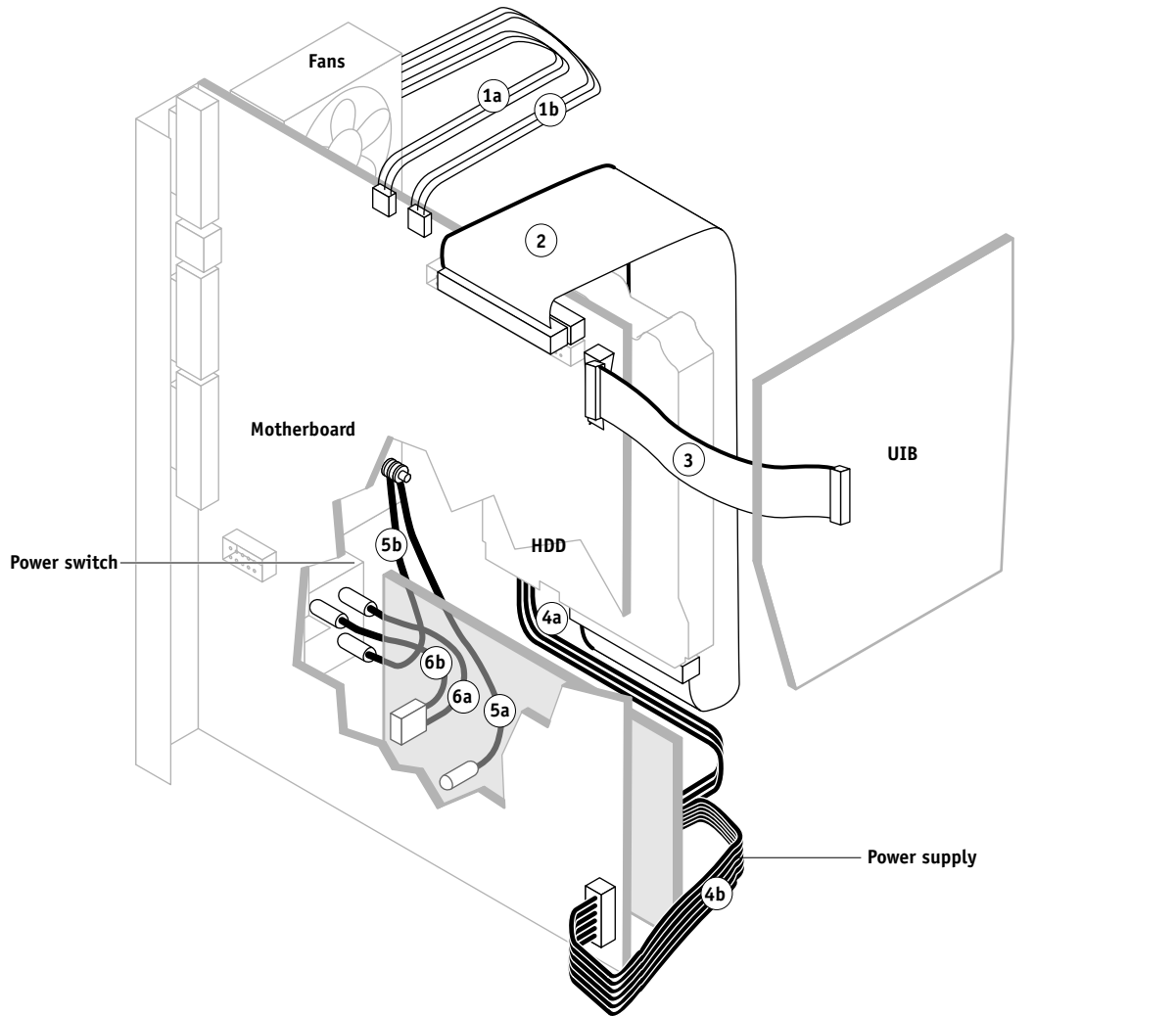
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#### TO CHECK BOARD AND CABLE CONNECTIONS

- 1. Power off and open the iR-M1 as described on page 4-3 and page 4-4.**
- 2. Inspect ribbon cables to make sure they are intact. Check the contact point between the cable and the connector to ensure that they have not separated.**  
Ribbon cables in the iR-M1 include the HDD cable and the UIB cable.
- 3. Make sure that cables are well seated on their connectors (see Figure 4-6 on page 4-9).**  
Connectors on the iR-M1 are keyed to fit only when cables are properly oriented.
- 4. After tightening connections, if one or more components are still not getting power, see “Power supply cable voltages” on page 4-31.**

# 4

## Checking internal connections



Cable key	From	To
1. Fan cables	Fans	a. Fan connector J25 on the motherboard b. Fan connector J26 on the motherboard
2. HDD cable	Hard disk drive (HDD)	HDD connector on motherboard (J28)
3. UIB cable	User interface board (UIB) cable connector	UIB connector on motherboard (J30)
4. Power supply cable	Power supply (6-pin connector)	a. Power connector on HDD (4-pin connector) b. Power connector on motherboard (J29)
5. Ground cables	Chassis ground pin	a. Power supply ground pin b. Connector pin E on the power switch (green)
6. AC power cable	Power supply (2-pin AC power connector)	a. Connector pin N on the power switch (blue) b. Connector pin P on the power switch (brown)

FIGURE 4-6 Internal cable connections

# 4 Service Procedures

## TO CHECK MOTHERBOARD DIMM CONNECTIONS

1. Power off and open the iR-M1 as described on page 4-3 and page 4-4.
2. Check that each installed DIMM is locked in its socket. If a DIMM has come loose, release and reseat it.

DIMMs fit into the sockets only one way. A DIMM is fully seated in its socket when the levers close securely around the ends. Avoid flexing the motherboard while you insert the DIMM in its socket.

3. To release a DIMM, push outward on the levers on each side of the DIMM (see Figure 4-7).

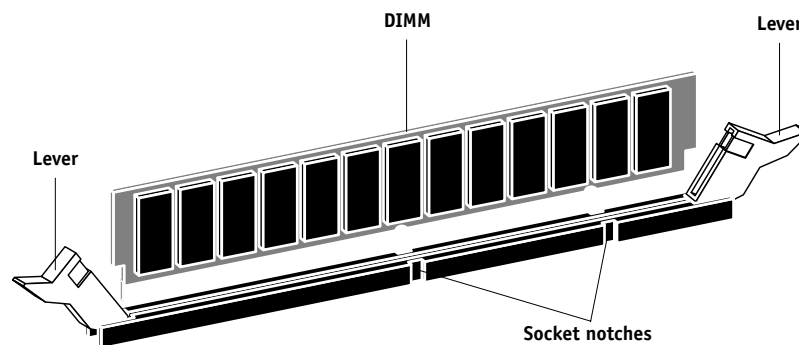


FIGURE 4-7 Releasing a DIMM

4. Slide the DIMM straight out of the socket.
5. To install a DIMM, slide it straight into the socket and close the levers on each side to lock it into place.

# 4

## Checking internal connections

### Restoring functionality after service

#### TO REASSEMBLE THE iR-M1

1. Reseat all devices, boards, cables, connectors, and other parts loosened or removed during inspection or service.
2. Place the chassis cover on its back, so that it is open at the top.
3. If you have not done so already, replace the front panel as described on page 4-7.
4. Hold the front panel/center frame assembly above the open chassis cover and then lower it gently into the chassis cover (see Figure 4-8).

Fold in the fan cables, AC power cable, and HDD cable, if necessary, to avoid interfering with the closure and fraying the cables.

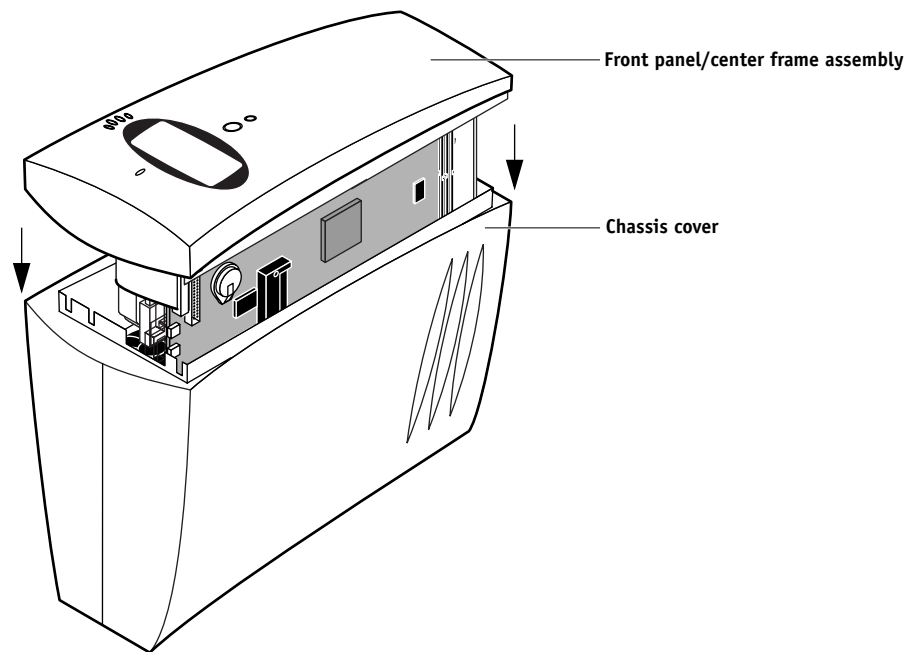


FIGURE 4-8 Reassembling the iR-M1

5. Make sure the edges are tight between the front panel and the chassis cover and then snap them together.

The two tabs near the bottom of the inside front panel snap into the chassis cover. Push the chassis cover and the front panel together to achieve a snug fit. See Figure 4-5 on page 4-7 for tab locations.

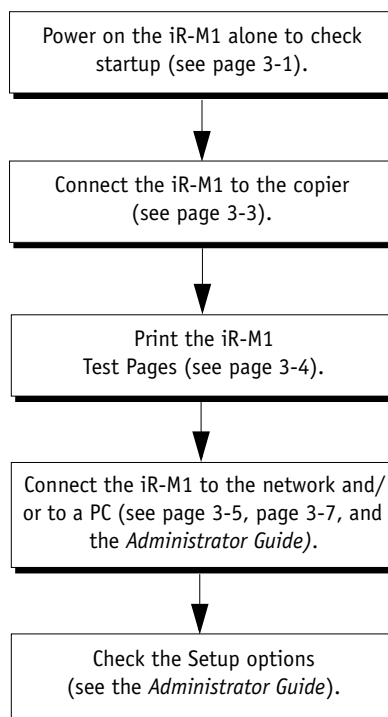
# 4 Service Procedures

6. Place the iR-M1 in its standard operating position. Secure the chassis cover to the center frame with the four screws previously removed (see Figure 4-2 on page 4-4).

**NOTE:** Do not leave the chassis cover off after servicing. An air flow channel is created by the chassis cover and the fans. Leaving the chassis cover off could reduce the operational life expectancy of internal iR-M1 components.

7. Verify iR-M1 operation as outlined below.

Note that the iR-M1 must be powered off before any cables are attached to the back panel.



**FIGURE 4-9** iR-M1 connection verification steps



# 4

## Removing and replacing circuit boards

### Removing and replacing circuit boards

This section describes the procedure for removing and replacing the following boards:

- User interface board (UIB)
- Copier interface board
- Motherboard

For information on installing option boards, such as the Token Ring board, see the separate installation instructions provided with that board.

#### User interface board

The UIB installed in the front panel of the iR-M1 (see Figure 4-10) provides the interface between the iR-M1 and the user. The front of the user interface board contains circuitry for the following:

- Activity lights (1 green and 1 red LED)
- Display window (LCD)
- Four line selection buttons
- Up and down button
- Menu button

The UIB cable connects to the cable connector on the back of the UIB and to motherboard connector J30.

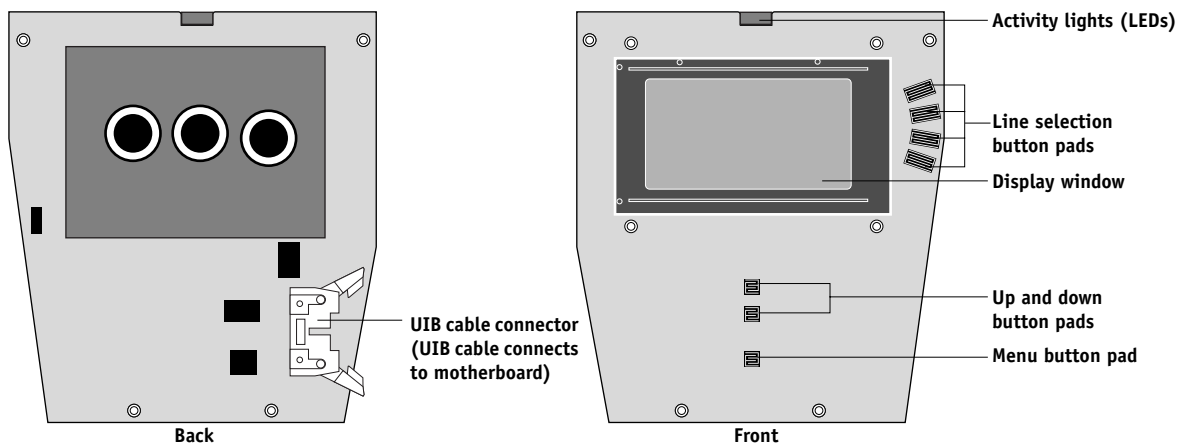


FIGURE 4-10 User interface board layout

# 4 Service Procedures

## TO REMOVE THE UIB

1. Power off and open the iR-M1 as described on page 4-3 and page 4-4.
2. Remove the front panel as described on page 4-6.
3. Carefully lift off the UIB enclosure. Thread the UIB cable back through the UIB cable slot. Set aside the UIB enclosure.

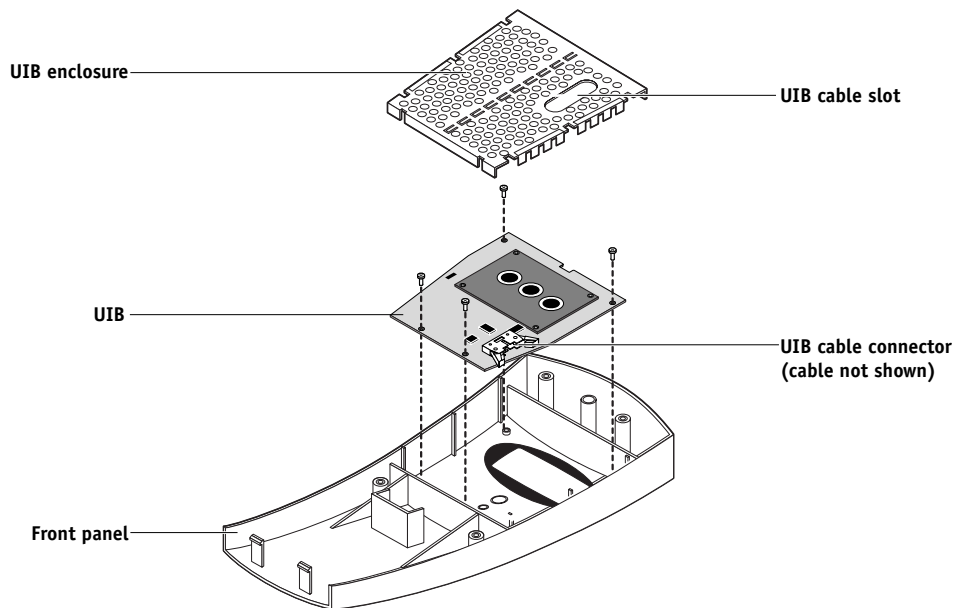


FIGURE 4-11 Removing the UIB

4. Disconnect the UIB cable from the cable connector on the back of the UIB (see Figure 4-10 on page 4-13).
5. Remove the four screws that secure the UIB to the inside front panel (see Figure 4-11). Lift the UIB out of the front panel.

Set aside the screws for reassembly and place the UIB in an antistatic bag.

# 4

## Removing and replacing circuit boards

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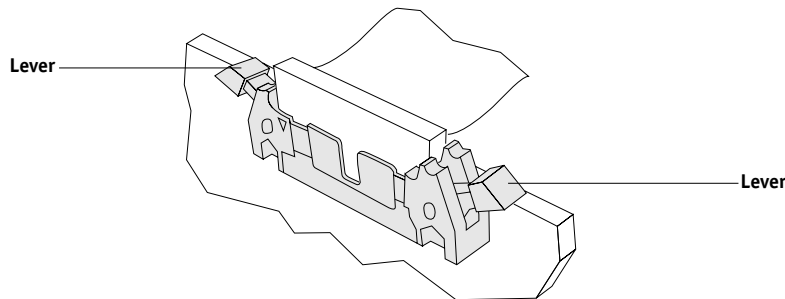
### TO REPLACE THE UIB

**1. Place the UIB inside the front panel.**

Make sure the buttons in the front panel stay in place. Also, make sure no dust or marks are on the display window glass of the UIB. See “Precautions” on page xiii.

**2. Secure the UIB to the inside front panel with the four screws previously removed from the UIB.**

**3. Attach the UIB cable to the keyed connector on the UIB, making sure to lock it in place using the levers (see Figure 4-12).**



**FIGURE 4-12** UIB cable connector

**4. Position the UIB enclosure above the front panel and thread the UIB cable through the UIB cable slot.**

**5. Install the UIB enclosure.**

When properly aligned, the eight notches on the UIB enclosure fit over the eight guides molded along the inside edge of the front panel.

Tuck in all the loose metal shielding along the edges of the UIB enclosure. Make sure the top and bottom lip of the UIB enclosure rest on the molding.

**6. Attach the UIB cable to motherboard connector J30.**

**7. Reassemble the iR-M1 and verify its functionality as described on page 4-11.**

# 4

## Service Procedures

### Copier interface board

The copier interface board in the iR-M1 provides the interface between the iR-M1 and the copier. The copier interface board attaches to motherboard connector J17. The copier interface port on one edge of the board connects to the copier interface cable that plugs into the copier.

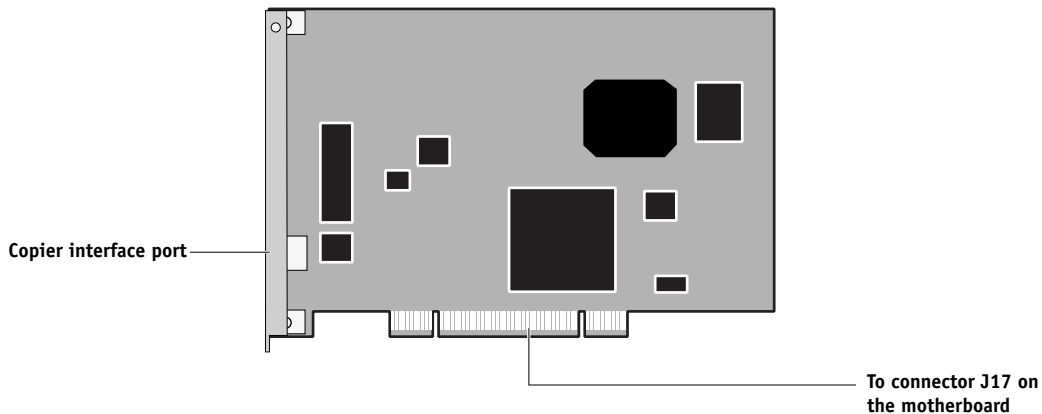


FIGURE 4-13 Copier interface board layout

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#### TO REMOVE THE COPIER INTERFACE BOARD

1. Power off and open the iR-M1 as described on page 4-3 and page 4-4. For stability during service, remove the front panel as described on page 4-6.
2. Remove the screw on the side of the port bracket that secures the copier interface board to the port bracket.
3. Remove the copier interface board from motherboard connector J17.  
Grasp the board at the sides. Gently pull the board straight up, until it releases from the connector.
4. Place the copier interface board in an antistatic bag.

---

#### TO REPLACE THE COPIER INTERFACE BOARD

1. Insert the copier interface board into motherboard connector J17. Make sure that the copier interface port is in its slot.
2. Replace the screw you removed earlier to secure the copier interface board to the port bracket.
3. Replace the front panel as described on page 4-7.
4. Reassemble the iR-M1 and verify its functionality as described on page 4-11.

# 4

## Removing and replacing circuit boards

### Motherboard

The iR-M1 motherboard has a 500MHz CPU and a minimum of 128MB of memory. It processes image data, controls hard disk drive functions, controls the image data transferred to and from the copier interface board, and handles communication between the iR-M1 and external devices. This section includes instructions for replacing the motherboard, motherboard battery, and DIMMs.

#### Key

1. RJ-45 port (J4)
2. Parallel port (J2)
3. BIOS chip
4. Battery (BT1)
5. Copier interface board connector (J17)
6. Exhaust fan cable connector (J25)
7. Exhaust fan cable connector (J26)
8. HDD cable connector (J28)
9. UIB cable connector (J30)
10. CPU/heatsink/CPU fan
11. CPU fan cable connector (J27)
12. DIMM socket
13. Power supply cable connector (J29)

MS-Mounting screws (3)

NOTE: Components not listed above are not used.

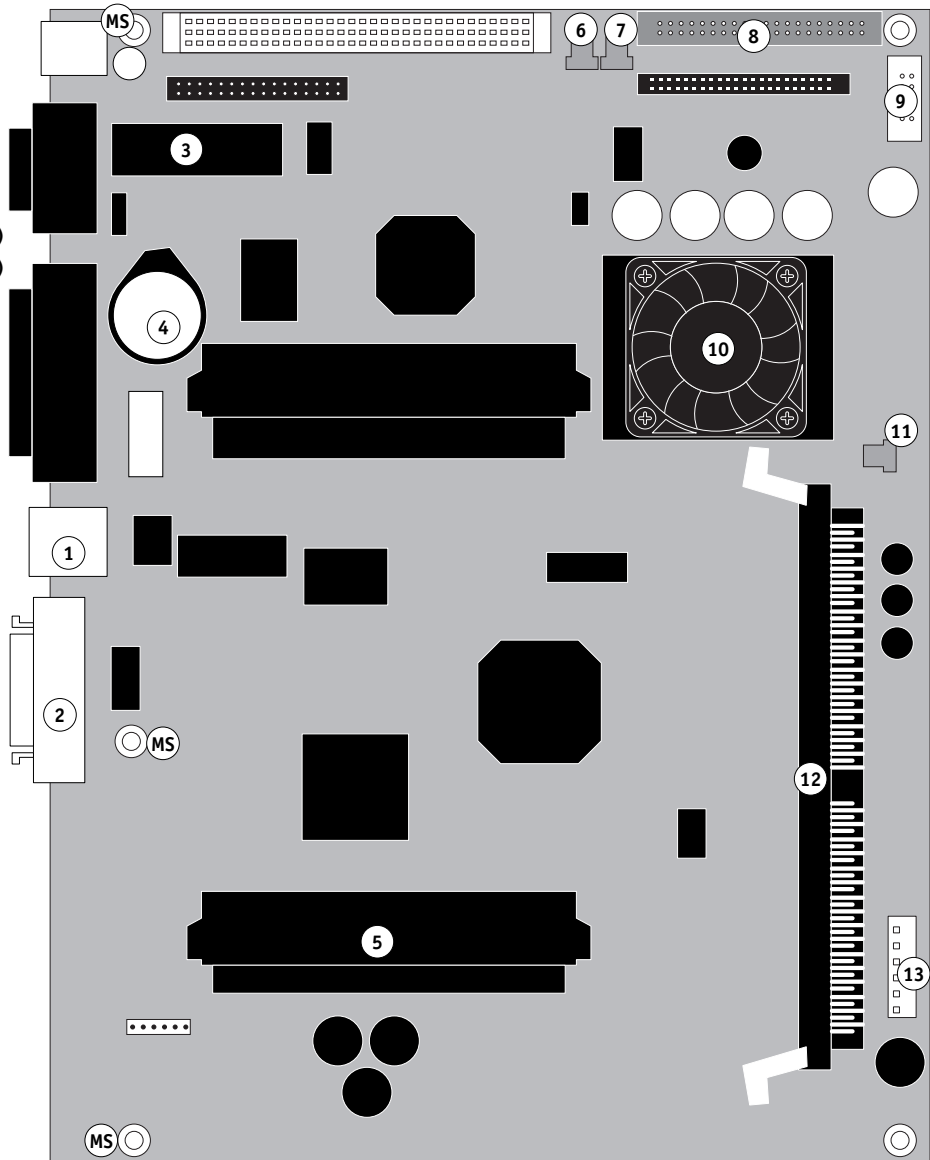


FIGURE 4-14 Diagram of the iR-M1 motherboard

# 4

## Service Procedures

### Removing the iR-M1 motherboard

The motherboard attaches to the iR-M1 center frame. Before you remove the motherboard, you must remove:

- All cables attached to the motherboard
- Copier interface board
- Option board, if present
- Three (3) mounting screws

---

#### TO REMOVE THE MOTHERBOARD

- 1. If you are replacing the motherboard with a new board, print the following from the Functions menu:**
  - Configuration page—records the customer's current Setup configuration. If you are installing a new drive you will need to reinstall system software after the new motherboard is installed. The Setup configuration will be reset to the default configuration when the motherboard is replaced.
  - Font Lists—details what PostScript and PCL fonts are resident on the iR-M1 HDD. Along with the fonts provided on the System Software CD, the customer may have installed additional fonts that will be deleted when the motherboard is replaced.
- 2. Power off and open the iR-M1 as described on page 4-3 and page 4-4.**
- 3. For stability during service, remove the front panel as described on page 4-6.**
- 4. Remove the power supply cable from motherboard connector J29.**
- 5. Remove the two fan cables from motherboard connectors J25 and J26.**
- 6. Make sure the UIB cable is removed from motherboard connector J30.**
- 7. Remove the HDD cable from motherboard connector J28.**

Using a ribbon cable connector extractor is recommended.
- 8. Remove the copier interface board from motherboard connector J17 (see "To remove the copier interface board" on page 4-16).**
- 9. Remove the three mounting screws that attach the motherboard to the center frame.**
- 10. Gently lift the motherboard away from the three center frame hooks.**

The three center frame hooks hold the motherboard in place. Place the motherboard on an antistatic mat or in an antistatic bag.

# 4

## Removing and replacing circuit boards

---

### TO REPLACE THE MOTHERBOARD

1. Place the motherboard into the center frame behind the three center frame hooks, making sure that the motherboard is in the correct position.
2. Secure the motherboard to the center frame with three mounting screws.
3. Connect the power supply cable to motherboard connector J29.
4. Reseat any option board removed from motherboard connector J18.
5. Reseat the copier interface board on motherboard connector J17 (see "To remove the copier interface board" on page 4-16).
6. Attach the two fan cables to motherboard connectors J25 and J26.
7. Attach the UIB cable to motherboard connector J30.
8. Attach the HDD cable to motherboard connector J28.
9. Reattach the front panel as described on page 4-7.
10. Reassemble the iR-M1 and verify its functionality as described on page 4-11.
11. If you installed a new motherboard, reinstall system software (see "iR-M1 system software" on page 4-36).

# 4 Service Procedures

## Replacing parts on the motherboard

This section describes how to remove and install the following parts on the motherboard:

- DIMM
- Battery

Before performing any of the following procedures, you must first power off and open the iR-M1 as described on page 4-3 and page 4-4.

### DIMM

The DIMM (dual in-line memory module) is held in place by levers at each end of its socket on the motherboard. The iR-M1 is originally configured for a minimum of 128MB.

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#### TO REPLACE A DIMM

1. To release a DIMM, push outward on the levers on each side of the DIMM (see Figure 4-15).

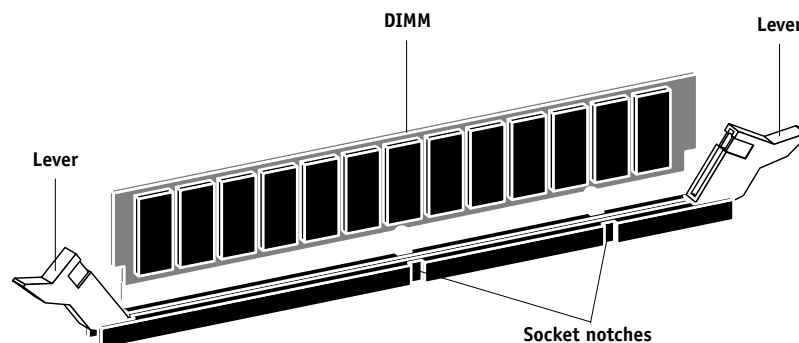


FIGURE 4-15 Releasing a DIMM

2. Slide the DIMM straight out of the socket.
3. To replace a DIMM, slide it straight into the socket and close the levers on each side to lock it into place.

A DIMM fits in the socket only one way. The DIMM is fully seated in its socket when the levers close securely around the ends. Avoid flexing the motherboard while you insert the DIMM in its socket.

4. Reassemble the iR-M1 and verify its functionality as described on page 4-11.



# 4

## Removing and replacing circuit boards

### Motherboard battery

The battery on the motherboard is located at BT1. The battery provides support for the realtime clock chip on the motherboard. To replace it, use a 3V manganese dioxide lithium coin cell battery (Panasonic CR2032 or equivalent).



**CAUTION:** There is danger of explosion if the battery is replaced with the incorrect type. Replace only with the same type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

**ACHTUNG:** Es besteht Explosionsgefahr, wenn die Batterie durch eine Batterie falschen Typs ersetzt wird. Als Ersatz dürfen nur vom Hersteller empfohlene Batterien gleichen oder ähnlichen Typs verwendet werden. Verbrauchte Batterien müssen entsprechend den Anweisungen des Herstellers entsorgt werden.

**ATTENTION:** Il y a risque d'explosion si la pile est remplacée par un modèle qui ne convient pas. Remplacez-la uniquement par le modèle recommandé par le constructeur. Débarrassez-vous des piles usées conformément aux instructions du constructeur.

---

### TO REPLACE THE MOTHERBOARD BATTERY

1. **Locate the battery on the motherboard.**
2. **Carefully lift up the clip that holds the battery.**

Use caution when lifting up the clip; excessive force could cause the clip to lose its tension.

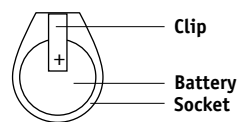


FIGURE 4-16 Motherboard battery

3. **Pull the battery out of its socket and release the clip.**
4. **To insert a new battery, slide the battery into the socket under the clip with the positive (+) side facing up.**  
Make sure the clip holds the battery securely in the socket.
5. **If you removed the front panel, reattach it (see "To replace the front panel" on page 4-7).**
6. **Reassemble the iR-M1 and verify its functionality as described on page 4-11.**

**NOTE:** When you power on the iR-M1, let the Start-up diagnostics complete, then power off and on again to reinitialize the realtime clock.

# 4 Service Procedures

## Fans

The following fans run continuously when the iR-M1 is on:

- Exhaust fans—Pull warm air from inside the unit and blow it out of the unit through the back of the chassis. You should hear the fans start as soon as you power on the iR-M1. The fans connect to the motherboard at connectors J25 and J26. They are mounted on a metal bracket attached to the device side of the center frame.
- CPU fan—Attached to the CPU heatsink with four mounting screws. The CPU fan cable attaches to motherboard connector J27.

You should hear the fans start as soon as you power on the iR-M1.

### Exhaust fan

Use the following procedures to service the exhaust fans.

---

#### TO REMOVE THE EXHAUST FANS

1. Power off and open the iR-M1 as described on page 4-3 and page 4-4.
2. For stability during service, remove the front panel as described on page 4-6.
3. Remove the exhaust fan cables from motherboard connector J25 and J26 and cut the tie wrap that holds the fan cables to the white tie-mount on the metal bracket.

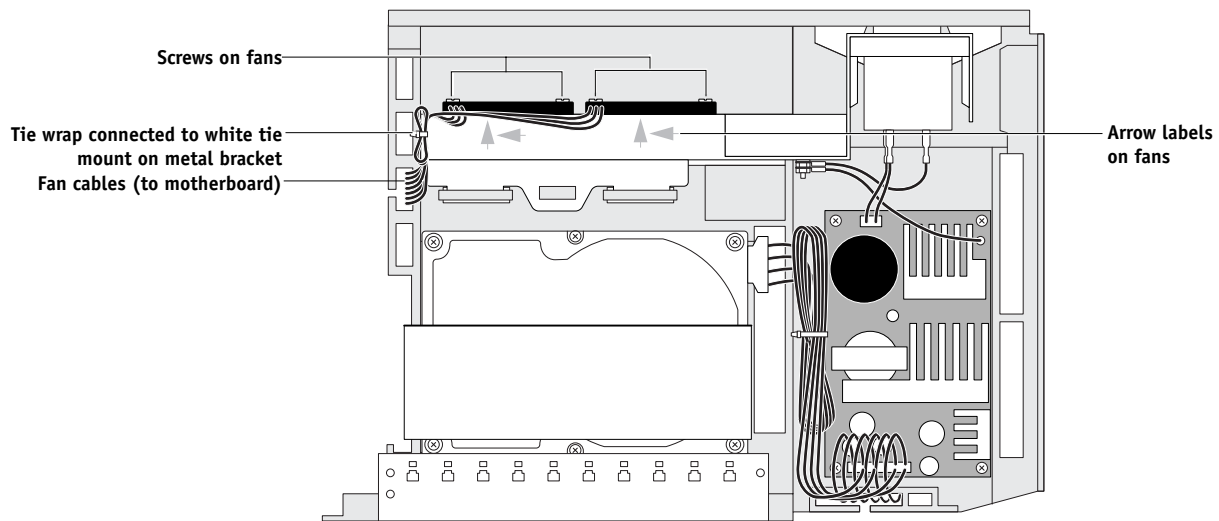


FIGURE 4-17 Removing the exhaust fans

4. Remove the three screws that secure each fan to the metal bracket and remove the fan (with cable attached).

# 4 Fans

---

## TO REPLACE THE EXHAUST FANS

- 1. Place the fans on the metal bracket so that an arrow on the fans points to the back of the chassis (see the direction of the arrow labels on the fans in Figure 4-17 on page 4-22).**
- 2. Secure the fan to the metal bracket with the three screws previously removed.**
- 3. Attach the fan cables to motherboard connectors J25 and J26.**

Use a tie wrap to secure the fan cables to the white tie-mount on the metal bracket. Fold any excess cable neatly and secure with a tie-wrap.
- 4. If you removed the front panel, reattach it as described on page 4-7.**
- 5. Reassemble the iR-M1 and verify its functionality as described on page 4-11.**

# 4 Service Procedures

## CPU fan

The 12V CPU fan is mounted on the CPU heat sink. The fan blows air toward the heatsink to cool the CPU. The fan is correctly oriented when the notches near the corners of the fan face away from the heatsink (see Figure 4-18). The CPU fan cable connects to the motherboard at connector J27.

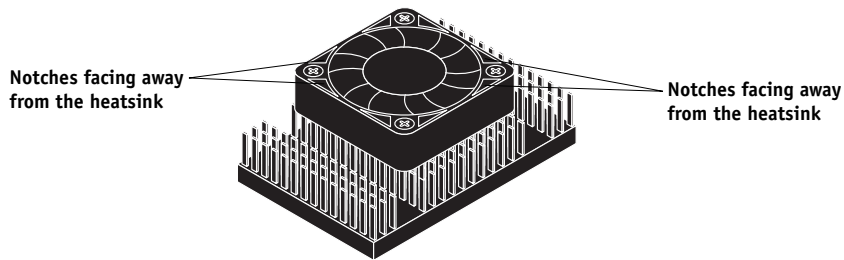


FIGURE 4-18 CPU fan

### TO REMOVE THE CPU FAN

1. Power off and open the iR-M1 as described on page 4-3 and page 4-4.
2. Remove the CPU fan cable from iR-M1 board connector J27 (see Figure 4-19).  
To remove the fan cable, gently pull the white connector from the pins.
3. Using a Phillips screwdriver, remove the four screws that secure the CPU fan to the CPU heatsink. Set aside the screws so that you can replace them later.

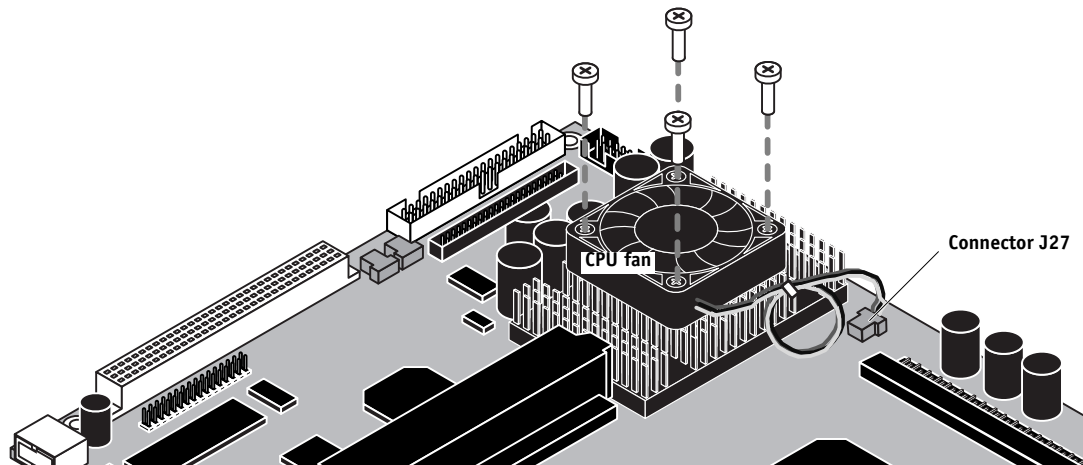


FIGURE 4-19 The CPU fan on the motherboard

4. Remove the CPU fan and set it aside.

# 4 Power switch

## TO REPLACE THE CPU FAN

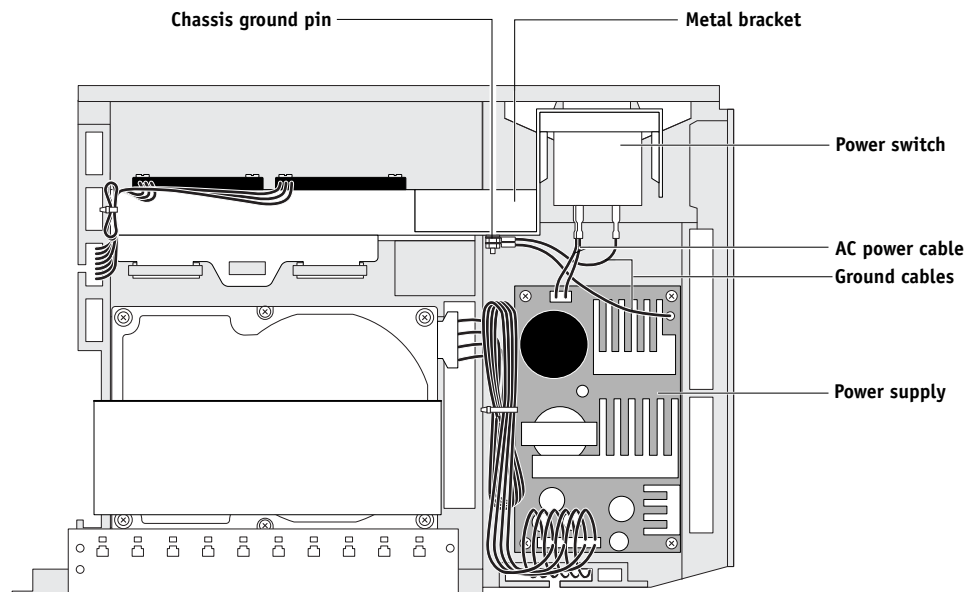
1. **Position the CPU fan on top of the CPU heatsink so that the notches near the corners of the fan are facing away from the heatsink (see Figure 4-18 on page 4-24).**
2. **Attach the CPU fan to the CPU heatsink with four screws.**  
The screws are driven between fins in the heatsink. Do not to apply excessive pressure to the board when replacing the screws.
3. **Connect the CPU fan cable to iR-M1 board connector J27.**  
Use a tie wrap to secure any slack in the CPU fan cable.
4. **Reassemble the iR-M1 and verify its functionality as described on page 4-11.**

## Power switch

The power switch is mounted on a metal bracket attached to the device side of the center frame.

The following cables connect to the power switch:

- AC power cable
- Ground cable



**FIGURE 4-20** Replacing the power switch

Use the following procedures to replace the power switch on the back panel.

# 4 Service Procedures

---

## TO REMOVE THE POWER SWITCH

1. Power off and open the iR-M1 as described on page 4-3 and page 4-4.
2. For stability during service, remove the front panel as described on page 4-6.
3. Note the orientation of the power switch and the cables attached to the power switch for reassembly.

When the iR-M1 is in its standard operating position, the on/off switch is above the power connector.

4. Using a pair of needlenose pliers, carefully remove the AC power cable (blue and brown cables) from the pins on the power switch.

Leave the other end of the cable attached to the power supply.

5. Remove the ground cable (green) from its pin on the power switch (see Figure 4-20 on page 4-25).

Leave the other end of the cable attached to the chassis ground pin.

6. Remove the two screws that secure the power switch to the metal bracket.
7. Remove the ground shield.
8. Remove the power switch by lifting it up through the opening in the metal bracket.

---

## TO REPLACE THE POWER SWITCH

1. Slide the power switch down through the opening in the metal bracket. Position the power switch so the silkscreened | is on top when the iR-M1 is in its standard operating position.
2. Place the ground shield over the power switch.
3. Secure the power switch and ground shield to the metal bracket with two screws.

# 4 Power switch

## 4. Connect the AC power cable to the power switch (see Figure 4-21).

The AC power cable consists of one blue and one brown cable. The colored label on the switch shows the proper connection.

- Connect the blue cable to pin N
- Connect the brown cable to pin P

The other end of the AC power cable should still be attached to the power supply.

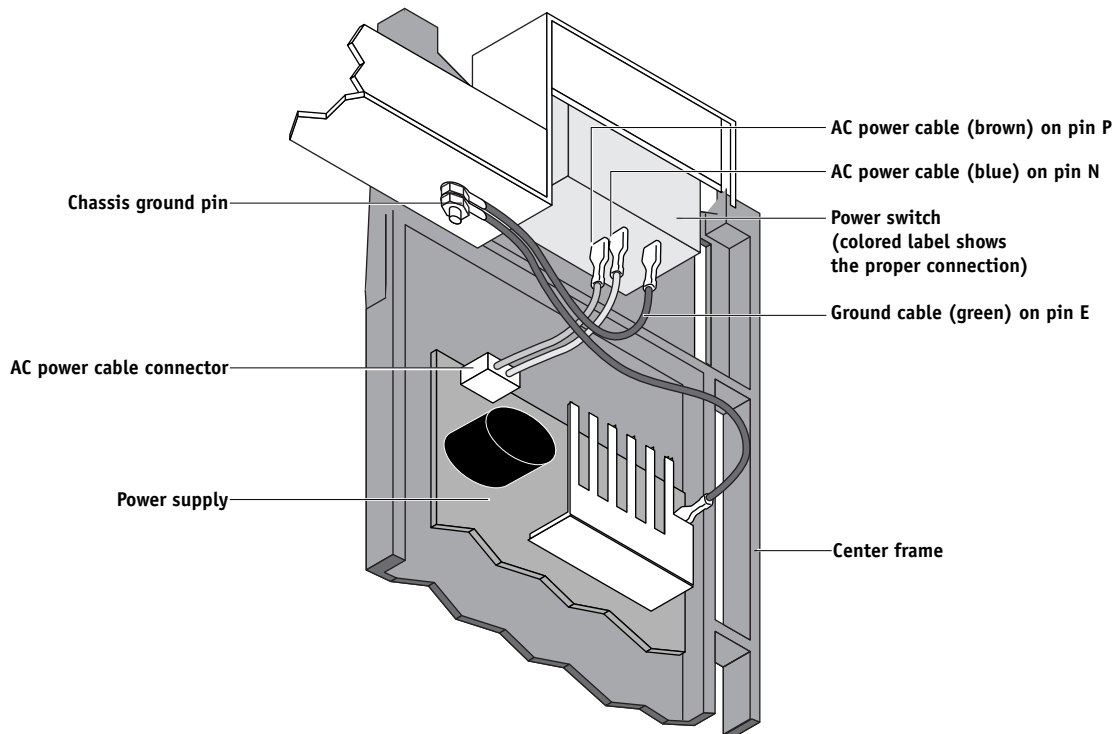


FIGURE 4-21 Power switch pins and cables

## 5. Connect the ground cable to pin E on the power switch (see Figure 4-21).

The other end of the ground cable should still be attached to the chassis ground pin. The second ground cable should remain attached to the chassis ground pin and the power supply.

## 6. Reattach the front panel as described on page 4-7.

## 7. Reassemble the iR-M1 and verify its functionality as described on page 4-11.

# 4 Service Procedures

## Power supply

The 60 watt power supply in the iR-M1 has an input range of 100V AC to 240V AC.

The following cables connect to the power supply:

- AC power cable

*Do not* attempt to measure voltages on the AC power cable because voltages are in the range of 100-240V AC.

- Power supply cable (with connectors to the HDD and motherboard)

The power supply cable supplies +5V, +12V, and -12V to the motherboard and +5V and +12V to the HDD (see “Power supply cable voltages” on page 4-31).

- Ground cables



Inside the chassis the power supply is not encased. Before you service the iR-M1, power it off and unplug the power cable from the back.

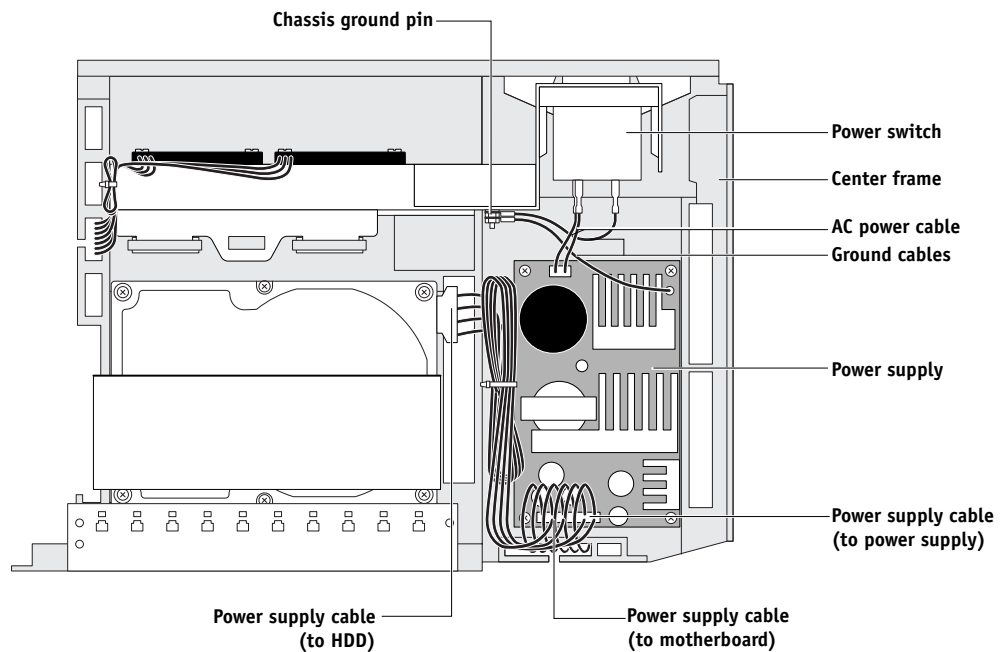


FIGURE 4-22 Power supply on the center frame



# 4

## Power supply

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### TO REMOVE THE POWER SUPPLY

1. **Power off and open the iR-M1 as described on page 4-3 and page 4-4.**
2. **Remove the front panel as described on page 4-6.**
3. **Remove the power supply cable from motherboard connector J29 and the HDD.**  
The center connector on the power supply cable connects to the power supply.
4. **Remove the AC power cable connector from the power supply with a pair of needlenose pliers.**  
Leave the other end of the AC power cable attached to the pins on the power switch.
5. **Remove the ground cable (green) from the power supply with a pair of needlenose pliers.**  
Leave the other end of the ground cable attached to the chassis ground pin.
6. **Remove the four screws that secure the power supply to the center frame.**
7. **Remove the power supply from the center frame.**

---

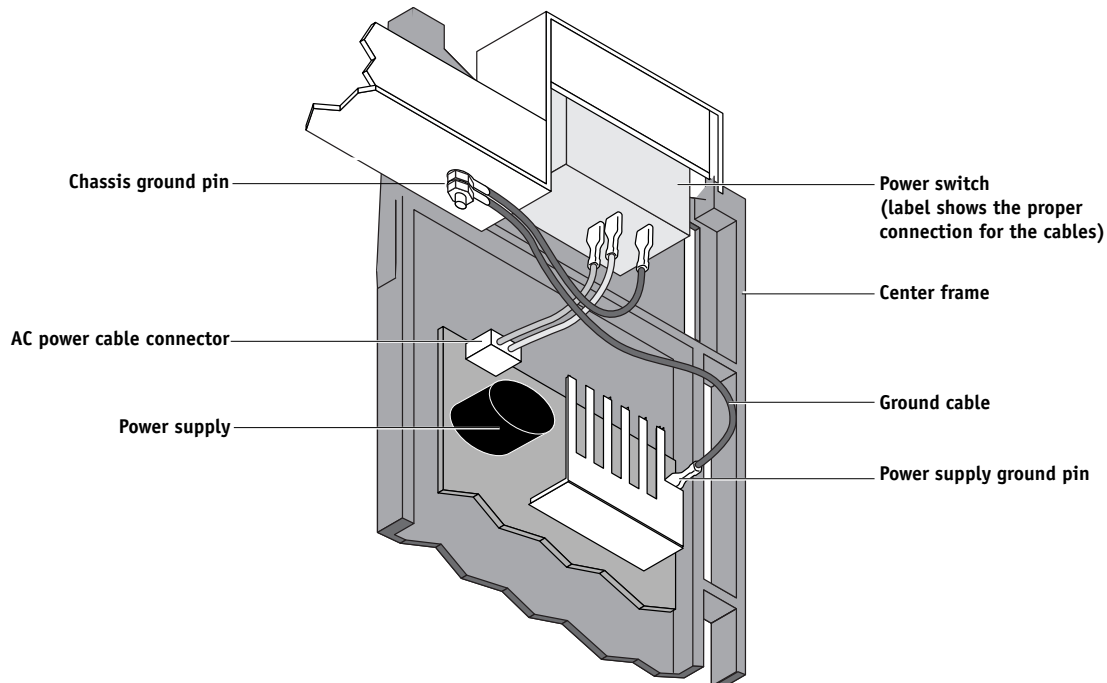
### TO REPLACE THE POWER SUPPLY

1. **Secure the power supply to the center frame with four screws.**
2. **Thread the motherboard end of the power supply cable through the guide on the center frame and attach it to connector J29 on the motherboard.**
3. **Connect the other end of the power supply cable to the power connector on the HDD.**
4. **If you removed the power supply cable connector from the power supply, reattach it.**

# 4 Service Procedures

**5. Connect the AC power cable connector to the power supply (see Figure 4-23).**

The white cable connector is keyed to fit only one way on the power supply pins. The other end of the cable should still be attached to the power switch. Make sure the cables are attached according to the label on the power switch.



**FIGURE 4-23** Power supply pins and cables

**6. Connect the ground cable to the power supply ground pin.**

The ground cable should still be attached to the chassis ground pin.

**7. Fit the bottom EMI shield into the main EMI shield and secure it with two screws.**

**8. Reattach the front panel as described on page 4-7.**

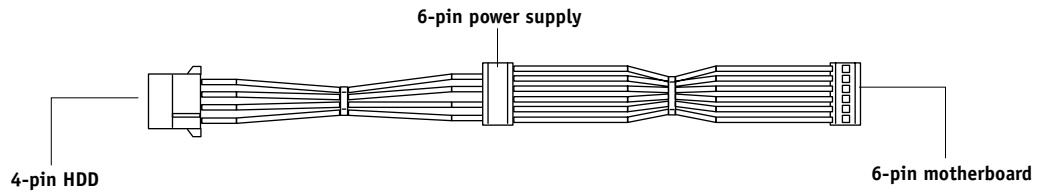
**9. Reassemble the iR-M1 and verify its functionality as described on page 4-11.**




# 4 Power supply

## Power supply cable voltages

This section provides voltage information about the iR-M1 power supply cable. The power supply cable connects to the HDD, power supply, and motherboard.

**NOTE:** *Do not* attempt to measure voltages on the power supply cable.



Connector	Pin number	Cable color	DC Voltage
 <b>4-pin HDD</b>	1	Yellow	+12V
	2	Black	Common
	3	Black	Common
	4	Red	+5V
 <b>6-pin power supply</b>	1	Yellow	+12V
	2	Red	+5V
	3	Red	+5V
	4	Black	Common
	5	Black	Common
	6	Blue	-12V
 <b>6-pin motherboard</b>	1	Blue	-12V
	2	Black	Common
	3	Black	Common
	4	Red	+5V
	5	Red	+5V
	6	Yellow	+12V

**FIGURE 4-24** Power supply cable voltages

# 4

## Service Procedures

### Hard disk drive

The factory-installed hard disk drive (HDD) is formatted and loaded with all iR-M1 software, including operating software, system software, and printer fonts. Because the HDD is used to store spooled print jobs, available disk space is displayed on the Control Panel.

If you are replacing the HDD, you need:

- The appropriate System Software CD and documentation
- The latest version of the user software (for computers that print to the iR-M1)

#### Proper handling

Handle the hard disk drive with care:

- Use proper ESD practices when grounding yourself and the iR-M1.
- Keep magnets and magnetic-sensitive objects away from the HDD.
- Do not remove the six screws on top of the HDD. Loosening these screws voids the warranty.
- Never drop, jar, or bump the HDD.
- Handle the HDD by its sides and avoid touching the printed circuit board assembly.
- Allow the HDD to reach room temperature before installation.
- Never connect live cables to the HDD.

---

#### TO REMOVE THE HDD

- 1. If you are replacing the HDD with a new drive, print the following from the Functions menu:**
  - Configuration page—records the customer's current Setup configuration. If you are installing a new drive you will need to reinstall system software. The Setup configuration will be reset to the default configuration when HDD is replaced.
  - Font Lists—details what PostScript and PCL fonts are resident on the iR-M1 HDD. Along with the fonts provided on the System Software CD, the customer may have installed additional fonts that will be deleted when the HDD is replaced.
- 2. Power off and open the iR-M1 as described on page 4-3 and page 4-4.**
- 3. For stability during service, remove the front panel as described on page 4-6.**
- 4. Remove the HDD cable from motherboard connector J28.**

Using a ribbon cable connector extractor is recommended. Pull the connector straight out so as not to bend pins on the motherboard. *Do not* pull on the cable itself.

# 4

## Hard disk drive

5. **Remove the power supply cable from the HDD.**
6. **Lift the release tab of the HDD carrier and slide the carrier off of the center frame.**
7. **Remove the four screws that attach the HDD to the HDD carrier.**  
Set aside the HDD carrier and the screws for reassembly.
8. **Remove the HDD cable from the HDD and set it aside for reassembly.**
9. **Place the HDD in an antistatic bag.**

---

### TO REPLACE THE HDD

1. **Attach the HDD cable to the HDD and drape it over the top of the HDD.**  
Even though they are keyed, the connectors on the HDD cable are identical. Make sure to connect the cable such that the red wire (pin 1) is nearest the middle of the HDD when the cable is draped over the top of the HDD.
2. **Position the HDD on the HDD carrier and secure with four screws.**  
The bottom of the HDD connects to the side of the HDD carrier without the guide rails. HDD connectors are oriented away from the release tab on the HDD carrier.
3. **Slide the HDD carrier along the guide rails on the center frame.**  
To make it easier to connect the cable, slide the HDD carrier in only part way.
4. **Attach the power supply cable to the HDD.**
5. **Continue sliding the HDD carrier onto the center frame until the release tab clicks into place.**
6. **Attach the HDD cable to motherboard connector J28. Align the connectors and push the HDD cable connector straight in to avoid bending pins on the motherboard.**  
Straighten any bent pins with a pair of needlenose pliers.
7. **Secure the top EMI shield to the main EMI shield with three screws.**  
Keep any loose metal shielding pressed in place.
8. **If you removed the front panel, reattach it as described on page 4-7.**
9. **Reassemble the iR-M1 and verify its functionality as described on page 4-11.**  
**NOTE:** Be sure to fold in the HDD cable so that it is not damaged when you replace the chassis cover.
10. **If you replaced the HDD with a new drive, install system software (see “iR-M1 system software” on page 4-36).**

# 4 Service Procedures

## Front panel components

The front panel contains jewels, the UIB, and buttons. This section describes replacing jewels and buttons in the front panel. For information on replacing the UIB, see “User interface board” on page 4-13.

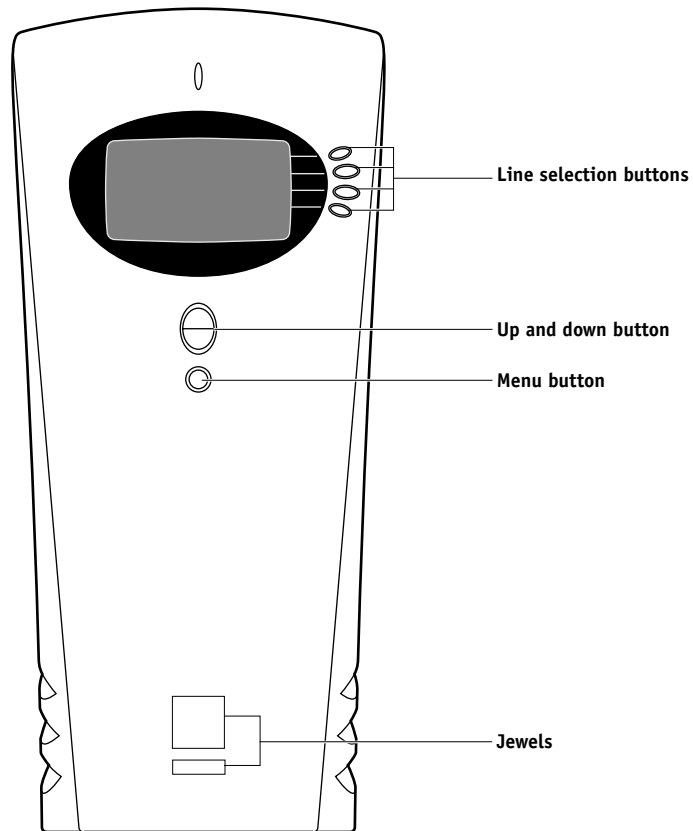


FIGURE 4-25 iR-M1 jewels and buttons

# 4

## Front panel components

### Jewels

Some upgrades or product modifications may require you to replace a jewel on the front panel of the iR-M1. The following procedure describes how to replace the jewel.

---

#### TO REPLACE A JEWEL

1. Power off and open the iR-M1 as described on page 4-3 and page 4-4.
2. Remove the front panel as described on page 4-6 to access the tabs on the back side of the jewel.
3. Squeeze the tabs on the back side of the jewel as you push it out of its slot on the front panel.
4. Insert the new jewel into the slot from outside the front panel.  
Push the jewel into the slot from the front until it snaps into place.
5. Reattach the front panel as described on page 4-7.
6. Reassemble the iR-M1 and verify its functionality as described on page 4-11.

### Buttons

The two sets of Control Panel buttons are designed to fit only one way in their respective cutouts in the front panel. In position, the buttons make contact with the button pads on the UIB to provide users with manual status/control features on the Control Panel.

---

#### TO REPLACE BUTTONS

1. Power off and open the iR-M1 as described on page 4-3 and page 4-4.
2. Remove the front panel as described on page 4-6.
3. Remove the UIB (see "To remove the UIB" on page 4-14).
4. Place front panel buttons in appropriate cutouts; the buttons fit only one way in the cutouts.
5. Replace the front panel components and reattach the front panel as described on page 4-7.
6. Reassemble the iR-M1 and verify its functionality as described on page 4-11.

# 4

## Service Procedures

### iR-M1 system software

System software is installed from the System Software CD using a prepared PC connected to the parallel port (see page 4-37). The iR-M1 System Software CD includes the system software installation files. Use the System Software CD when:

- You replace the iR-M1 HDD
- You upgrade to a more recent version of the system software

### System software installation reminders

Keep in mind the following when installing system software:

- **Compatibility**—The latest user software should be installed onto all computers that print to the iR-M1. Using incompatible versions of the system and user software may result in system problems.
- **Job Log**—Formatting the HDD to install system software deletes the list of jobs in the Job Log and any jobs in the queues.
- **Fonts**—Formatting the HDD to install system software deletes all fonts installed on the iR-M1 HDD. Resident fonts are restored during system software installation. If any additional fonts were downloaded to the iR-M1, the network administrator can reinstall the fonts using Fiery Downloader.

To determine which additional fonts were downloaded to the iR-M1, print the font list before you format the HDD and again after you complete the system software installation. Any fonts *not listed* after installation will need to be reinstalled. See the *Printing Guide* for more information.

- **Custom simulations**—Custom simulations used with previous versions of the operating system are deleted when you install system software. The custom simulations will need to be redone.
- **Language**—Screens for installing system software are always displayed in English even if the iR-M1 is configured for another language.



# 4

## iR-M1 system software

### Installing system software

The System Software CD contains two files that you install. The first file is the smaller of the two and contains the basic information required for the iR-M1 to boot; the second contains all of the EFI system software. Always install the smaller file first.

You need the following to install system software:

- A PC with Windows 98/Me that meets these minimum requirements:
  - CD-ROM drive (built-in or attached)
  - At least 200MB of disk space free
  - Support for ECP mode on the parallel port (Compatibility mode will work, but the installation will take much longer.)
- An IEEE 1284-C parallel cable to connect the PC to the iR-M1

**NOTE:** You can install system software using a PC with NT 4.0, but the installation will be much slower as ECP mode is not supported on NT 4.0.

Check to see if the PC's BIOS is configured so the parallel port mode is set to ECP. When you access the PC BIOS, you may discover that ECP is the default mode, or you may discover that ECP mode is not supported at all. If ECP is not supported, you can use a different PC or opt for a much slower installation using Compatibility Mode.

In addition to accessing the BIOS, you will also set certain port and printer settings in Windows. Before you begin installing system software, follow the procedures for setting up the PC.

# 4 Service Procedures

---

## TO SET UP THE PC

**1. Access the PC BIOS and make sure that Parallel Port Mode is set to ECP.**

Power on the PC and immediately press the key indicated on your monitor for entering the BIOS (or a likely key if it is not indicated). Pressing a likely key repeatedly (ESC, DEL, F1, or a combination) may interrupt the starting of Windows and access the BIOS or give you directions for accessing the BIOS.

Once in the BIOS, you may have to scroll through several screens to reach the settings for the parallel port. After setting the Parallel Port Mode to ECP, save your changes and exit the BIOS. You can use Compatibility mode instead, but the installation will take much longer to complete.

**2. Install the PostScript printer driver for the iR-M1. The driver is located in the Windows 98/Me subdirectory of the User Software CD.**

This driver supports IEEE 1284-C throughput over an ECP parallel port and allows you to configure all port and spool settings required for a successful installation. You may skip this step if a comparable printer driver is already installed on the PC. See *Getting Started* for directions on installing printer drivers.

**3. In Windows, click the Start button, select Settings, and click Printers.**

**4. Right click the icon for the printer and choose Properties from the File menu.**

**5. Click the Details tab and make sure the box "Print to the following port:" reads exactly as follows: LPT 1: (ECP Printer Port).**

If this box reads LPT 1: (Printer Port) instead of LPT 1: (ECP Printer Port), the LPT1 port has not been configured in the BIOS for ECP mode. Reboot the PC to reenter the BIOS and set the Parallel Port Mode to ECP. You can use Compatibility mode instead, but the installation will take much longer to complete.

**6. Click Spool Settings and select "Spool print jobs so program finishes printing faster" and "Start printing after last page is spooled." Then click OK.**

"Start printing after last page is spooled" takes longer but ensures no disruption from a parallel port timeout.

**7. Click Port Settings and ensure that "Spool MS-DOS print jobs" and "Check port state before printing" are checked. Click OK.**

**8. Click OK to activate the settings and exit from the Printer Properties screen.**

The PC is properly configured. Now prepare for the system software installation.

# 4 iR-M1 system software

## TO PREPARE FOR INSTALLATION USING THE PARALLEL PORT

1. **Before installing system software, print the following from the Functions menu (if possible):**
  - Configuration page —records the customer's current Setup configuration. The Setup configuration is reset to the default configuration when the system software is installed.
  - Font Lists—details what PostScript and PCL fonts are resident on the iR-M1 HDD. Along with the fonts provided on the System Software CD, the customer may have installed additional fonts that are deleted when the system software is installed.
2. **Power off the iR-M1 as described on page 4-3.**
3. **Make sure the PC is powered off. Connect the parallel cable to the LPT1 port on the PC and to the parallel port on the back panel of the iR-M1.**
4. **Power on the PC.**

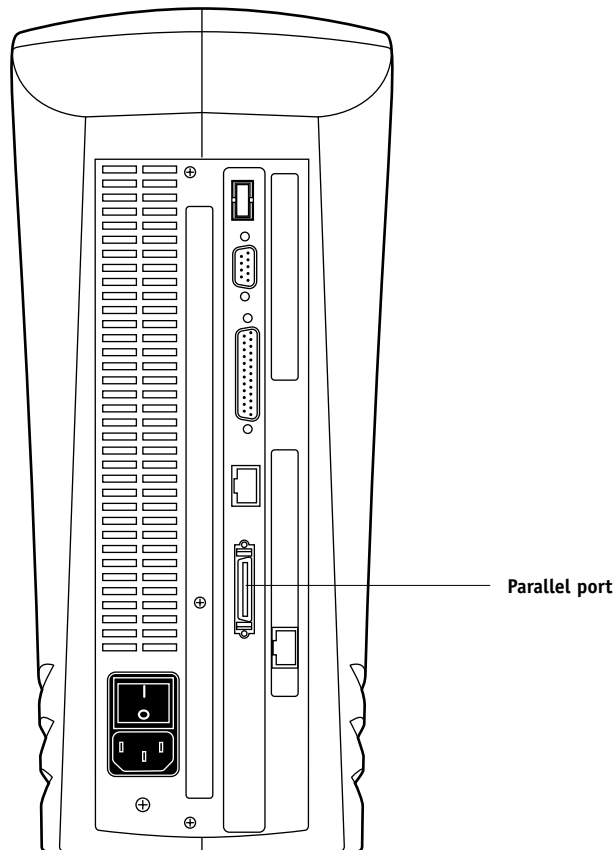


FIGURE 4-26 Parallel port

# 4 Service Procedures

---

## TO INSTALL SYSTEM SOFTWARE

1. Insert the System Software CD into the PC's CD-ROM drive.
2. In the Windows Start menu, select Programs, and click MS-DOS Prompt to bring up an MS-DOS window.

*Do not* use the option to “Shut Down and Restart Windows in DOS mode.”

3. At the MS-DOS prompt, navigate to the CD-ROM drive directory. Type `dir` and press the enter key to display the contents of the CD.

To find the correct letter for the CD-ROM drive, open the My Computer folder and read the drive letter associated with the CD-ROM icon.

The CD may include a directory containing the system software files you wish to install. If so, access the directory to display the files.

Each file is listed with its full name and file size. Note the full filenames and extensions (if any). Also, note which file is smaller; you will install the smaller file first.

4. Once you have navigated to the files on the CD, type the following command at the MS-DOS prompt but *do not* press the enter (or return) key yet:

```
copy filename lpt1 /b
```

*filename* refers to the full name of the smaller file on the System Software CD.

`/b` specifies the binary option (not ASCII).

**NOTE:** Make sure to spell the file name correctly and include the file extension, if any.

*Do not* press the enter (or return) key yet.

5. Power on the iR-M1; when the Fiery logo appears on the iR-M1 Control Panel, press the up button on the front of the iR-M1.
6. At the Parallel Boot screen on the iR-M1, select Yes.

**NOTE:** If you do not select Yes quickly enough at the Parallel Boot screen, recycle power and try again.

7. When the message “Send download” appears, press the enter key on the PC.

Wait while the iR-M1 Control Panel displays status messages indicating that the iR-M1 is downloading the file and booting. Do not press any keys during this time.

8. At the Choose Function screen, select Installation. A message appears informing you that the parallel port is flushing; wait for that process to complete.

# 4

## iR-M1 system software

9. **On the PC, type the following command at the MS-DOS prompt but *do not* press the enter (or return) key yet:**

`copy filename lpt1 /b`

filename refers to the full name of the larger file on the System Software CD.

/b specifies the binary option (not ASCII).

**NOTE:** Make sure to spell the file name correctly and include the file extension, if any.

*Do not* press the enter (or return) key yet.

10. **When “Please copy installation software to the parallel port” appears on the iR-M1, press the enter key on the PC.**
11. **Select OK on the iR-M1.**

A message appears informing you that the installation is in progress.
12. **When the installation is complete, “Installation was successful” appears; select OK.**
13. **At the Choose Function screen, select Continue Boot.**

Wait as several messages appear on the Control Panel indicating that the system is booting.
14. **At the Language Setup screen, find the language you want displayed on the Control Panel and select OK.**

Use the up and down button on the Control Panel to cycle through the languages available. If you select a language different from the default, the system reboots and then displays screen text in the language you selected.
15. **At the Setup screen, reenter the customer’s settings from the Configuration page that you printed earlier.**

Bypass settings not included on the Configuration page if it is more appropriate for the network administrator to set them. See the *Administrator Guide* for more information.
16. **When the iR-M1 reaches the Idle screen, remove the System Software CD from the PC.**
17. **Power off the iR-M1 as described on page 4-3.**
18. **Power off the PC and remove the parallel port cable from the back of the iR-M1 and the PC.**



# 5

## The troubleshooting process

### Chapter 5: Troubleshooting Procedures

This chapter identifies the source of common problems that may occur with the iR-M1 and suggests ways of correcting them.

#### The troubleshooting process

The troubleshooting process is designed to eliminate the most obvious causes of failure before progressing to more complex solutions. “Where problems occur” on page 5-2 gives an overview of the iR-M1 system and indicates areas most likely to require troubleshooting.

- Problems with initial installation

If the iR-M1 fails to complete its initial startup and does not reach the Idle (ready to print) screen, the most likely cause is a loose cable or board connection. See “Accessing internal components” on page 4-3 for instructions on opening the iR-M1, and “Checking internal connections” on page 4-8 for descriptions of iR-M1 parts and connections.

If a loose part or cable is not the cause of the problem, see “Checking the iR-M1 as a stand-alone unit” on page 5-8, and “Checking the entire iR-M1 system” on page 5-14.

- Try a phone check before you go to the customer site

“Before you go to the customer site” on page 5-3 suggests areas you should check out before making a service call to the customer site. With a phone call you can find out if the problem is a simple operating failure or a failure caused by a network or configuration change. You can ask the customer to check for loose cables on the back of the iR-M1 and loose connections at a power strip or outlet.

- Check for obvious causes of problems

“Preliminary on-site checkout” on page 5-5 takes you through the initial checkout you should make when you arrive at the customer site. You should check the iR-M1 internally and externally for the most common problems such as loose cables, connectors, and boards.

- Check the iR-M1 as a stand-alone unit

“Checking the iR-M1 as a stand-alone unit” on page 5-8 describes the checks you should perform on the iR-M1 if the initial checks fail to identify the cause of a problem. With the iR-M1 disconnected from the copier and the network, test the iR-M1 as a stand-alone unit.

This section describes possible startup errors and explains how to run and interpret iR-M1 diagnostics.

# 5 Troubleshooting Procedures

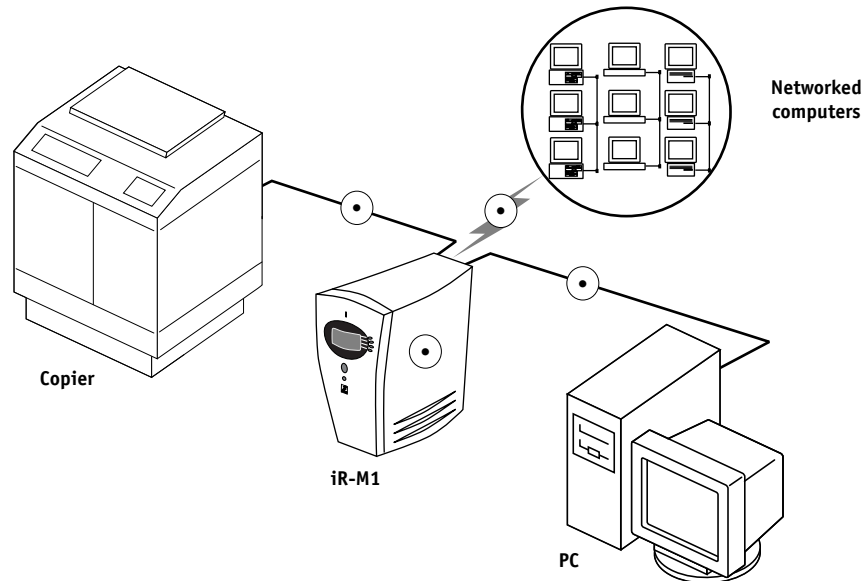
- Check the entire iR-M1 system

“Checking the copier interface” on page 5-14 explains how to print the Test Page from the iR-M1. “Checking network connections” on page 5-15 includes guidelines for checking the network connections between the iR-M1 and the computers or workstation to which it is connected, and also provides information on several printing problems.

## Where problems occur

The iR-M1 is a server for one copier, and it is generally part of a configuration such as the one shown below and in Figure 5-2 on page 5-3. Problems may occur in one of three areas:

- Inside the iR-M1
- In the interface between the iR-M1 and the copier
- In the interface between the iR-M1 and the network or PC to which it is connected



**FIGURE 5-1** Troubleshooting the system

This chapter does not attempt to provide troubleshooting information for attached PCs or Mac OS computers, for copiers, or for extensive networks. You should refer problems in these areas to the appropriate service department and network administrator.



# 5 Before you go to the customer site

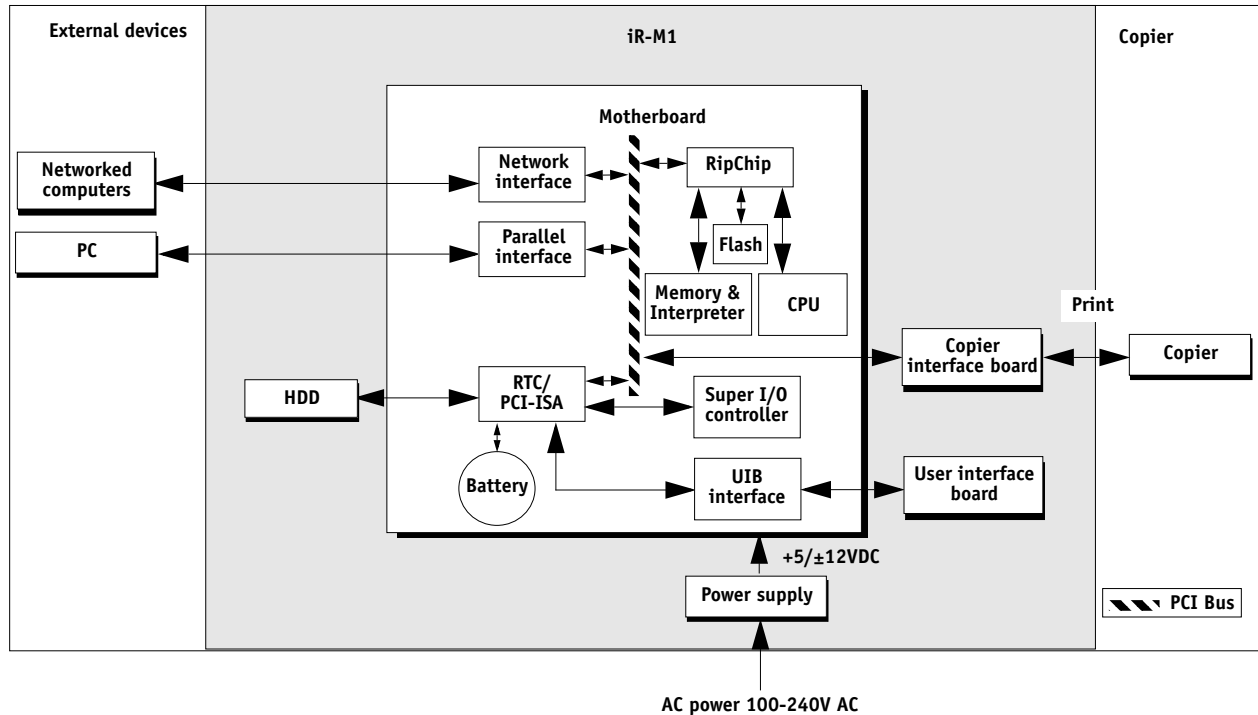


FIGURE 5-2 Functional diagram of typical iR-M1 configuration

## Before you go to the customer site

Before you make a service call to a customer site, talk to the customer on the phone and check out the following items:

### 1. Does the copier work when it is not connected to the iR-M1?

If the copier works but the user cannot print the iR-M1 Test Page, have the customer check the Control Panel on the iR-M1 for an error message.

If the iR-M1 Control Panel reports an error, the customer can check the copier interface cable connection between the iR-M1 and the copier.

### 2. Is the failure caused by a simple operating problem?

- Is there a printing problem?
  - Does the iR-M1 Test Page fail to print?
  - Does the iR-M1 fail to respond to a print command?
  - Does printing seem to take a long time?
  - Is print quality poor?

# 5

## Troubleshooting Procedures

- Does the iR-M1 fail to appear in the list of printers?
- Has the customer noted any error messages on the iR-M1 or the copier screen?

If the answer to any of these questions is yes, refer the customer to the *Printing Guide*. If the customer has followed the corrective actions in the *Printing Guide* and has failed to solve the problem, be prepared to make a service call. Keep a log of the failures and messages the customer has observed.

### 3. Has the customer made any network changes?

If so, request that the customer's network administrator verify the iR-M1 network requirements. See "Checking network connections" on page 5-15.

### 4. Has the customer added or removed any equipment that might impact the operation of the iR-M1?

If so, obtain a list of the modifications. This should direct you toward possible problem areas. For example, if the HDD has been replaced, system software may need to be reinstalled.

### 5. Is the user having printing problems with a particular image file?

If there are problems with files from particular applications, the user may be more successful using different print settings. See the *Printing Guide* for more information.

If your preliminary phone call fails to clear up the problem, proceed to the second phase, the preliminary on-site checkout.

# 5 Preliminary on-site checkout

## Preliminary on-site checkout

Perform a preliminary on-site checkout to eliminate obvious problems such as loose or missing cables and connectors, or loosely seated printed circuit boards.

### Checking interface cables

Before you open the iR-M1 to check internal components:

- Verify that the copier interface cable is plugged into the copier interface port and connected to the copier (see “Connecting to the copier” on page 3-3).
- If a PC is connected, check that the parallel cable is connected to the PC and the iR-M1 parallel port (see “Connecting a PC to the parallel port” on page 3-7).
- Check that the network cable is connected to the proper port on the back panel (see “Connecting to the network” on page 3-5).
- Make sure the power cable is plugged into the wall supply and that the iR-M1 is powered on (see “Preliminary checkout” on page 3-1).

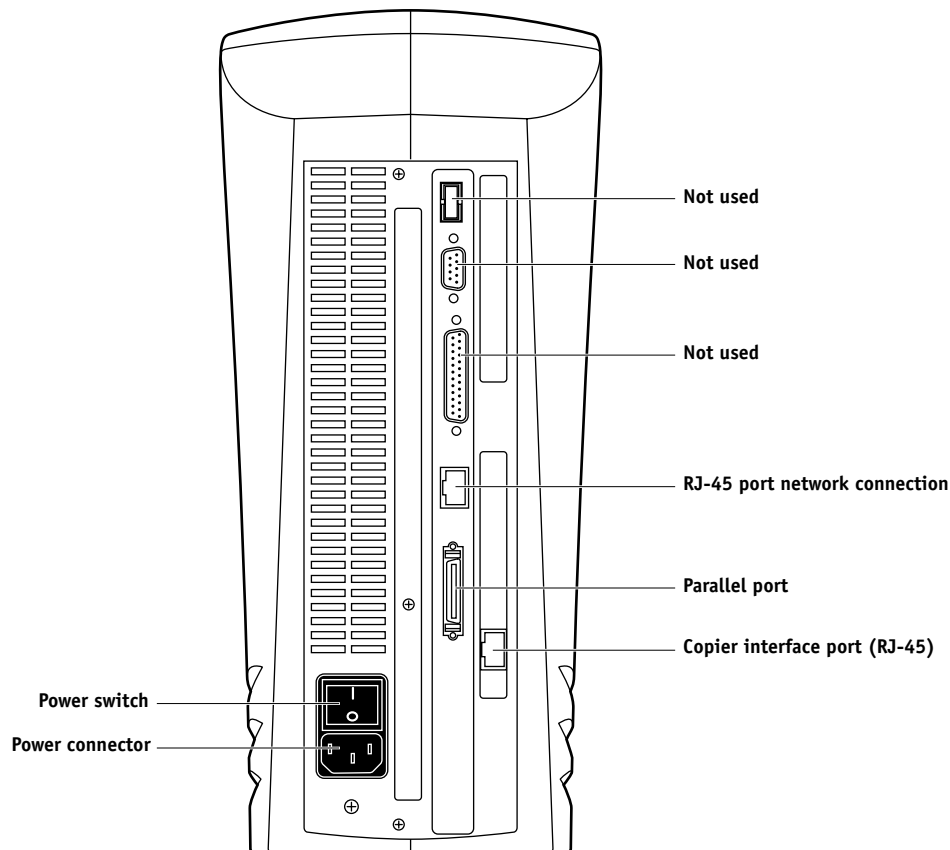


FIGURE 5-3 Back panel of the iR-M1

# 5

## Troubleshooting Procedures

### Checking internal components

To check the internal components you must open the iR-M1. For an overview of internal components, see Figure 5-4 on page 5-7. Check the following components:

- Circuit boards (UIB, copier interface board, and motherboard)
- Fans (exhaust fan and CPU fan)
- Power switch and power supply
- Hard disk drive



Before you open the iR-M1, be aware of the safety precautions you should take when handling the iR-M1, and use ESD precautions when handling printed circuit boards and electronic components. To review the safety precautions, see “Precautions” on page xiii.

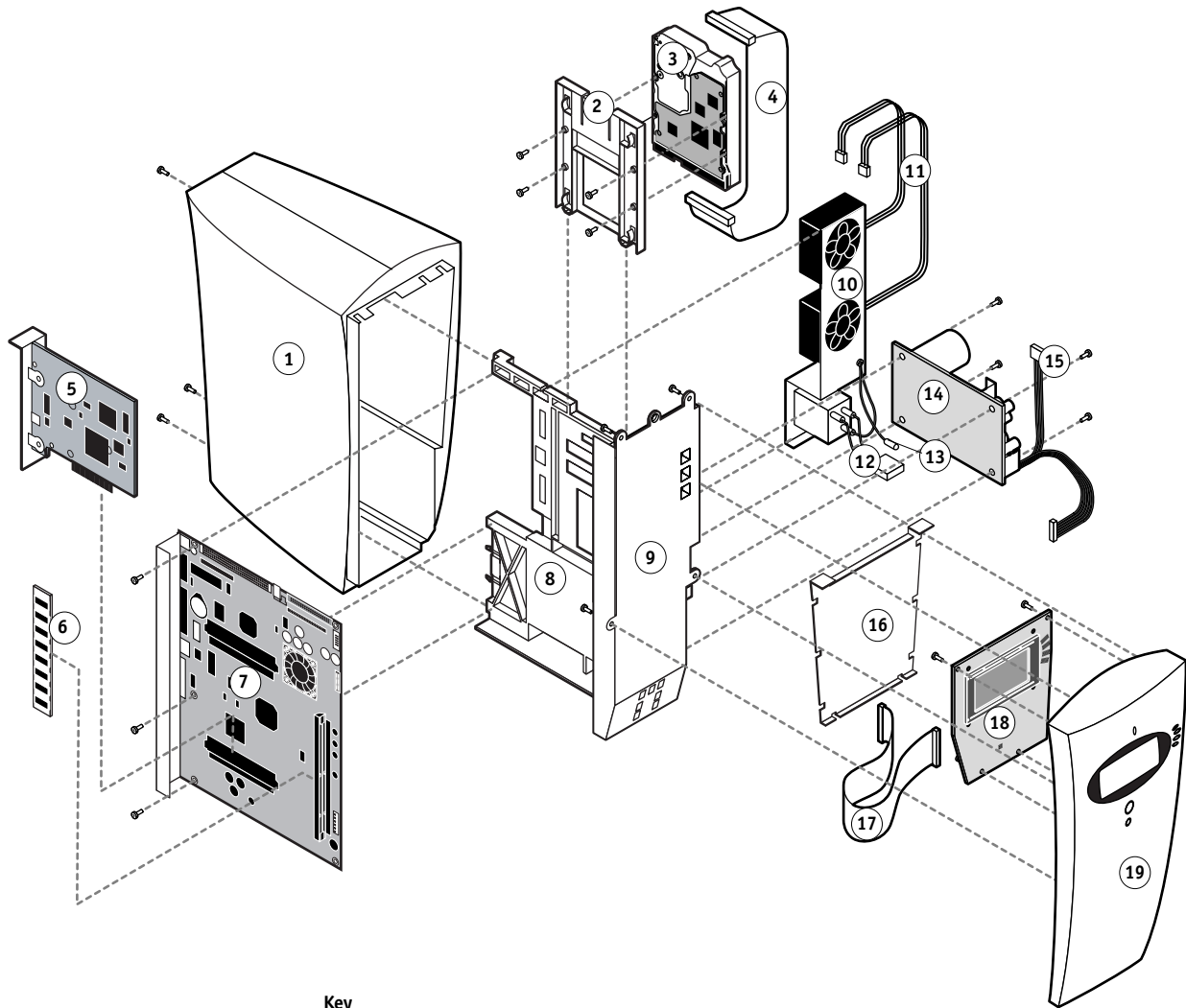
Use the guidelines in Chapter 4 when shutting down, disassembling, checking, and reassembling the iR-M1.

---

#### TO CHECK INTERNAL COMPONENTS

1. **Power off and open the iR-M1 (see “Accessing internal components” on page 4-3).**
2. **Before you touch any components inside the iR-M1 chassis, attach an ESD grounding strap to your wrist. Discharge any static electricity on your body by touching the metal back panel of the iR-M1.**
3. **Inspect the inside of the chassis.**
  - Check the connections between an option board (if present) and the motherboard. If a board is loose, reseal it securely in its connector.
  - Check the connections between the copier interface board and motherboard. If a board is loose, reseal it securely in its connector.
  - Look for cables that are obviously loose. Reseat each cable firmly. See Figure 4-6 on page 4-9 for an overview of the cables in the iR-M1. Make sure that the power supply cable, AC power cable, and ground cables are properly connected to the power supply.
  - Make sure each connector is properly aligned with its mating connector. If any pins are offset from each other, the component affected will not function properly.
  - Make sure DIMM(s) are properly seated in DIMM slot(s).
4. **Reassemble the iR-M1 and verify functionality (see “Restoring functionality after service” on page 4-11).**

# 5 Preliminary on-site checkout



**Key**

- |                                    |                        |
|------------------------------------|------------------------|
| 1. Chassis cover                   | 11. Fan cables         |
| 2. HDD carrier                     | 12. AC power cable     |
| 3. Hard disk drive (HDD)           | 13. Ground cables      |
| 4. HDD cable                       | 14. Power supply       |
| 5. Copier interface board          | 15. Power supply cable |
| 6. DIMM                            | 16. UIB enclosure      |
| 7. Motherboard                     | 17. UIB cable          |
| 8. Center frame                    | 18. UIB                |
| 9. EMI shield                      | 19. Front panel        |
| 10. Fans and power switch assembly |                        |

FIGURE 5-4 Exploded view of iR-M1 components

# 5

## Troubleshooting Procedures

### Checking the iR-M1 as a stand-alone unit

After you have checked interface cables and internal components, try to isolate any issues by separating the iR-M1 from external connections.

To test the iR-M1 as a stand-alone unit:

- Disconnect the iR-M1 from the copier and from the network
- Check for possible startup problems
- Check Setup
- Run diagnostics

---

#### TO ISOLATE THE iR-M1

1. **Power off the iR-M1 as described on page 4-3 and disconnect the following cables from the iR-M1:**
  - Copier interface cable
  - Network cable
  - Parallel cable (if a PC is connected to the parallel port)
2. **Make sure the power cable to the iR-M1 is still in place.**

#### General iR-M1 system error conditions

When you startup the iR-M1 or when you install system software, you may encounter error conditions. Table 5-1 lists some of these error conditions and suggests corrective action. When you first encounter any of these error conditions, power off and open the iR-M1 as described in “Accessing internal components” on page 4-3. Inspect the iR-M1 chassis for obviously loose cables and boards as described in “Checking internal connections” on page 4-8. Then check other components as suggested below. When you are done, refer to “Restoring functionality after service” on page 4-11.

# 5

## Checking the iR-M1 as a stand-alone unit

**TABLE 5-1** General iR-M1 system error conditions

Symptom	Probable cause	Suggested action
Nothing happens when you power on the iR-M1.	Power cables are not properly connected or power supply has failed.	<ul style="list-style-type: none"> <li>• Make sure that the iR-M1 is powered on.</li> <li>• Make sure that the power cable is properly connected to the back panel of the iR-M1 and is plugged into a wall socket. Verify that the power cable is not plugged into a switchable wall socket that has been powered off (see “Preliminary checkout” on page 3-1).</li> <li>• Check internal power supply cable connections to the motherboard, HDD, and power supply.</li> <li>• Check AC power cable and ground cable connections to the power supply and power switch (see “Internal cable connections” on page 4-9).</li> <li>• If the above does not correct the problem, replace the power supply (see “Power supply” on page 4-28).</li> </ul>
The iR-M1 powers on, but nothing appears on the Control Panel or the backlighting on the Control Panel is discolored.	The UIB is faulty or UIB cable is disconnected.	<ul style="list-style-type: none"> <li>• Check the UIB cable connection to the UIB and motherboard (see “User interface board” on page 4-13).</li> <li>• If the problem persists, replace the UIB cable.</li> <li>• If the problem still persists, replace the UIB.</li> </ul>
	Faulty DIMM connection.	<ul style="list-style-type: none"> <li>• Make sure that the DIMM(s) are inserted correctly into the socket(s) (see “DIMM” on page 4-20). If the problem persists in a product with more than one DIMM socket, insert the DIMM into another socket. If the DIMM fails in the second location, replace it.</li> </ul>
	Faulty power supply cable connections.	<ul style="list-style-type: none"> <li>• Check power supply cable connections to the motherboard and power supply.</li> <li>• Check AC power cable connections to the power supply (see “Internal cable connections” on page 4-9).</li> <li>• If the problem persists, replace the power supply (see “Power supply” on page 4-28).</li> </ul>
	Faulty motherboard.	<ul style="list-style-type: none"> <li>• Check the power supply cable connection to the motherboard (see “Motherboard” on page 4-17).</li> <li>• Make sure that all other cables are properly connected to the motherboard.</li> <li>• If the problem persists, try replacing the motherboard battery (see “Motherboard battery” on page 4-21).</li> <li>• If the problem still persists, replace the motherboard.</li> </ul>

# 5 Troubleshooting Procedures

**TABLE 5-1** General iR-M1 system error conditions (Continued)

Symptom	Probable cause	Suggested action
The Control Panel buttons don't work.	Buttons are stuck or they are not making contact with the UIB.	<ul style="list-style-type: none"> <li>• Check to make sure that the buttons are installed correctly and are making contact with the pads on the UIB (see "User interface board" on page 4-13).</li> </ul>
	UIB cable connection is faulty or the UIB is bad.	<ul style="list-style-type: none"> <li>• Check the UIB cable connection to the UIB and motherboard (see "User interface board" on page 4-13).</li> <li>• Make sure that the UIB is installed correctly and that the UIB enclosure is in place.</li> <li>• If the problem persists, replace the UIB.</li> </ul>
	Faulty chip on the motherboard.	<ul style="list-style-type: none"> <li>• Replace the motherboard (see "Motherboard" on page 4-17).</li> </ul>
No exhaust fan sound, but the iR-M1 starts up properly.	Exhaust fans are not properly connected.	<ul style="list-style-type: none"> <li>• Check exhaust fan cable connection to the motherboard connectors J25 and J26 (see "Fans" on page 4-22).</li> <li>• If problem persists, replace the exhaust fan.</li> </ul>
Exhaust fan is working but no air is blown out the back panel of the iR-M1.	Exhaust fan is installed backwards.	<ul style="list-style-type: none"> <li>• Remove the exhaust fan and make sure to install it in the proper orientation (see "Fans" on page 4-22).</li> </ul>



# 5 iR-M1 diagnostic sets

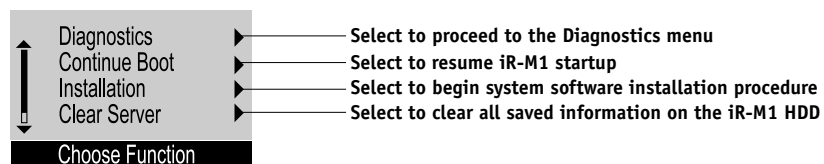
## iR-M1 diagnostic sets

iR-M1 diagnostic sets are available to manually test components of the iR-M1 motherboard. iR-M1 diagnostic sets are divided into two groups: Custom and Start-up (the diagnostic groups are described in more detail below). Note that Start-up diagnostic tests are the same tests that are run automatically when the iR-M1 is turned on.

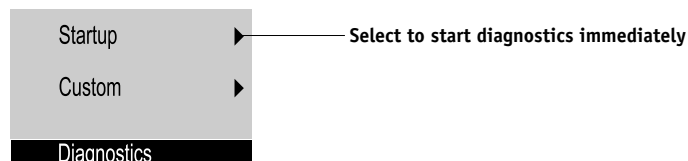
---

### TO RUN iR-M1 STARTUP DIAGNOSTICS

1. If the iR-M1 is on, power it off as described on page 4-3.
2. Press and hold the up button on the Control Panel.
3. Power on the iR-M1.
4. Release the up button as soon as you see the Choose Function screen display.



5. Select Diagnostics from the Choose Function screen.
6. When prompted choose Startup from the Diagnostics menu. Diagnostics begin immediately.

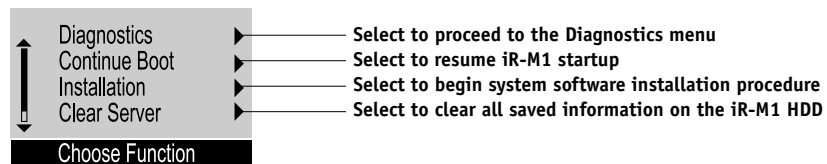


7. If no Diagnostics fail, the iR-M1 boots up normally. If a test fails, the name of the test appears on the Display Window.
8. If a test fails, replace the motherboard.

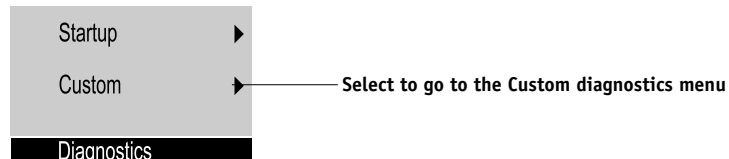
# 5 Troubleshooting Procedures

## TO RUN iR-M1 CUSTOM DIAGNOSTICS

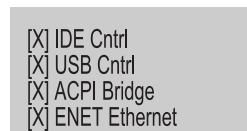
1. If the iR-M1 is on, power it off as described on page 4-3.
2. Press and hold the up button on the Control Panel.
3. Power on the iR-M1.
4. Release the up button as soon as you see the Choose Function screen display.



5. Select Diagnostics from the Choose Function screen.
6. When prompted choose Custom from the Diagnostics menu.



7. At the next screen a list of tests appears. All diagnostic tests are marked with an X; if there is a diagnostic test that you do not want to run, press the button next to the name to remove the X. When the desired tests are selected, press the button next to Continue.



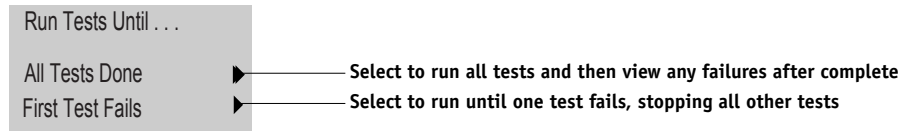
8. At the "Include Option Board Tests" screen, select Yes if you would like to run the group of tests that run on the copier interface board, or select No to continue with the diagnostic set you previously selected.

# 5 iR-M1 diagnostic sets

- If you select Yes, the Option Board Tests menu appears. Make sure that the desired tests are selected with an X and then select Continue.



- At the "Run Tests Until" screen, select "All Tests Done" to run all the tests even if there is a failure of one or more tests, or select "First Test Fails" to run the tests until one fails, without running anymore diagnostics. Once you make your selection, tests begin immediately.



- If no Diagnostics fail, the iR-M1 boots up normally. If a test fails, the name of the test appears on the Display Window.
- If a test fails, replace the motherboard.

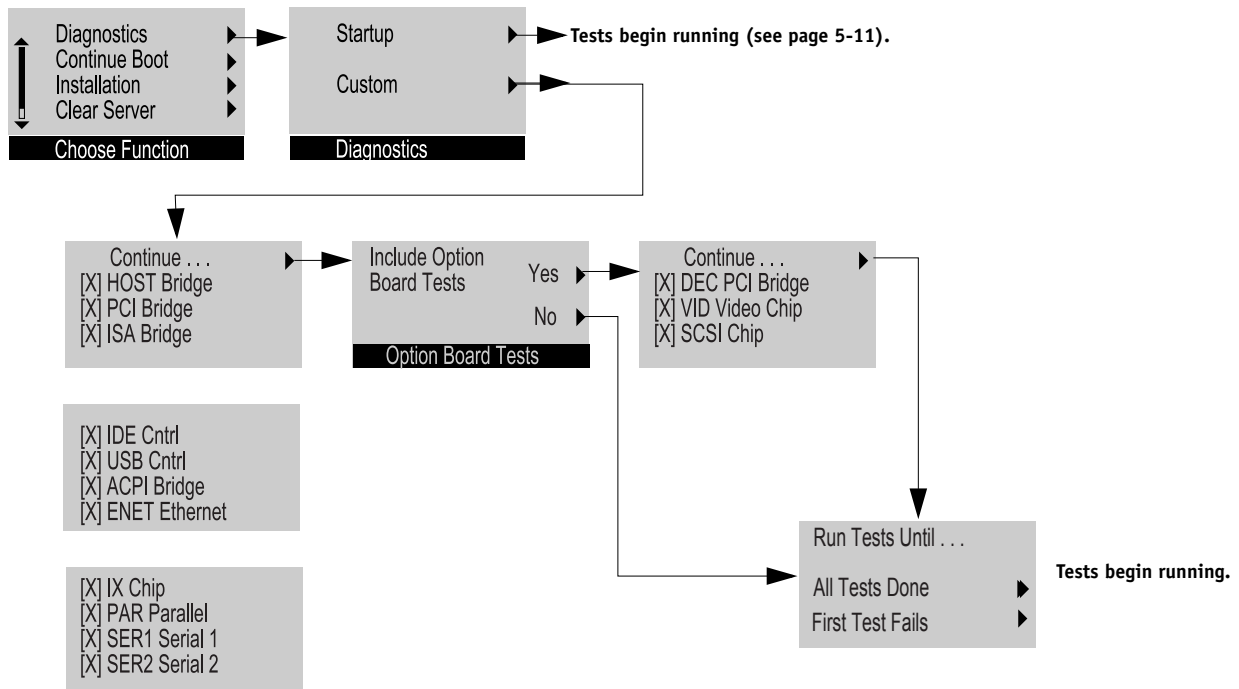


FIGURE 5-5 iR-M1 diagnostic overview

# 5 Troubleshooting Procedures

## Checking the entire iR-M1 system

This phase of troubleshooting deals with problems with the entire system once the iR-M1 functions as a stand-alone unit.

## Checking the copier interface

After the iR-M1 starts up successfully as a stand-alone unit, power off the iR-M1 as described on page 4-3 and connect the copier interface cable. You should make sure the iR-M1 is working properly with the copier before you connect it to the network. See “Connecting to the copier” on page 3-3.

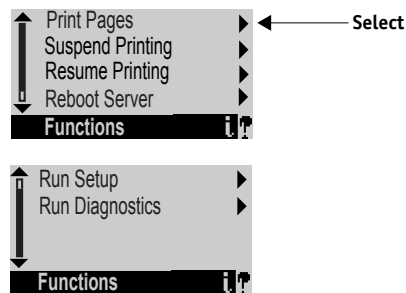
## Printing the Test Pages

Before connecting the iR-M1 to the network, print the Test Pages to verify that the iR-M1 is connected properly to the copier. The PS and PCL Test Pages are black and white PostScript files that reside on the iR-M1 hard disk drive. Print both pages to make sure everything is operating properly.

---

### TO PRINT THE TEST PAGE FROM THE CONTROL PANEL

1. **Power on the copier and allow it to warm up.**
2. **Power on the iR-M1 using the power switch on the back panel.**  
Messages appear on the Control Panel as the iR-M1 runs through its Start-up diagnostics.
3. **Before proceeding, make sure that the copier is not in use.**
4. **At the Idle screen on the iR-M1, press the menu button (see “Using the Control Panel” on page 3-9). The Functions menu displays.**



5. **Select Print Pages and then select PS Test Page.**

The iR-M1 sends the PS Test Page to the copier and displays the RIP and Print status screens so you can monitor the job.

# 5

## Checking the entire iR-M1 system

### 6. Select Print Pages again and then select PCL Test Page.

The iR-M1 sends the PCL Test Page to the copier and displays the RIP and Print status screens so you can monitor the job.

### 7. Examine the quality of the Test Pages from the copier.

The Test Page confirms that the iR-M1 print engine is functional and that the connection between the iR-M1 and the copier is good.

## Checking network connections

After the iR-M1 is connected to networked computers, printing problems may arise if the network hardware or software is not set up properly or doesn't match network settings on the iR-M1. Problems may also occur when printing from a specific application or printing a particular file.

Most of these problems show up as printing problems, and do not necessarily indicate a iR-M1 malfunction. The customer's network administrator can eliminate many printing problems without requiring you to make a service call. The network administrator deals with:

- Print device error conditions.
- Conflicting network settings in Setup and on the customer's attached PC.
- Printing problems caused by inappropriate Setup options.
- Application-specific printing errors caused by missing or incorrectly placed printer description files.
- Network connection problems that result in the iR-M1 not appearing in printer list on the customer's networked computers.

# 5

## Troubleshooting Procedures

### Printing to the iR-M1

If the user can print a iR-M1 Test Page, but cannot print a job from a workstation on the network, you may have to make a service call. However, first make sure the network administrator has done the following:

- Checked all components of the network including cables, connectors, terminators, network adapter boards, and network drivers.
- Activated the network and used it to communicate with other printers.
- Checked the corrective actions listed in the user documentation shipped with the iR-M1.
- Confirmed that the applicable network settings in Setup (such as AppleTalk zone, IP address, Subnet mask, and Gateway address) match the settings used in the network.

When you make a service call, check the back panel of the iR-M1 to make sure that the appropriate network connections are in place.

Intermittent print quality problems are difficult to trace. Before you try to troubleshoot print quality problems, make sure that the copier itself does not need servicing or adjusting.

**NOTE:** EPS file generation is not completely standardized among applications. Some users may encounter problems while printing certain EPS files.

# A

## Hardware features

## Appendix A: Specifications

This chapter provides an overview of iR-M1 features.

### Hardware features

The iR-M1 has the following hardware features:

- Intel Mobile Pentium III 500MHz CPU
- 128MB (minimum) memory
- 10GB hard disk drive
- Battery—3V manganese dioxide lithium coin cell (Panasonic CR2032 or equivalent)

### Networking and connectivity

The iR-M1 has the following networking features:

- Supports AppleTalk, TCP/IP, and IPX protocols simultaneously
- RJ-45 port for twisted pair (10/100BaseT) network connection

### User software

A complete description of iR-M1 user software is provided in the *Printing Guide*. For optimal iR-M1 performance, current versions of the user software should be maintained on every network computer that might print to the iR-M1.

### Safety and emissions compliance

The iR-M1 has been certified to meet or surpass the following government standards:

#### Safety approvals

- UL 1950
- CSA 22.2 #950
- EN 60950 (TUV/GS mark)
- CE Mark

#### EMI approvals

- FCC Class B
- EN55022 Class B
- VCCI Class B





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