GE Healthcare

MARS™

Holter Analysis Workstation

Software Version 7

Service Manual

2020044-065 Revision J

The information in this manual applies to MARS™ Holter Analysis System version 5.1, 6.x and 7. Due to continuing product innovation, specifications in this manual are subject to change without notice.

Contents

1 Introduction

2 Equipment Overview and System Setup

3 Network Setup

4 Maintenance

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1 Introduction

For your notes

Manual Information

Revision History

The document number and revision appear at the bottom of each page. The following table outlines the manual's revision history.

Table 1. Revision History 2020044-065

Revision	Date	Comment
A	17 May 2005	Initial release of this manual.
B	7 July 2005	■ Added "Security Updates" on page 1-12. ■ Added Warning statement to use Medical Grade UPS when SEER Light Connect is used with the MARS™ Holter Analysis System. Refer to "Uninterruptible Power Supply (UPS)" on page 2-33. ■ Various clarifications.
C	24 February 2006	■ Added information for dc7600 hardware. ■ Various clarifications.
D	1 May 2006	Updated for 19" LCD1990SXi flat panel display
E	30 March 2007	■ Updated for the HP dc5750 platform. ■ Update "Security Updates" on page 1-12
F	19 September 2008	Added information about the HP rp5700 client, HP L1910 LCD display, and HP 4015N LaserJet printer.
G	27 October 2008	Revised the system activation procedure.
H	22 April 2009	Added information regarding new modem.
J	25 February 2013	Added information regarding new monitor. Added HP rp5800 server and workstation. Added Powervar ABC MED isolation transformer.

Manual Purpose

This manual provides technical information to service and technical personnel so they can install and maintain the equipment. Use it as a guide for maintenance and electrical repairs considered field repairable. Where necessary the manual identifies additional sources of relevant information and or technical assistance.

See the operator manual for the instructions necessary to operate the equipment safely in accordance with its function and intended use.

MARS Hardware and Operating Systems

Currently, MARS™ Holter Analysis Systems v7 shipped from GE Healthcare are loaded with Windows XP or Windows 2003 server software.

This manual primarily covers the MARS™ Holter Analysis Systems running the Windows 2000 operating system. These systems run on a Compaq Evo D510, Hewlett Packard (HP) D530 CMT, HP dc7100 CMT, HP dc7600 CMT, or an HP dc5750 system.

The MARS™ Holter Analysis Systems running the Windows NT operating systems are only discussed in two chapters, the "Network Setup" on page 3-1, and the "System Rebuild" on page 6-1. For any additional information on the MARS Holter Analysis systems running Windows NT, see the original Service Manual that shipped with that particular unit.

MARS™ Holter Analysis Systems can also run on Windows 2003 server, and XP operating systems. These operating systems are briefly covered in this manual. See the MARS™ Holter Analysis System Pre-Installation Guide, and the MARS™ Holter Analysis System Installation and Troubleshooting Guide, for additional information regarding installing and updating software on these operating systems.

Typographical Conventions

The following typographical conventions are used in this document.

Convention	Description
Bold	Indicates keys on the keyboard, text to be entered, or hardware items such as equipment buttons or switches.
Italics	Indicates software terms such as menu items, buttons, field names, or options.
[Key 1] + [Key 2]	Indicates a sequence of keys that must be pressed to initiate an action. While pressing and holding the first key, press and release the second key.
[Space]	Indicates the spacebar must be pressed. Used in command line instructions when the command must be entered precisely.
Enter	Indicates the Enter or Return key must be pressed.

Manual Content

This manual is organized into the following chapters.

- Chapter 1, "Introduction"

  Describes the service manual and chapter contents. Provides general information on safety, service requirements, equipment symbols, and serial number identification.

- Chapter 2, "Equipment Overview and System Setup"

  Describes the equipment and its technical characteristics, preparation for use, and connector locations. An interconnect table is provided for setting up and connecting the system.

- Chapter 3, "Network Setup"

  Describes network installation for the Windows NT and Windows 2000 systems, the process for adding new users to the workgroup, and how to change from a workgroup to a domain.

- Chapter 4, “Maintenance”

  Contains a preventive maintenance schedule, cleaning guidelines and checkout procedures.

- Chapter 5, “Troubleshooting”

  Provides overall and specific troubleshooting help.

- Chapter 6, “System Rebuild”

  Provides instructions on rebuilding the MARS™ Holter Analysis System with an image disk. Also provides information on the reinstallation of MARS Holter Analysis application software.

- Chapter 7, “System Checkout”

  Provides a list of GE Healthcare and original equipment manufacturer (OEM) part numbers for field replaceable units (FRUs).

- Chapter 8, “Parts List”

  Provides instructions for verifying the correct installation and network configuration of the MARS™ Holter Analysis System system.

- Appendix A, “Appendix A – Technical Descriptions”

  Includes technical specifications.

- Appendix B, “Appendix B – Configuring Patient Slots”

  Includes slot configuration information.

- Appendix C, “Appendix C – Electromagnetic Compatibility”

  Includes electromagnetic compatibility (EMC) declaration.

Related Documents

Additional information can be found in the following documents:

Part Number	Title
2020044-063	MARS™ Holter Analysis System Operators Manual
2020044-064	MARS™ Holter Analysis System Installation and Troubleshooting Guide
2020044-067	T-Wave Alternans Physician’s Guide
2020044-068	Adding MAR™ to MUSE Communication
2020044-069	MARS™ Holter Analysis System Pre-Installation Guide
2020044-105	Heart Rate Turbulence Physician’s Guide

OEM Documentation and Support

The following table lists the system components provided by each original equipment manufacturer (OEM) and the URL of each component's support page. The support pages provide the most current component information, drivers, manuals, troubleshooting help, and support forum. The URLs were current and active at the time this manual was released but are subject to change without notice.

Requirements for accessing and viewing these additional documents vary from manufacturer to manufacturer and sometimes from product to product. Please refer to the requirements listed on each OEM's website.

Table 2. OEM Component Support Pages

Component Type	Component	Support Page
Workstations	HP rp5700	http://h20000.www2.hp.com/bizsupport/TechSupport/Home.jsp?lang=en&cc=us&prodTypeId=12454&prodSeriesId=3375897&lang=en&cc=us
	HP rp5750	http://h20000.www2.hp.com/bizsupport/TechSupport/Home.jsp?lang=en&cc=us&prodTypeId=12454&prodSeriesId=3252512&submit.y=8&submit.x=6&lang=en&cc=us
	HP rp5800	http://h20000.www2.hp.com/bizsupport/TechSupport/Home.jsp?lang=en&cc=us&prodTypeId=12454&prodSeriesId=5081352&exit=product_series_oid&jumpid=reg_r1002_usen_s-001_title_r0001%#29=en&cc=us
	HP rp7600	http://h20000.www2.hp.com/bizsupport/TechSupport/Home.jsp?lang=en&cc=us&prodTypeId=12454&prodSeriesId=472277&lang=en&cc=us
	HP dc7100	http://h20000.www2.hp.com/bizsupport/TechSupport/Home.jsp?lang=en&cc=us&prodTypeId=12454&prodSeriesId=410112&lang=en&cc=us

Table 2. OEM Component Support Pages		
Component Type	**Component**	**Support Page**
Printers	HP LaserJet P4015N	http://h20000.www2.hp.com/bizsupport/TechSupport/Home.jsp?lang=en&cc=us&prodTypeId=18972&prodSeriesId=3558793&submit.y=0&submit.x=0&lang=en&cc=us
	HP LaserJet P4250	http://h20000.www2.hp.com/bizsupport/TechSupport/Home.jsp?lang=en&cc=us&prodTypeId=18972&prodSeriesId=412144&lang=en&cc=us
	HP LaserJet 4200N	http://h20000.www2.hp.com/bizsupport/TechSupport/Home.jsp?lang=en&cc=us&prodTypeId=18972&prodSeriesId=84028&lang=en&cc=us
	HP LaserJet 1200	http://h20000.www2.hp.com/bizsupport/TechSupport/Home.jsp?lang=en&cc=us&prodTypeId=18972&prodSeriesId=29789&lang=en&cc=us
	Ricoh Aficio SP4100N	http://www.ricoh-usa.com/products/product_features.asp?pCategoryId=25&pCatName=Printers&tsn=Ricoh-USA&pSubCategoryId=20&pSubCatName=Printers%20-%20Monochrome%20Laser&pProductId=774&pProductName=Aficio%20SP%204100N
Monitors	HP L1910 19-inch LCD	http://h20000.www2.hp.com/bizsupport/TechSupport/Home.jsp?lang=en&cc=us&prodTypeId=382087&prodSeriesId=3561416&submit.y=0&submit.x=0&lang=en&cc=us
	HP LE1911 19-inch LCD	http://h20000.www2.hp.com/bizsupport/TechSupport/Document.jsp?lang=en&cc=us&objectID=c01922882&prodTypeId=382087&prodSeriesId=3561416
	Compaq CV7500 17-inch CRT	http://h10025.www1.hp.com/ewfrf/wc/product?product=313889&lc=en&cc=us&dlc=en&submit.y=8&submit.x=7&lang=en&cc=us
	NEC 1990SXi 19-inch LCD	http://www.necdisplay.com/SupportCenter/Product/?product=bb77b527-6721-4721-b36c-f0b961836afb
	Sony CPD-G520P	http://esupport.sony.com/US/perl/model-home.pl?mdl=CPDG520P&LOC=3
	NEC LCD 1850X	http://www.necdisplay.com/SupportCenter/Archive/
	NEC LCD 1990SXi	http://www.necdisplay.com/SupportCenter/Archive/
Modems	Multitech MultimodemZBA	http://multitech.com/PRODUCTS/Families/MultiModemZBA/
UPS	Powerware 5115	http://www.powerware.com/UPS/5115_UPS.asp?cx=3

Safety Information

Responsibility of the Manufacturer

GE Healthcare is responsible for the effects of safety, reliability, and performance only if:

- Assembly operations, extensions, readjustments, modifications, or repairs are carried out by persons authorized by GE Healthcare.
- The electrical installation of the relevant room complies with the requirements of the appropriate regulations.
- The equipment is used in accordance with the instructions for use.

  NOTE
  The addition of non-approved software programs and network devices are not recommended or supported by GE Healthcare. Repairs or Technical Support assistance for failures related to non-approved applications and configurations are not covered by warranty, and will be charged on a time and material basis.

General

This device is intended for use under the direct supervision of a licensed health care practitioner.

To ensure patient safety, use only parts and accessories manufactured or recommended by GE Healthcare.

Contact GE Healthcare for information before connecting any devices to this equipment that are not recommended in this manual.

If the installation of this equipment, in the USA, will use 240 V rather than 120 V, the source must be a center-tapped, 240 V, single-phase circuit.

Parts and accessories used must meet the requirements of the applicable IEC 601 series safety standards, and/or the system configuration must meet the requirements of the IEC 601-1-1 medical electrical systems standard.

The use of ACCESSORY equipment not complying with the equivalent safety requirements of this equipment may lead to a reduced level of safety of the resulting system. Consideration relating to the choice shall include:

- use of the accessory in the PATIENT VICINITY; and
- evidence that the safety certification of the ACCESSORY has been performed in accordance to the appropriate IEC 601-1 and/or IEC 601-1-1 harmonized national standard.

Information Technology Equipment

The hardware components that make up the MARS™ Holter Analysis System are considered to be Information Technology Equipment (ITE). These individual components have been

found to comply with the standard for Safety of Information Technology Equipment, Including Electrical Business Equipment EN60950 (UL 950).

The software used in the MARS™ Holter Analysis System is considered as medical software. The software has been designed and manufactured to the appropriate medical regulations and controls.

The MARS™ Holter Analysis System, which consists of the hardware and software components together, is considered a medical device. However, the appropriateness of applying the ITE requirements to evaluate the hardware portions of the workstation can be justified by the fact that the MARS™ Holter Analysis System does not have any applied parts nor is the MARS™ Holter Analysis System intended for use in the “patient environment”.

Equipment Symbols

The following symbols may appear on the equipment. For equipment symbols not shown refer to the original manufacturer’s equipment manuals.

WEEE Symbol	
	This symbol indicates that the waste of electrical and electronic equipment must not be disposed as unsorted municipal waste and must be collected separately. Please contact an authorized representative of the manufacturer for information concerning the decommissioning of your equipment.

Date of Manufacture	
	The number found under this symbol is the date of manufacture in the YYYY-MM format.

Monitors

	Sets monitor brightness
	Sets Monitor Contrast
	Power button

Disk Drive LEDs

	Indicates disk activity (flashing green)
	Indicates disk is on-line (green)

	Indicates a disk failure (amber)

UPS

	Identifies the row of LEDs that show AC input level
	Identifies the row of LEDs that indicate battery charge Level
	Identifies the row of LEDs that indicate load devices
	Power ON button

Safety Messages

The following terms are used throughout this manual to alert the reader to important messages regarding the safe use of the product.

- DANGER

  Indicates an imminently hazardous situation which, if not avoided, WILL result in death or serious injury.

- WARNING

  Indicates a potentially hazardous situation which, if not avoided, COULD result in death or serious injury.

- CAUTION

  Indicates a potentially hazardous situation which, if not avoided may result in minor or moderate injury.

- NOTE

  Provides additional user information.

Warnings and Cautions

The following messages apply to the product as a whole. Specific messages may also appear elsewhere in the manual.

DANGER
Do NOT use in the presence of flammable anesthetics.

WARNINGS
Replace only with the same type and rating of fuse.

This is Class I equipment. The mains plug must be connected to an appropriate power supply.

Turn off power and disconnect power cord from AC power source before removing the cover.

CAUTIONS
To reduce the risk of electric shock, do NOT remove cover (or back). Refer servicing to qualified personnel.

This equipment contains no user serviceable parts. Refer servicing to qualified service personnel.

DO NOT load any software other than that specified by GE Healthcare onto the MARS™ Holter Analysis System. Installation of software not specified by GE Healthcare may cause damage to the equipment or loss or corruption of data.

U.S. Federal law restricts this device to sale by or on the order of a physician.

Service Information

Service Requirements

Refer equipment servicing to GE Healthcare authorized service personnel only. Any unauthorized attempt to repair equipment under warranty voids that warranty.

It is the user's responsibility to report the need for service to GE Healthcare or to one of their authorized agents.

Failure on the part of the responsible individual, hospital, or institution using this equipment to implement a satisfactory maintenance schedule may cause undue equipment failure and possible health hazards.

Regular maintenance, irrespective of usage, is essential to ensure that the MARS Holter Analysis Standalone, Client and Server will always be functional when required.

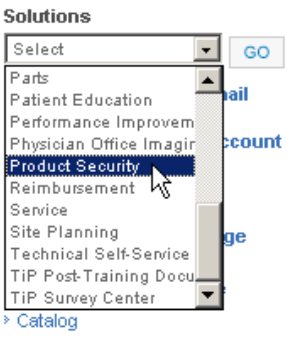
Security Updates

A list of viruses that pose a significant threat to GE customers' product security are posted on the GE Healthcare *Product Security Database* web site. Vulnerability notification to customers will occur through the website. After security patches have been validated for specific GE Healthcare products, this information will be added to this database. After confirming that a particular security patch has been validated for your system configuration, you can download it directly from the web site of the software manufacturer (Microsoft, etc.) and applied to the customer's GE product. To check on the latest information regarding validated security patches:

1. Browse to the GE Healthcare *Product Security Database* web site:

   http://www.gehealthcare.com/usen/index.html

2. Select *Product Security* from the *Solutions* drop-down list.



3. Select *Product Vulnerability Database*.
4. Login with your SSO (Single Sign On) username and password.

   NOTE

   If you do not have an SSO, click the *Sign Up* link to obtain an SSO.

Use the features on the GE Healthcare *Product Security Database* web site to determine security patches that can be applied to your system.

Product Code Identification

The Product Code is used to identify specific system platforms. Using the Product Code Table below and before servicing the MARS™ Holter Analysis System, identify the correct product code of the system.

The product code can be identified using the serial number listed on the product label attached to the base of the system. In newer systems, the serial number is located in the *About* window. Launch the MARS application (see "Power On Procedure" on page 4-4) and click *Help* > *About* to view the serial number. See "Equipment Identification" on page 1-15 for serial number formats and descriptions.

Table 3. Product Codes

Product Code or catalog number	MARS Model	Operating System
PU	MARS Holter Analysis Standalone and Client	Microsoft Windows NT Service Pack 6A (manufactured in USA)
2006542-002	MARS Holter Analysis Standalone and Client	Microsoft Windows NT Service Pack 6A (manufactured in Germany)
HY	MARS Holter Analysis Standalone and Client workstation (Compaq Model Evo D510)	Microsoft Windows 2000 Professional Service Pack 3
	MARS Holter Analysis Standalone and Client workstation (HP Model EVO D530)	Microsoft Windows 2000 Professional Service Pack 4
HY	MARS Holter Analysis Server (Compaq Model D510)	Microsoft Windows 2000 Server Service Pack 3
	MARS Holter Analysis Server (HP Model EVO D530)	Microsoft Windows 2000 Server Service Pack 4

Table 3. Product Codes (Continued)		
Product Code or catalog number	MARS Model	Operating System
SAT	MARS Holter Analysis Standalone and Client workstation (HP Model dc7100)	Microsoft Windows 2000 Professional Service Pack 4
	MARS Holter Analysis Server (HP Model dc7100)	Microsoft Windows 2000 Server Service Pack 4
	MARS Holter Analysis Standalone and Client workstation (HP Model dc7600)	Microsoft Windows XP Professional Service Pack 2
	MARS Holter Analysis Server (HP Model dc7600)	Microsoft Windows 2003 Server Service Pack 1
	MARS Holter Analysis Standalone and Client workstation (HP Model dc5750)	Microsoft Windows XP Professional Service Pack 2
	MARS Holter Analysis Server (HP Model dc5750)	Microsoft Windows 2003 Server Service Pack 2
	MARS Holter Analysis Standalone and Client workstation (HP model RP5700)	Microsoft Windows XP Professional SP3
	MARS Holter Analysis Server (HP model RP5700)	Microsoft Windows Server 2003 R2 SP2
SKC	MARS Ambulatory ECG Standalone and Client Workstation (HP model rp5800)	Microsoft Windows XP Professional Service Pack 3
SA2	MARS Software-only USB Dongle	Microsoft Windows 2000 Server Microsoft Windows 2000 Pro Microsoft Windows XP Pro Microsoft Windows 2003 Server
AB8	MARS Software-only Parallel Dongle	Microsoft Windows NT Microsoft Windows NT Server Microsoft Windows 2000 Server Microsoft Windows 2000 Pro Microsoft Windows XP Pro Microsoft Windows 2003 Server

Equipment Identification

Every GE Healthcare device has a unique serial number for identification. The serial number appears on the device label and may appear in one of two formats.

Format A is shown in the following illustration

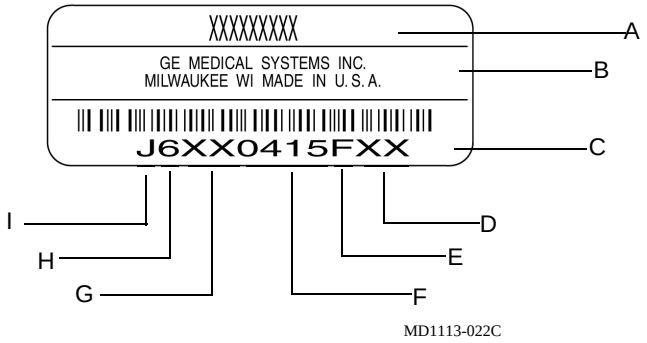
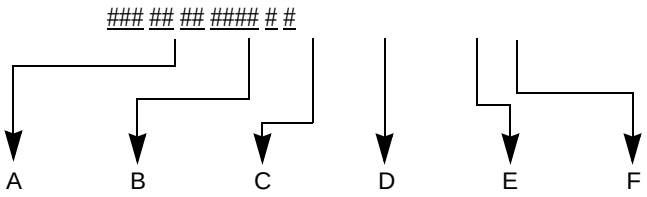


Table 4. Equipment Identification

Item	Name	Description
A	name of device	MARS™ Holter Analysis System
B	manufacturer	GE Healthcare
C	serial number	Unique identifier
D	device characteristics	One or two letters that further describe the unit, for example: P = prototype not conforming to marketing specification; R = refurbished equipment; S = special product documented under Specials part numbers; U = upgraded unit
E	division	F = Cardiology G = Monitoring N = Freiburg Hellige
F	product sequence number	Manufacturing number (of total units manufactured)
G	product code	Two-character product descriptor PU = MARS™ Holter Analysis System
H	year manufactured	0 = 2000, 1 = 2001, 2 = 2002, (and so on)
I	month manufactured	A = January, B = February, C = March, D = April, E = May, F = June, G = July, H = August, J = September, K = October, L = November, M = December

Format B is shown in the following illustration.



A	Product Code
B	Year Manufactured (00-99) 00 = 2000 04 = 2004 05 = 2005 (and so on)
C	Fiscal Week Manufactured
D	Production Sequence Number
E	Manufacturing Site
F	Miscellaneous Characteristic

2 Equipment Overview and System Setup

For your notes

System Characteristics

General Description

The MARS™ Holter Analysis System is a multi-parameter analysis and review system on a platform that supports the MARS Holter analysis and editing system software.

03A

NOTE

The picture is a representative system. Your system configuration may vary. The printer, modem, and power supply are not pictured.

Hardware

The MARS Holter Analysis server, client, and standalone workstation use an Intel PC platform with the Microsoft Windows operating system. This multi-tasking environment provides the ability to acquire, analyze, edit, and print simultaneously.

Peripherals include monitor, keyboard, mouse, card reader, printer, uninterruptible power supply (UPS) or isolation transformer, and an optical drive. The system also includes an analog modem for remote system support (RSS). A tape acquisition unit and external USB or parallel OMNI Drive are optional.

Storage requirements depend on the platform:

Platform	Patient Data	Patient Reports
Client and Standalone	25GB	10GB
Server	60GB	15GB

Software

The following software is approved for use on the MARS Holter Analysis system. The addition of non-approved software programs is not recommended or supported by GE Healthcare.

MARS Holter Analysis and Editing System Software

The MARS Holter analysis and editing system software acquires ECG data from electronic ECG recorders. The software provides:

- multiple techniques of scanning for complex editing
- algorithm enhancement for more precise beat and noise detection
- up to 12 high-resolution trends simultaneously on one screen
- pre-configured standard final reports
- dual channel superimposition displayed at up to 240 times real-time

MARS Holter Analysis Client and Standalone Software

MARS Holter Analysis software can be installed on MARS Holter Analysis clients and standalone workstations running Windows NT 4.0 service pack 6A, Windows 2000 Professional service pack 4 with the multi-language package operating system, or Windows XP Professional.

MARS Holter Analysis Server Software

MARS Holter Analysis software can be installed on a MARS Holter Analysis server running the Windows 2000 Server operating system with the multi-language package, or Windows 2003 Server.

CardioSoft Software

The MARS Holter Analysis Software is fully compatible with CardioSoft. CardioSoft client software will operate on a MARS Holter Analysis client or standalone workstation. The MARS Holter Analysis server software and CardioSoft server software packages have been qualified to operate simultaneously on the same computer.

NOTE

CardioSoft Client software and CardioSoft Server cannot both be installed simultaneously on the MARS Holter Analysis Server.

Software Activators

A single application may contain various features. Depending on the features that were purchased, it may be necessary to use a MARS Holter Analysis System software activator to activate or use specific features. See the MARS™ Holter Analysis System operator's manual for additional information on using software activators.

Remote System Support (RSS) Access Unit

Each MARS™ Holter Analysis System uses a non-networked analog modem for Remote System Support (RSS). The RSS access unit allows GE Healthcare to maintain, and if necessary, diagnose and repair the software.

Configuration Options

The MARS™ Holter Analysis System can be provided in the following configurations:

Standalone Workstation

- The patient data is stored locally and saved patient reports can be sent to a MUSE server across a network. There is no access to patient data from other MARS systems. The standalone runs with Windows NT, Windows 2000 professional, or Windows XP professional software. See “MARS Hardware and Operating Systems” on page 1-3 for more information.
- The standalone can print to a network or parallel printer.

Server

- The patient data is stored on the MARS Holter Analysis server and can be accessed by MARS Holter Analysis clients. In the event of server failure, or interrupted connectivity, patient data acquired at the client will be stored locally on the client. The server may have a card reader or tape acquisition device if 5 or less clients are attached. The patient reports can also be sent to a MUSE server. The server runs with Windows 2000 or Windows 2003 server software. See “MARS Hardware and Operating Systems” on page 1-3 for more information.
- The server can support a maximum of 25 MARS Holter Analysis clients.

Client

- The client automatically sends patient data to the MARS Holter Analysis server, and has access to all patient data stored on the server. It has data acquisition devices attached. The patient reports can also be sent to a MUSE server. The client must have a MARS Holter Analysis server to operate. The client runs with Windows NT, Windows 2000 professional, or Windows XP professional software. See “MARS Hardware and Operating Systems” on page 1-3 for more information.
- The client can print to a network or parallel printer.

NOTE

GE Service personnel must configure the MUSE server to enable the MARS™ Holter Analysis System to communicate with the MUSE server.

Installation Options

The MARS Holter Analysis allows a choice between a *Custom Installation* and a *Typical Installation*. It is important to understand the difference between the installations before you continue.

Typical Installation

NOTE

If you want to change from a standalone configuration to a client configuration, you must perform the *Custom Installation* option.

The *Typical Installation* will keep the standalone configuration and will add networking capabilities. It will not prompt the user to select between a client or a standalone configuration. The *Typical Installation* does not make any changes to the MARS Holter Analysis application location, number of patient slots, or startup information. The *Typical Installation* leaves all the patient data in its current location and retains the *System Setup* information.

Custom Installation

The *Custom Installation* will prompt the user to select between a client or a standalone configuration. The *Custom Installation* will prompt the user to change the MARS Holter Analysis application location, number of patient slots, and startup information. The *Custom Installation* option will maintain the original patient data, even if the user changes the MARS application software from the current disk location. The *System Setup* information will be retained.

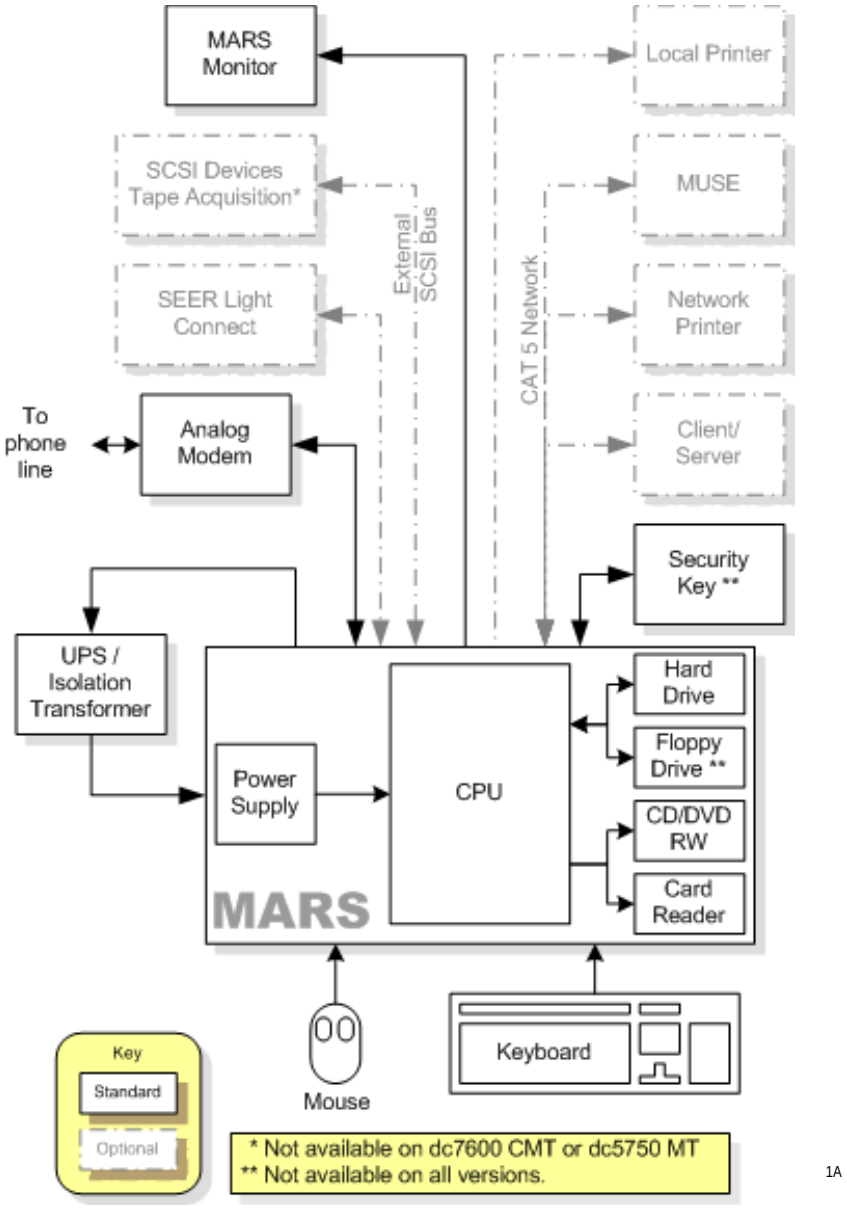
NOTE

You must have a MARS Holter Analysis server to use the MARS Holter Analysis client configuration.

MARS™ Holter Analysis Systems running Windows NT do not support the Tape Acquisition option.

Block Diagram

The block diagram is a representative configuration of a MARS™ Holter Analysis System. There are too many possible configurations to show them all.



1A

System Setup

Table 5, "Configuration Interconnections," on page 2-11 instructs how the client-server and standalone workstation should be set up. Please refer to the supplied OEM manuals and the "System Components and Locations" on page 2-13 for additional information.

WARNINGS

Keep leakage current within acceptable limits when connecting auxiliary equipment to this device.

This is Class 1 equipment. The mains plug must be connected to an appropriate power supply. See the leakage current warning on page 2-33 for important UPS information

Connecting the Equipment

Connecting the equipment consists of:

- Connecting the applicable peripheral devices
- Booting MARS™ Holter Analysis System for the first time
- Setting up the network
- Complete the check out procedure

To connect the equipment, follow the configuration table provided on the following pages.

MARS Holter Analysis Interconnection Guide

Table 5, "Configuration Interconnections," on page 2-11 provides the physical connections necessary for the MARS Holter Analysis standalone and client-server configurations. Once the physical connections are completed go to "Network Setup" on page 3-1 for setting up the network.

Setting the Correct Source Voltage

Confirm the MARS™ Holter Analysis System is configured to receive the correct source voltage (115V or 230V) for your geographical area.

Configure the dip switches on the UPS to receive the correct source voltage for your geographical area. Use the "User's Guide" that shipped with the UPS for the correct dip switch configuration.

Setting the Correct Platform Voltage

The power supplies of some platforms are equipped with a voltage switch that allows the user to toggle the power supply between 115V and 230V. This is typically a red switch located near the voltage inlet connector, as seen in the following illustration.

Before connecting your system to a power source, verify whether the system has a voltage switch.

If your system has a voltage switch, make sure the switch is set to the correct voltage for your geographical area. Failure to set the voltage switch to the proper input voltage may result in damage to the unit when connected to a power source.

If your system does not have a voltage switch, no additional action is required: the power supply will automatically detect the power line voltage.

Protecting Against Viruses

To protect the MARS™ Holter Analysis System from viruses, the appropriate antivirus software should be installed before connecting the system to the network. It is recommended that the customer turn on the antivirus software auto protect option, and keep the virus definitions current to avoid virus infections. Please discuss virus protection with the hospital Information Systems (IS) department before proceeding with the network installation of this equipment.

In addition to installing antivirus software, it is recommended that the customer limit drive share access for additional virus protection. This can be accomplished by changing the share permissions for the *gemsit* folder. It is recommended that permissions be set for individual users, rather than the entire MARSWORKGROUP or an entire domain. This will change the default factory setup.

Configuration Connection Guide

The following table describes how each MARS component connects to the system. To identify each component's connectors, refer to the diagrams located in "System Components and Locations" on page 2-13.

Table 5. Configuration Interconnections

Connect From	Connect To	Comments/Instructions
Medical Grade Isolation Transformer WARNING: See the leakage current warning on page 2-33 for important UPS information.	MARS™ Holter Analysis System (HP dc7600 CMT, HP dc5750 MT, or HP rp5700 only.)	Plug the workstation power cord into the isolation transformer. DO NOT plug the printer into the isolation transformer.
	AC Power Outlet	Plug the isolation transformer into the AC power wall outlet.
Uninterruptible Power Supply (UPS) WARNING: See the leakage current warning on page 2-33 for important UPS information.	MARS™ Holter Analysis System (All systems EXCEPT the HP dc7600 CMT, HP dc5750 MT, and HP rp5700.)	Connect the RS232 9-Pin cable from the UPS computer interface port to the Serial-1 connector on the MARS™ Holter Analysis System. DO NOT plug the printer into the isolation transformer.
	AC Power Outlet	Plug the UPS power cord into the AC power wall outlet.
RSS MultiModem	MARS™ Holter Analysis System	Connect the 9-pin, serial-2 workstation connector to the modem D connector.
	AC Power Wall Outlet	Ensure the RSS MultiModem is "OFF". Plug the AC/DC Power supply into the modem, and then to the AC power wall outlet.
	Telephone	RSS MutiModem Phone connector plugs into the base of the telephone (via RJ11 cable).
	Wall Phone Jack	Plug the other end of the RSS MutiModem Phone connector into the wall phone jack.
Tape Acquisition Unit	MARS™ Holter Analysis System	Note: This is an optional device. Connect to the MARS Holter Analysis SCSI connector then plug the terminator connector into the top connector on the Tape Acquisition unit. See "Tape Acquisition Unit (Optional)" on page 2-29 for additional information.
External Card Reader (USB)	MARS™ Holter Analysis System	Note: This is an optional device. Connect the USB version to workstation's USB port. Connect the parallel port version to the work station's parallel port. . See "External Card Reader – Omni Drive (Optional)" on page 2-30 for additional information.
External Card Reader (Parallel Port)		

Table 5. Configuration Interconnections (Continued)		
Connect From	Connect To	Comments/Instructions (Continued)
Keyboard	MARS™ Holter Analysis System	Connect to top left corner USB connector. (Looking at the rear of the workstation)
Mouse	MARS™ Holter Analysis System	Connect to green connector on the workstation.
Printer	MARS™ Holter Analysis System	Connect to the Parallel 2 connector. Note: DO NOT plug the printer into the UPS or isolation transformer.
	AC Power wall outlet	Ensure the printer is configured for the main power (i.e. 115VAC or 220 VAC). Ensure the printer is “OFF” before plugging the power cord into the AC wall outlet.
Monitor	MARS™ Holter Analysis System	Connect via 15-pin D video connector.
	AC Power wall outlet	Ensure the monitor is configured for the main power (i.e. 115VAC or 220 VAC). Ensure the monitor is “OFF” before plugging the power cord into the AC Power wall outlet.
MARS™ Holter Analysis System	UPS AC receptacle	Plug the power cord from the workstation into the UPS AC receptacle.
	Network connector (ethernet)	Connect via the network cable. NOTE: The network is optional on Standalone units.
Security Key (USB)	MARS Holter Analysis Workstation	Connect the USB version to workstation’s USB port. Connect the parallel port version to the work station’s parallel port.
Security Key (Parallel Port)		

After the physical connections are completed, go to “Network Setup” on page 3-1 for setting up the network.

System Components and Locations

MARS Holter Analysis Standalone, Client and Server Systems

Compaq EVO D510, Front View

Table 6. MARS Holter Analysis System (Compaq EVO D510, Front View)		
Item	Name	Description
A	Internal card reader	Reads holter data from data cards (This will be black in color, not white as pictured)
B	CD-RW Drive	Reads and writes to CD-RW
C	Floppy Drive	Reads floppy disks
D	Power Button	Turns system on or off.

Compaq EVO D510, Rear View

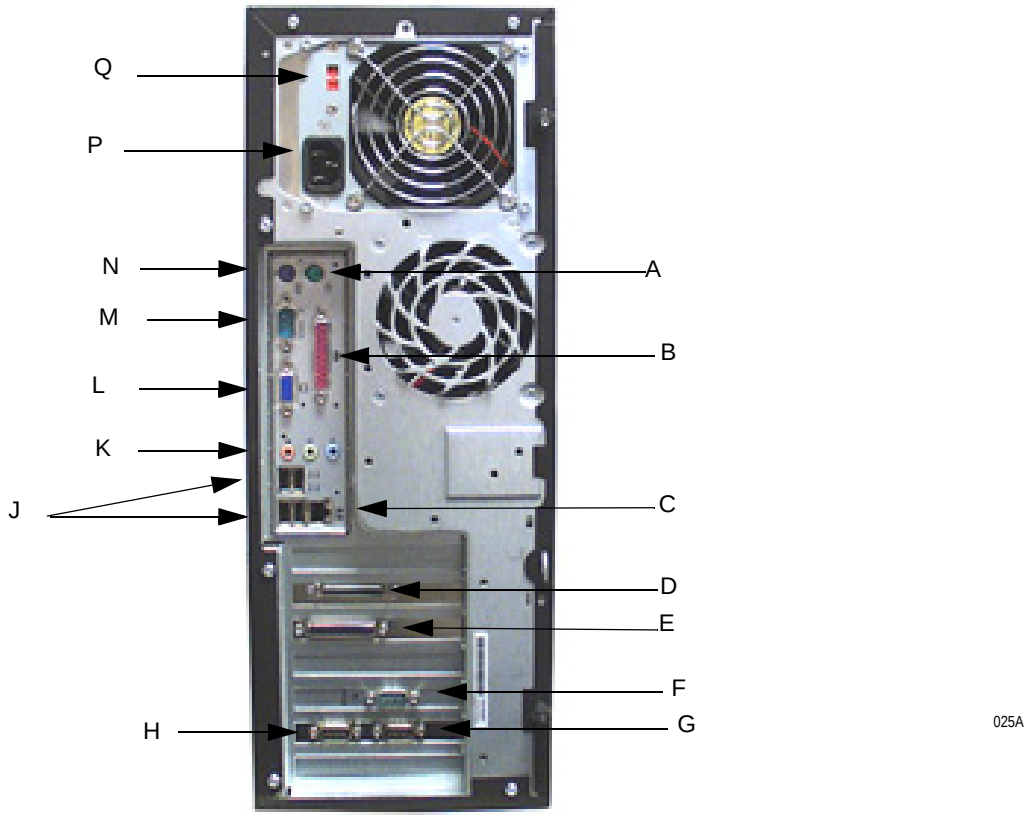


Table 7. MARS Holter Analysis System (Compaq EVO D510, Rear View)		
Item	Name	Description
A	Mouse Connector	Connects the mouse.
B	Parallel 1 Connector	Extra parallel connector (not currently used)
C	Ethernet Connector	Connects to network
D	SCSI Connector	Connects to the tape acquisition unit (optional device)
E	Parallel 2 Connector	Connects to the printer
F	Serial 2 Connector	Connects to RSS Modem
G	Serial 3 Connector	Extra serial connection (not currently used)
H	Serial 4 Connector	Extra serial connection (not currently used)
J	USB Connectors	Connects to the USB keyboard (use top left USB port for keyboard)
K	Audio Connector	Connects devices that supply sound
L	Video Connector	Connects to the monitor
M	Serial 1 Connector	Connects to the UPS

Table 7. MARS Holter Analysis System (Compaq EVO D510, Rear View) (Continued)		
Item	Name	Description
N	Keyboard Connector	Connects to the keyboard
P	Power Adapter	Connects unit to power outlet
Q	Voltage Select Switch	Switches voltage from 115V to 230V

HP EVO D530, Front View

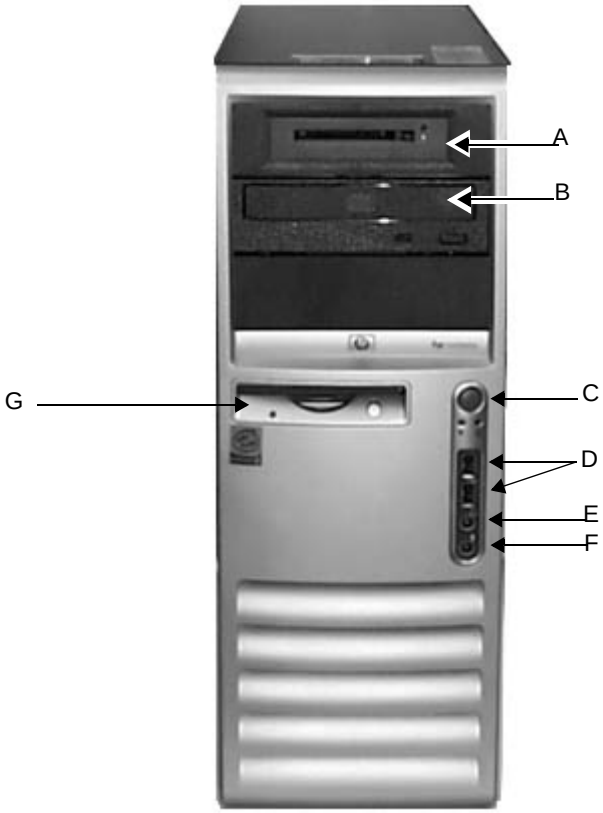


Table 8. MARS Holter Analysis System (HP EVO D530, Front View)		
Item	Name	Description
A	Internal card reader	Reads holter data from data cards
B	CD-RW Drive	Reads and writes to CD-RW
C	Power Button	Turns system on or off.
D	Universal Serial Bus Connectors 2.0	Front USB connectors.
E	Headphone Out Jack	Provides sound for headphones.
F	Microphone In Jack	Not Used
G	Floppy Drive	Reads floppy disks

HP EVO D530, Rear View

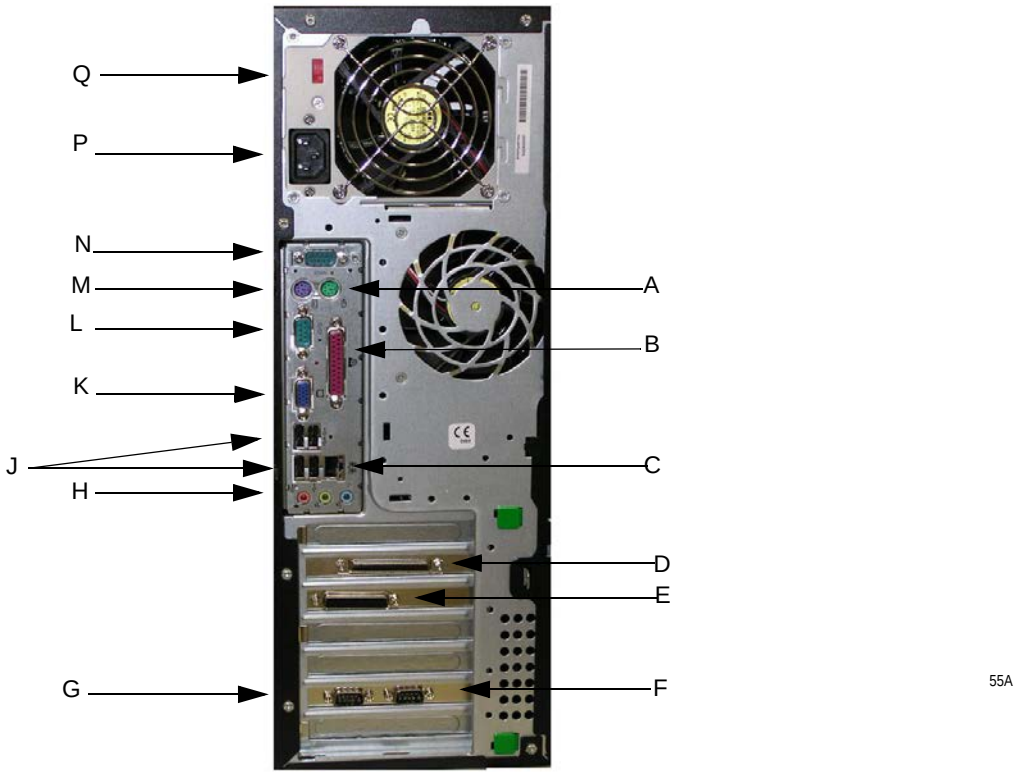


Table 9. MARS Holter Analysis System (HP EVO D530, Rear View)		
Item	Name	Description
A	Mouse Connector	Connects the mouse.
B	Parallel 1 Connector	Extra parallel connector (not currently used)
C	Ethernet Connector	Connects to network
D	SCSI Connector	Connects to the tape acquisition unit (optional device)
E	Parallel 2 Connector	Connects to the printer
F	Serial 3 Connector	Extra serial connection (not currently used)
G	Serial 4Connector	Extra serial connection (not currently used)
H	Audio Connector	Connects devices that supply sound
J	USB Connector	Connects to the USB keyboard (use top left USB port for keyboard)
K	Video Connector	Connects to the monitor
L	Serial 1 Connector	Connects to the UPS
M	Keyboard Connector	Connects to the keyboard
N	Serial Connector 2	Connects to RSS Modem

Table 9. MARS Holter Analysis System (HP EVO D530, Rear View) (Continued)		
Item	Name	Description
P	Power Adapter	Connects unit to power outlet
Q	Voltage Select Switch	Switches voltage from 115V to 230V

HP dc7100, Front View

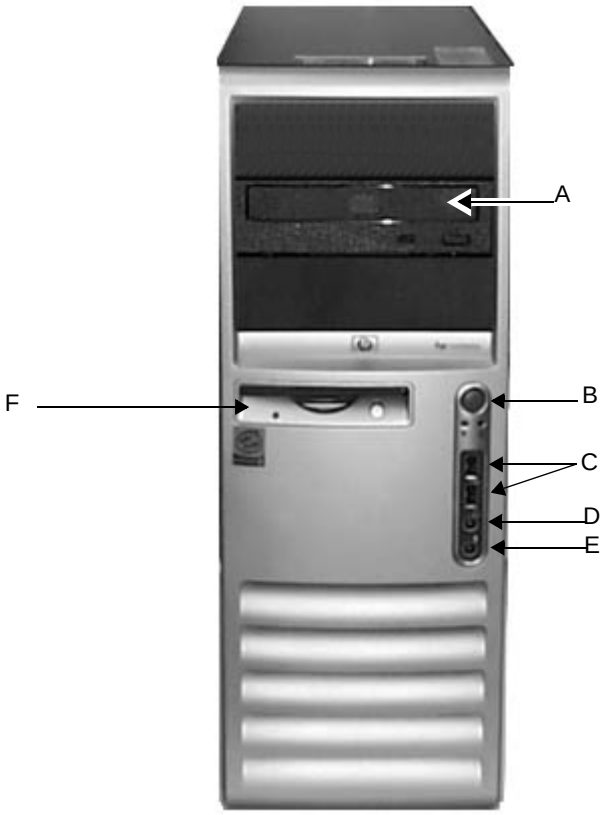


Table 10. MARS Holter Analysis System (HP dc7100, Front View)		
Item	Name	Description
A	DVD-RW Drive	Reads and writes to DVD-RW and CD-RW
B	Power Button	Turns system on or off
C	Universal Serial Bus Connectors 2.0	Front USB connectors
D	Headphone Out Jack	Provides sound for headphones
E	Microphone In Jack	Not used
F	Floppy Drive	Reads floppy disks

HP dc7100, Rear View

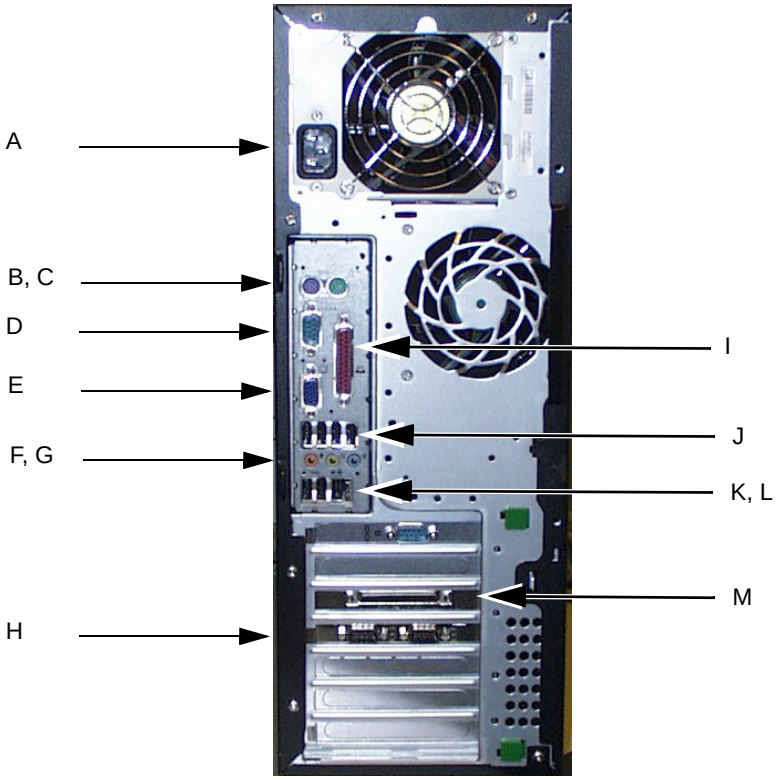


Table 11. MARS Holter Analysis System (HP dc7100, Rear View)		
Item	Name	Description
A	AC input connector	Connects unit to power outlet (or UPS)
B	Keyboard connector	Connects to the keyboard (Purple)
C	Mouse connector	Connects the mouse (Green)
D	Serial 1 connector	Connects to the UPS
E	Video connector	Connects to the monitor
F	Audio out connector	Headphone/Speaker audio out (Blue)
G	Audio in connector	Line audio in (Green)
H	Serial Connectors	Extra serial connectors
I	Parallel port	Connects to parallel printer
J	USB ports 1 – 4	Connects to the USB keyboard (use leftmost USB port for keyboard) and other USB devices
K	Ethernet connector	Connects to network (connection on the left)
L	USB ports 5 – 6	Other USB devices can be connected to these ports
M	SCSI connector	Connects tape acquisition unit

HP dc7600, Front View

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Table 12. MARS Holter Analysis System (HP dc7600, Front View)		
Item	Name	Description
A	DVD-RW Drive	Reads and writes to DVD-RW and CD-RW
B	Power Button	Turns system on or off
C	Universal Serial Bus Connectors 2.0	Front USB connectors
D	Headphone Out Jack	Provides sound for headphones
E	Microphone In Jack	Not used

HP dc7600, Rear View

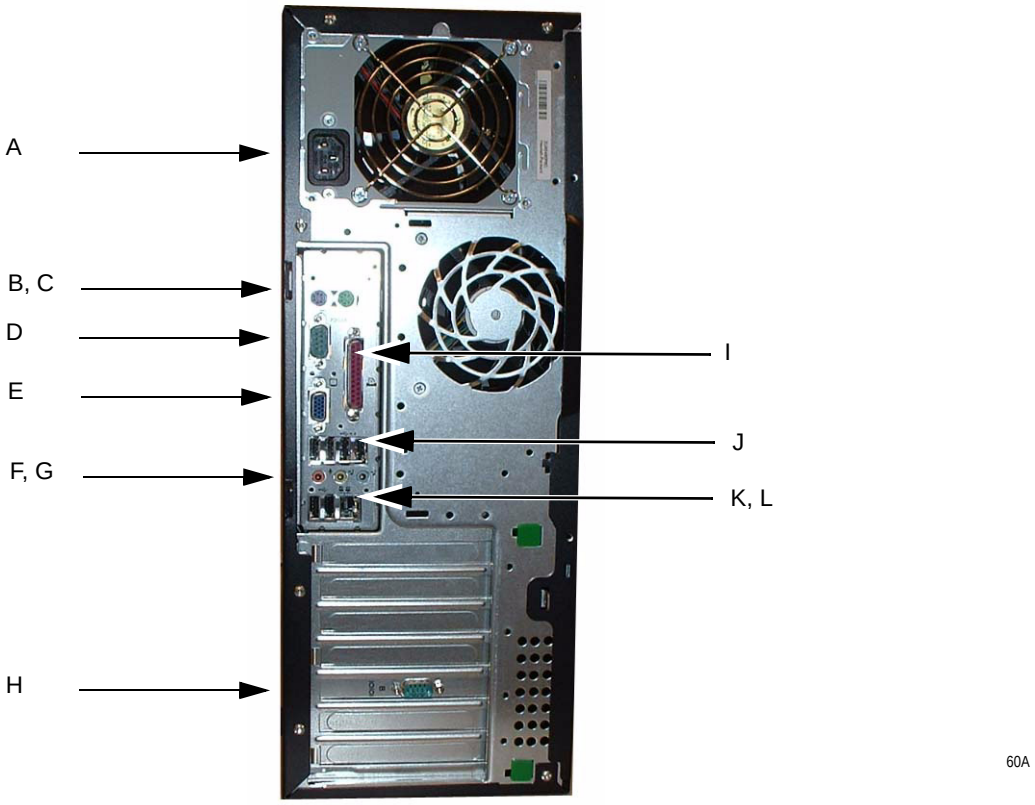

Table 13. MARS Holter Analysis System (HP dc7600, Rear View)		
Item	Name	Description
A	AC input connector	Connects unit to power outlet (or UPS)
B	Keyboard connector	Connects to the keyboard (Purple)
C	Mouse connector	Connects the mouse (Green)
D	Serial 1 connector	Connects to the UPS
E	Video connector	Connects to the monitor
F	Audio out connector	Headphone/Speaker audio out (Blue)
G	Audio in connector	Line audio in (Green)
H	Serial Connectors	Extra serial connector
I	Parallel port	Connects to parallel printer
J	USB ports 1 – 4	Connects to the USB keyboard (use leftmost USB port for keyboard) and other USB devices
K	Ethernet connector	Connects to network (connection on the left)
L	USB ports 5 – 6	Other USB devices can be connected to these ports

HP dc5750, Front View

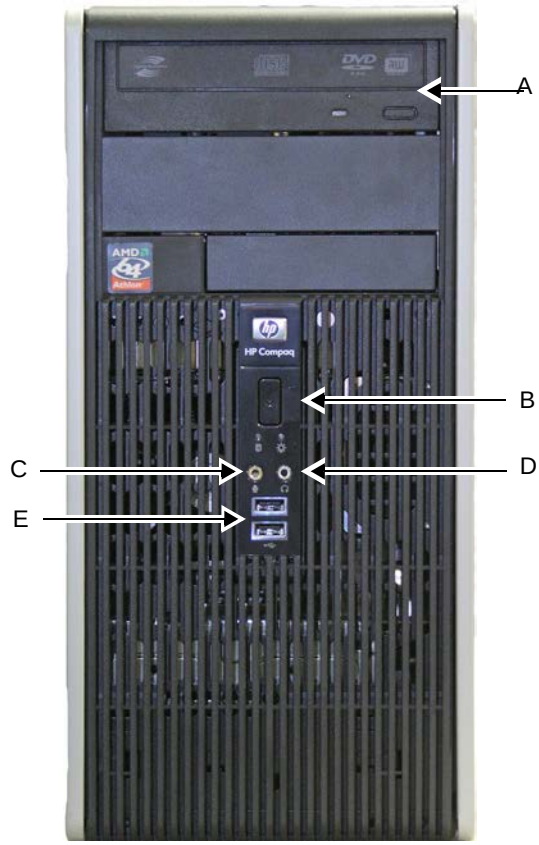

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Table 14. MARS Holter Analysis System (HP dc5750, Front View)

Item	Name	Description
A	DVD-RW Drive	Reads and writes to DVD-RW and CD-RW
B	Power Button	Turns system on or off
C	Microphone In Jack	Not used
D	Headphone Out Jack	Provides sound for headphones
E	Universal Serial Bus Connectors 2.0	Front USB connectors

HP dc5750, Rear View

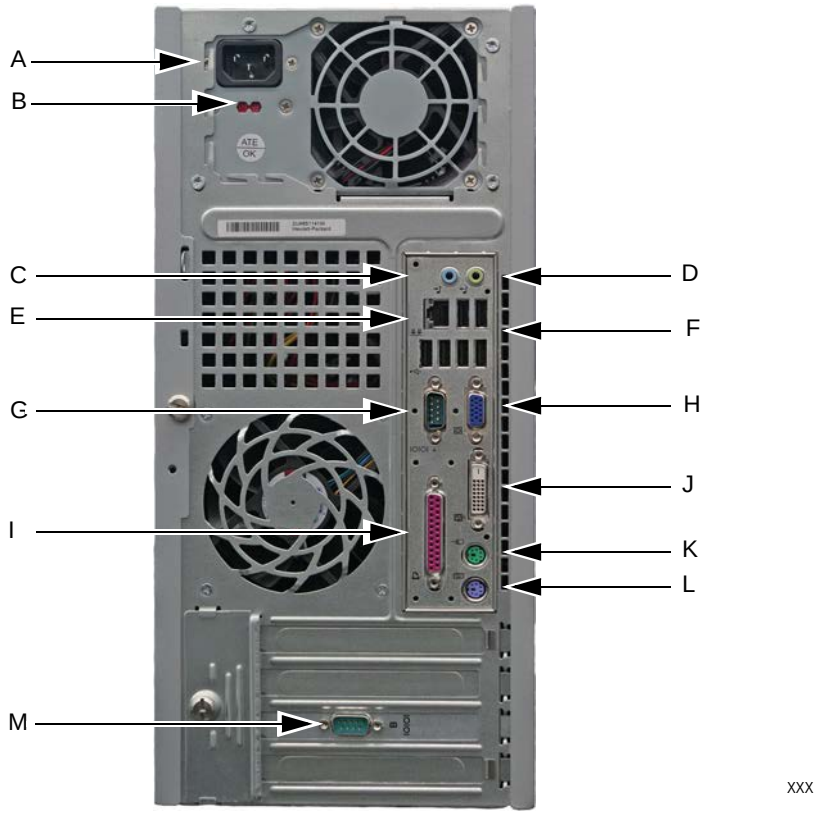


Table 15. MARS Holter Analysis System (HP dc5750, Rear View)		
Item	Name	Description
A	AC input connector	Connects unit to power outlet (or UPS)
B	Voltage Select Switch	Switches voltage from 115V to 230V
C	Audio in connector	Line audio in (Green)
D	Audio out connector	Headphone/Speaker audio out (Blue)
E	Ethernet connector	Connects to network (connection on the left)
F	USB ports	Connects to the USB keyboard (use leftmost USB port for keyboard) and other USB devices
G	Serial 1 connector	Connects to the UPS
H	VGA connector	Connects to the monitor
I	Parallel port	Connects to parallel printer
J	DVI Connector	Connects to the monitor
K	Mouse connector	Connects the mouse (Green)
L	Keyboard connector	Connects to the keyboard (Purple)
M	Serial 2 Connector	Extra serial connector

HP rp5700, Front View

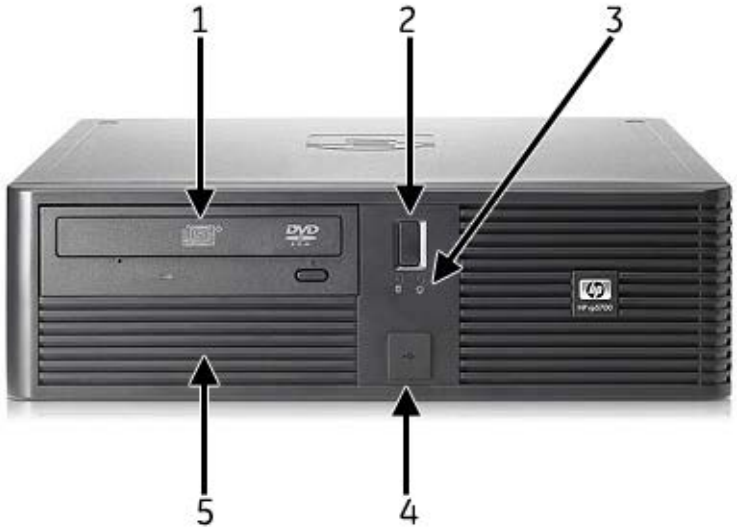


Table 16. HP rp5700, front view		
Item	Name	Description
A	Optical Drive	CD/DVD
B	Power button	Recessed power button
C	LEDs	Power and activity lights
D	USB Ports	2 USB 2.0 ports with rubber cover
E	Hard Drive	Internal hard drive

HP rp5700, Back View

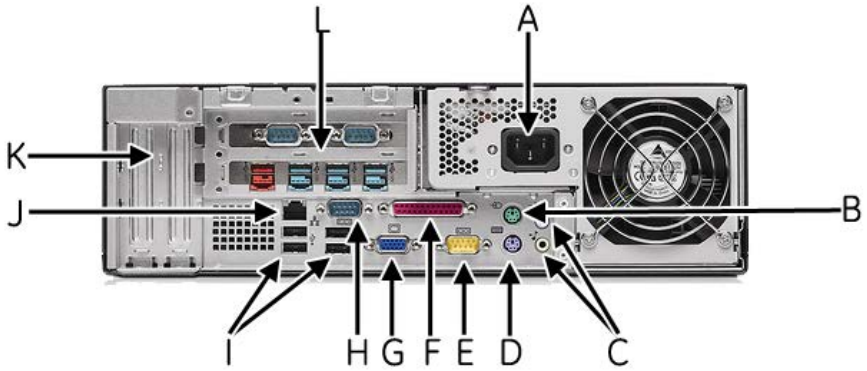


Table 17. rp5700 client, rear panel connectors		
Item	Name	Description
A	Mains	240W 80 PLUS® – Active PFC power supply (no line switching required)
B	Mouse port	Plug in a PS/2 mouse
C	Audio jacks	Line in and line out audio jacks
D	Keyboard port	Plug in a PS/2 keyboard
E	COM port	RS232 serial COM1 port
F	Parallel port	Plug in a parallel printer
G	VGA port	Plug in a monitor
H	COM port	RS232 serial COM2 port
I	USB ports	4 USB 2.0 ports
J	LAN jack	RJ-45 LAN jack
K	Expansion slots	2 low-profile slots: left ADD2/SDVO slot, right PCI3-x1
L	PCI slots	2 full-height PCI slots

HP rp5800, Front View

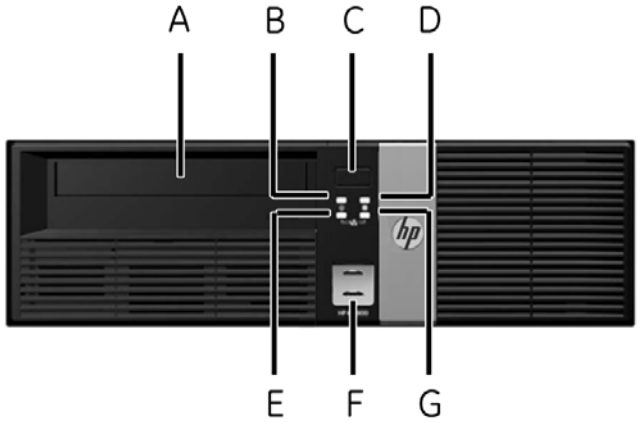


Table 18. HP rp5800, front view		
Item	Name	Description
A	Optical Drive	5.25–inch DVD–R/DVD–RW capable drive
B	Power Light	A steady green light indicates the system is powered on. A flashing red light indicates there is a problem with the system and displays a diagnostic code. Refer to the OEM's Maintenance and Service Guide to interpret the code.
C	Power Button	Dual state power button
D	Hard Drive Light	LED flashes when internal hard drive is being accessed
E	NIC Link Light	LED lights up to indicate a network connection.
F	USB Ports	2 USB 2.0 ports behind a sliding cover
G	NIC Activity Light	LED flashes to indicate network activity.

HP rp5800, Back View

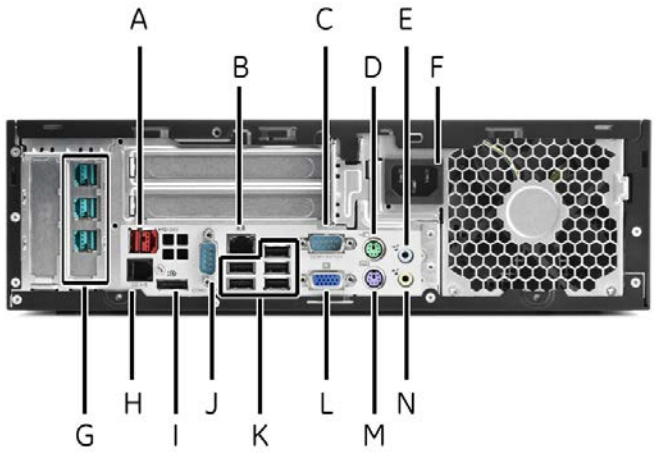


Table 19. rp5800 client, rear panel connectors		
Item	Name	Description
A	Powered USB	Powered USB port, 24V
B	LAN Port	RJ-45 network connector
C	Serial Connector	COM1 serial port
D	Mouse Connector	PS/2 mouse connector (green)
E	Audio Connector	Line-in audio connector (blue)
F	Mains	Mains power cord connector
G	Powered USB	Powered USB ports, 12V
H	Cash Drawer Connector	Similar in size and shape to standard modem jack. To avoid damaging the computer, DO NOT attempt plug a network or phone cable into the connector.
I	Display/Port	DVI display connector
J	Serial Connector	COM2 serial port
K	USB	Un-powered USB ports
L	VGA Connector	VGA display connector
M	Keyboard Connector	PS/2 keyboard connector (purple)
N	Speaker connector	Line-out speaker connector (green)

Tape Acquisition Unit (Optional)

Front View

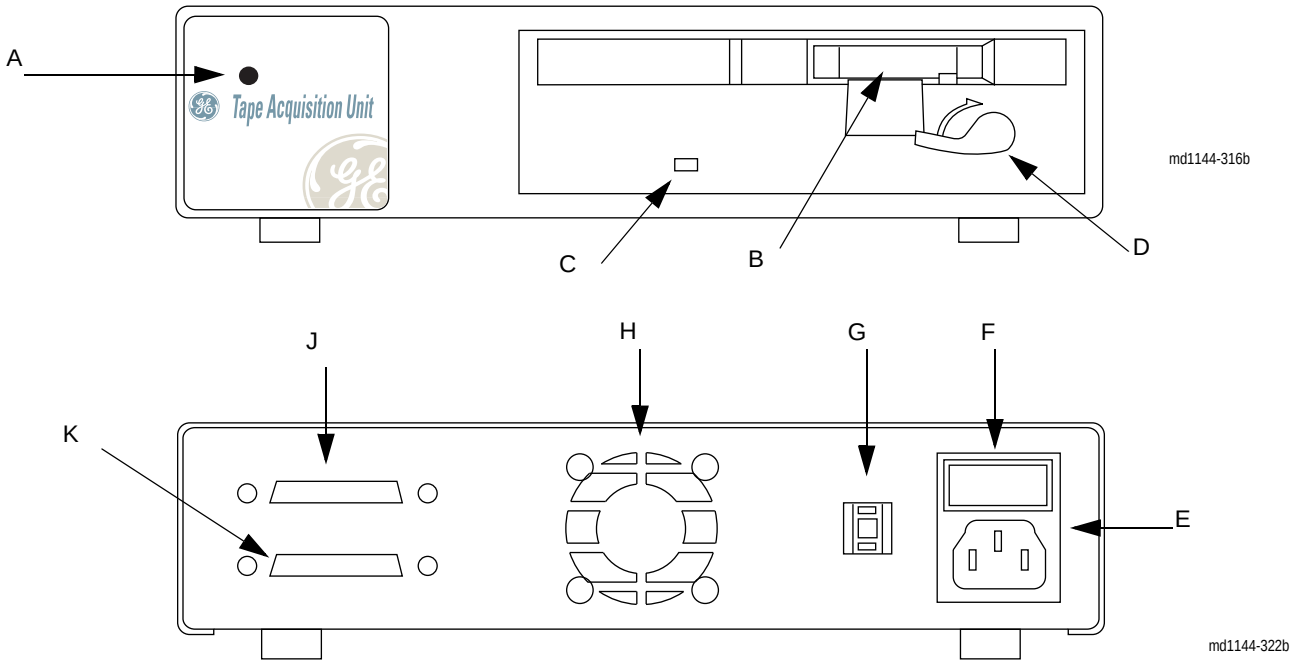
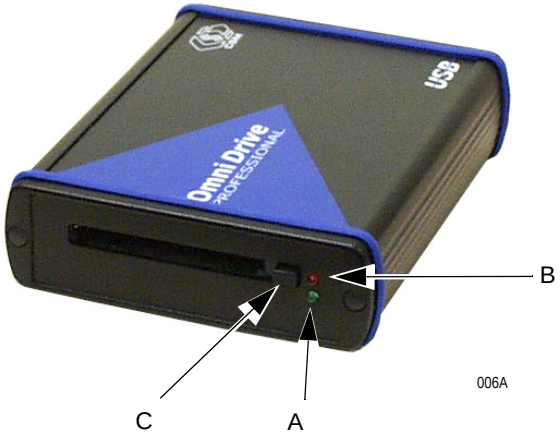
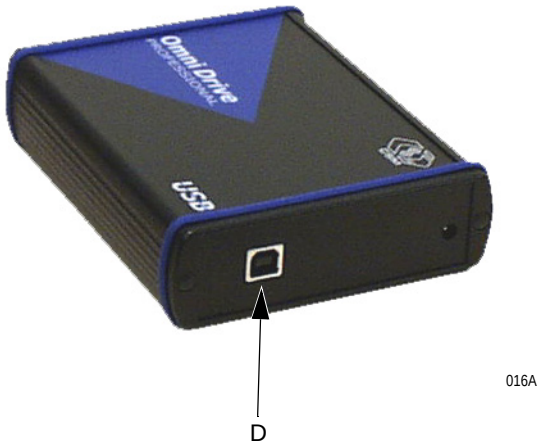


Table 20. Tape Acquisition Unit		
Item	Name	Description
A	power LED	Indicates the operating status of the tape acquisition unit. It glows green when power is applied.
B	tape drive opening	Allows tapes to be inserted into the tape acquisition unit.
C	tape motion indicator LED	Indicates the motion of the tape drive. It glows green when the tape moves faster than 100 mm/sec. It glows red when the tape speed drops below 100 mm/sec.
D	release lever	Depressing ejects the tape from the tape drive opening. Lever must be closed to start rewind.
E	mains AC power port	Connects the tape acquisition unit to an external mains AC power source. The tape acquisition unit contains a 120v/240v autosensing power supply.
F	power (On/Off) switch	Controls the power to the tape acquisition unit.
G	SCSI ID switch	Selects the SCSI target ID number. SCSI target ID for connecting to workstation = 5.
H	cooling fan intake	Moves air in to cool tape acquisition unit components.
J	SCSI port	Connects to the terminator connector
K	SCSI port	Connects to SCSI port on the back on the MARS™ Holter Analysis System

External Card Reader – Omni Drive (Optional)

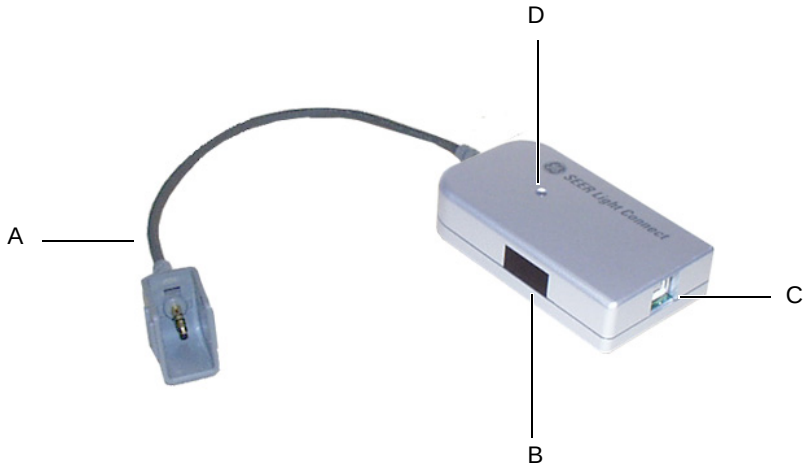




External Card Reader – Omni Drive		
Item	Name	Description
A	Power On Indicator	Green LED is lit when power is on. (Power is applied through the USB cable.)
B	Busy Indicator	Red LED is lit when transferring data.
C	Card Eject Button	Push the button to eject the card.
D	USB Connection	Connect the USB cable to the port on back on the Omni Drive and to a USB port on the MARS™ Holter Analysis System.

See "Card Reader – Omni Drive (Optional Device)" on page 5-12 for information on setting the drive letter.

SEER Light Connect (Optional)



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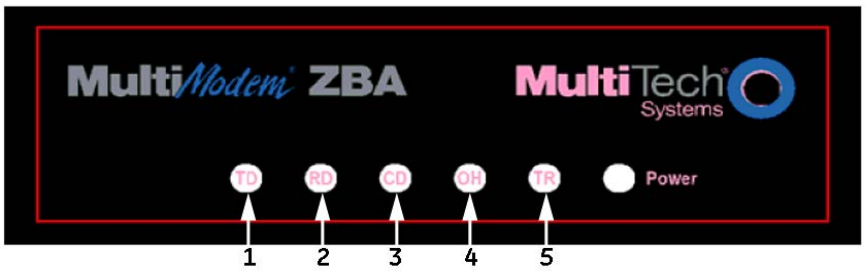
Item	Name	Description
A	data transfer cable	Used to transfer data from the SEER Light recorder to the SEER Light Connect.
B	infrared terminal	Used to communicate with the SEER Light recorder. ■ Receives ECG waveform data from a SEER Light recorder to preview. ■ Transfers patient demographics to the SEER Light recorder. ■ Starts the SEER Light recorder.
C	USB Connection	Uses a USB patch cord to transfer data from the SEER Light Connect to the Holter analysis system.
D	LED indicator	■ Flashes when data is transferring. ■ Lights without flashing when a proper connection exists.

Remote System Access Unit

MultiTech MultiModem (MT9234ZBA)



48A

Item	Name	Description
1	TD (Transmit Data)	The TD LED flashes when the modem is transmitting data to another modem.
2	RD (Receive Data)	The RD LED flashes when the modem is receiving data from another modem.
3	CD (Carrier Detect)	The CD LED lights when the modem detects a valid carrier signal from another modem. It is on when the modem is communicating with the other modem and off when the link is broken.
4	OH (Off-Hook)	The OH LED lights when the modem is off-hook, which occurs when the modem is dialing, online, or answering a call. The LED flashes when the modem pulse-dials.
5	TR (Terminal Ready)	The TR LED lights when a communication program is using the modem. It means the modem is ready for an outgoing or incoming call. It goes off when the communication program disconnects the serial port. When it goes off, a connected modem will also disconnect.

Uninterruptible Power Supply (UPS)

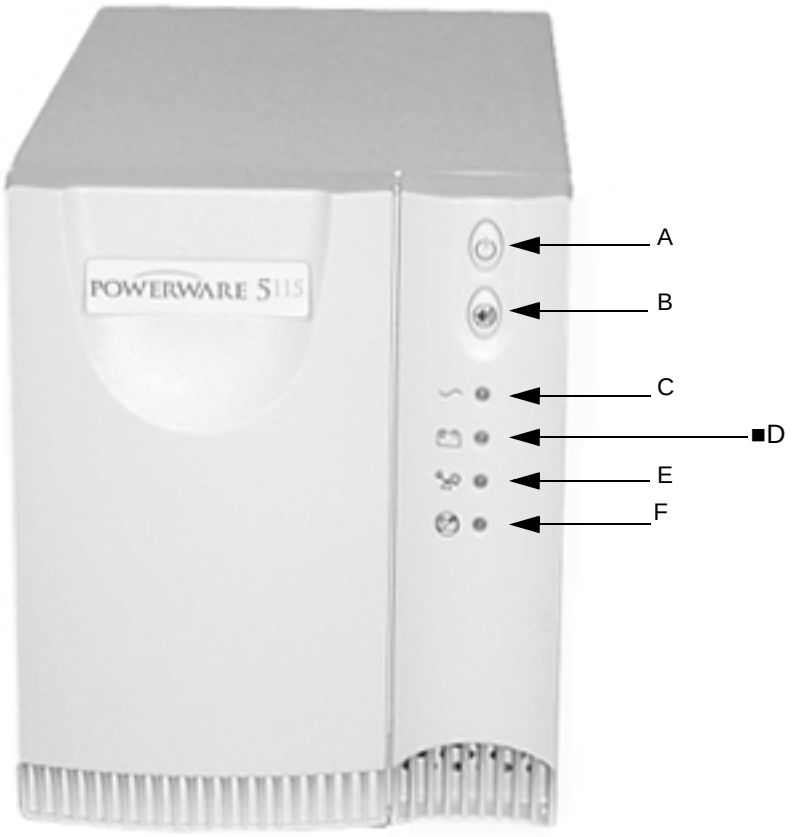
WARNING
LEAKAGE CURRENT – Electrical shock to patient could result from component failure and lack of power isolation.

In the event this system is used in the patient vicinity, it must be configured in such a way that it and all of its electrically-connected peripheral devices are isolated from mains power to prevent excessive leakage current to the patient. This can be accomplished through the use of isolated mains power, or a medical grade isolation transformer (in compliance with UL 60601, CAN/CSA C22.2 No. 601.1, IEC 60601-1) with this system. All nonmedical peripheral devices shall comply with IEC and ISO safety standards that are relevant to that equipment (i.e., IEC 60950, UL 60950).

Use of SEER Light Connect device in the patient vicinity requires that these measures are observed.

The UPS “ONEAC ONm600, Front View” on page 2-36 meets this requirement.

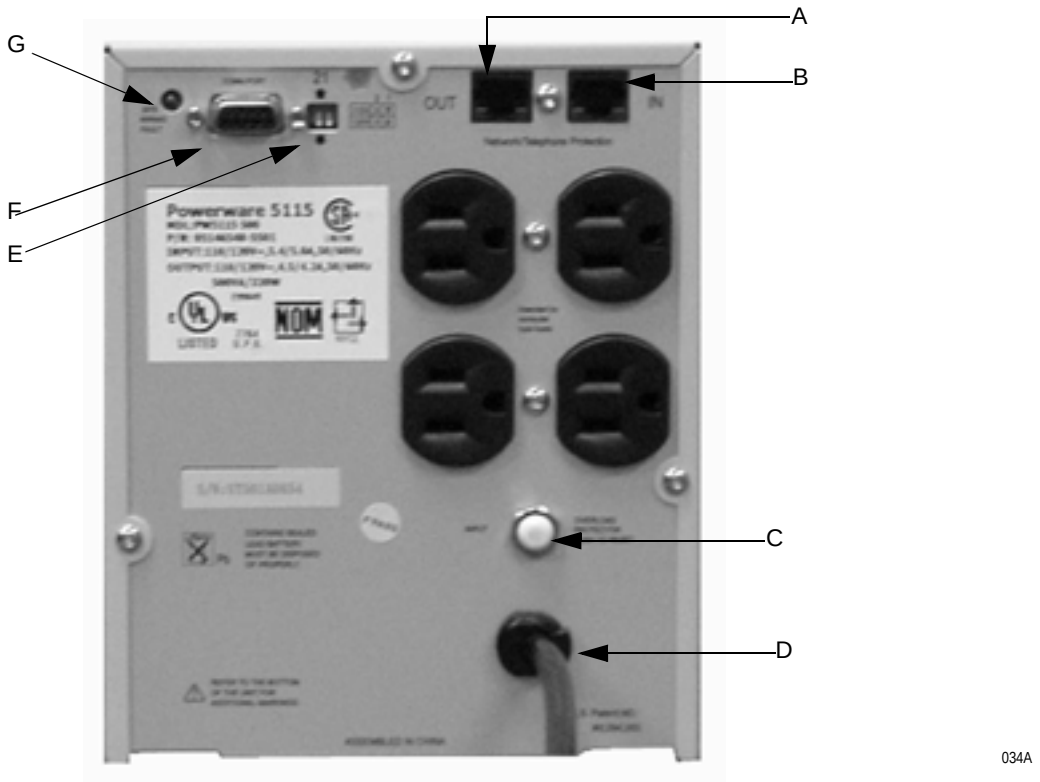
Powerware 5115, Front View



032A

Powerware Power Supply (Front view) 5115		
Item	Name	Description
A	Power On/Off Button	Controls power to the UPS.
B	Test/Alarm Reset Button	Lit whenever normal utility voltages are present at the power sockets.
C	Power On Indicator	This indicator is green when power is on.
D	On Battery Indicator	This indicator is yellow when the UPS is running on battery.
E	Overload Indicator	This indicator is red when the UPS is overloaded.
F	Service Indicator	This indicator is red when the UPS requires servicing.

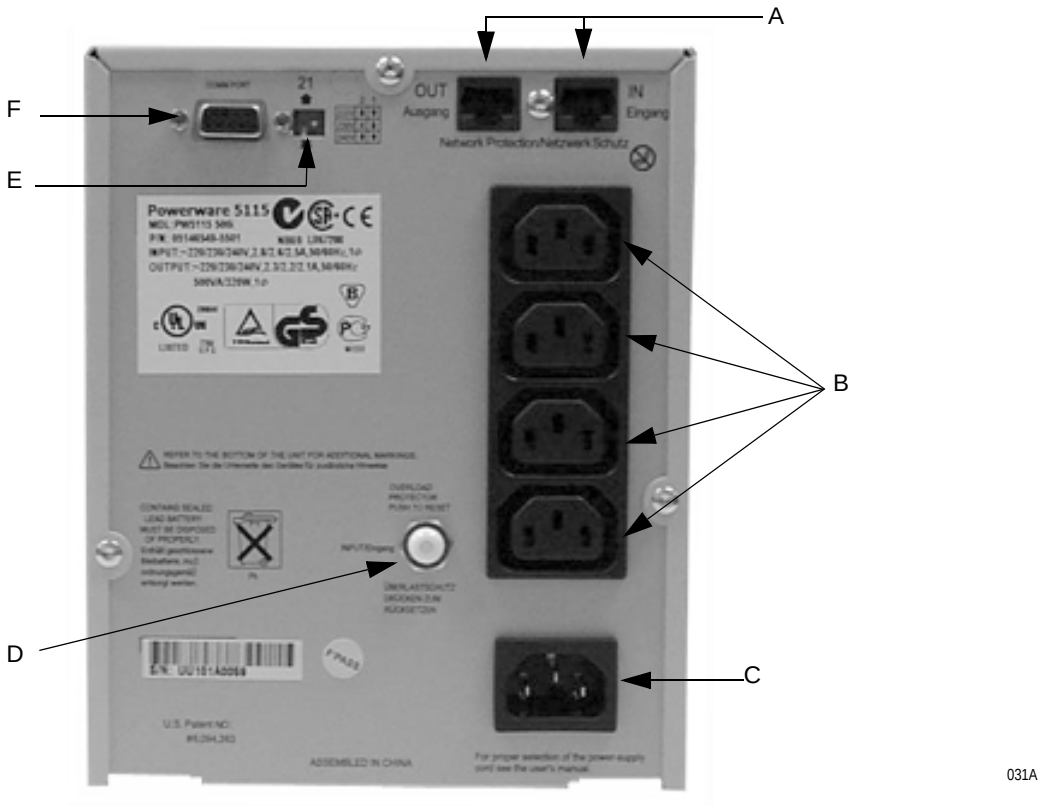
Powerware 5115 (120 volt), Rear View



Powerware 120V Power Supply 5115, Rear view		
Item	Name	Description
A	Network transient protector (OUT)	Used for network or telecommunications equipment
B	Network transient protector (IN)	Used for network or telecommunications equipment

Powerware 120V Power Supply 5115, Rear view (Continued)		
Item	Name	Description
C	Input overcurrent protector	Resettable input overcurrent protector
D	6 foot Power cord	Connects to power
E	DIP Switches	Configures the input and output voltage
F	Communication Port	Allows data communication between the UPS and the computer
G	Site Wiring Fault Indicator	Lights up if there is no ground wire connection or if the neutral and line wires are crossed in the line receptacle

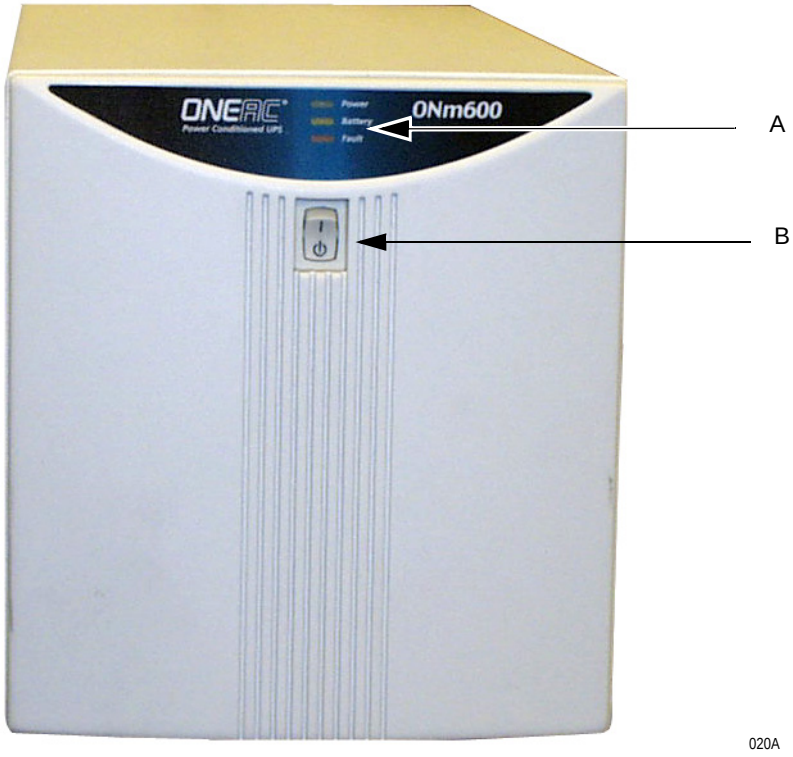
Powerware 5115 (220 volt), Rear View



Powerware 220V Power Supply 5115 Rear view		
Item	Name	Description
A	Network Transient Protector	Used for network or telecommunications equipment
B	10 Amp Receptacles	Connect equipment to the UPS
C	Input Connector	Connects the UPS to power
D	Input Overcurrent Protector	Resettable input overcurrent protector

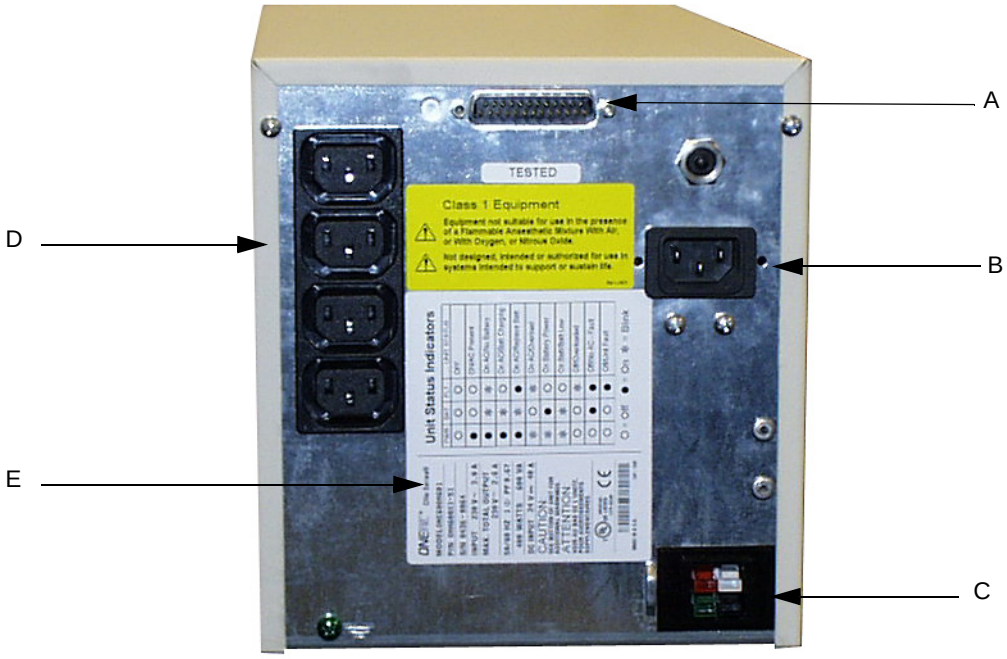
Powerware 220V Power Supply 5115 Rear view (Continued)		
Item	Name	Description
E	Dip Switch	Configures the input and output voltage
F	Communication Port	Allows data communication between the UPS and the computer

ONEAC ONm600, Front View



ONEAC ONm600 Front View		
Item	Name	Description
A	Status LEDs	Three LEDs indicate the UPS status. ■ Power - When the green LED is on, either solid or blinking, power is being supplied to the output. If blinking, it indicates the UPS is on inverter or there is an overload condition. ■ Battery - When the yellow LED is on solid, the UPS is on inverter. If blinking, it indicates the battery is charging when on line or low battery if running on inverter. ■ Fault - When the red LED is on solid, it indicates there is a problem with the battery charger or Operating Instructions ON Series m UPS User Instruction Manual 11 inverter. If blinking, it indicates no battery, overload or high line and no battery present. See the label on back of the UPS for LED fault status information, (or download the ONEAC service manual for LED fault status information. See “OEM Documentation and Support” on page 1-6.)
B	Power On/Off Button	Controls power to the UPS

ONEAC ONm600, Rear View



ONEAC ONm600 Rear View		
Item	Name	Description
A	Interface Serial Port	Allows data communication between the UPS and the computer
B	Power Input	Connects to AC power. Use the AC power supply cord supplied with the UPS
C	External Battery Input Connector	Connection for adding additional external battery for longer battery runtime. See "OEM Documentation and Support" on page 1-6 and download the ONEAC service manual for more information
D	Power Outlets	Connect equipment to the UPS
E	LED Fault Status Chart	Describes the fault reason matching the LED status

Isolation Transformer

WARNING

LEAKAGE CURRENT – Electrical shock to patient could result from component failure and lack of power isolation.

In the event this system is used in the patient vicinity, it must be configured in such a way that it and all of its electrically-connected peripheral devices are isolated from mains power to prevent excessive leakage current to the patient. This can be accomplished through the use of isolated mains power, or a medical grade isolation transformer (in compliance with UL 60601, CAN/CSA C22.2 No. 601.1, IEC 60601-1) with this system. All nonmedical peripheral devices shall comply with IEC and ISO safety standards that are relevant to that equipment (i.e., IEC 60950, UL 60950).

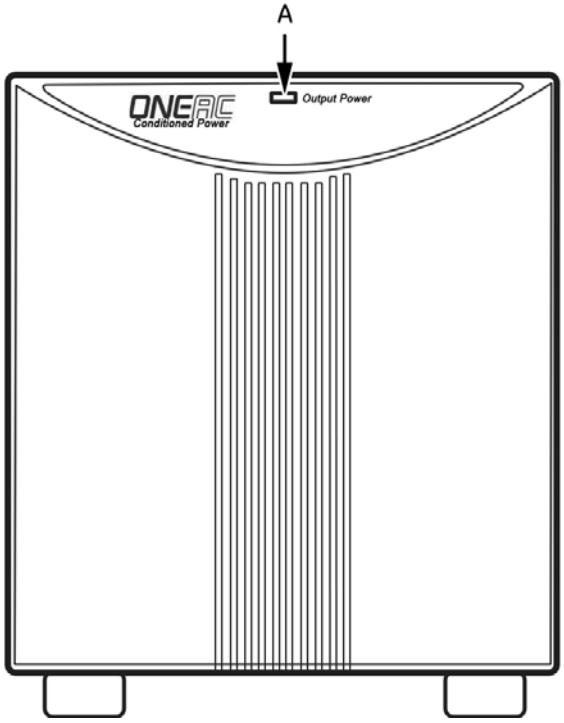
Use of SEER Light Connect device in the patient vicinity requires that these measures are observed.

The following isolation transformers meet these requirements:

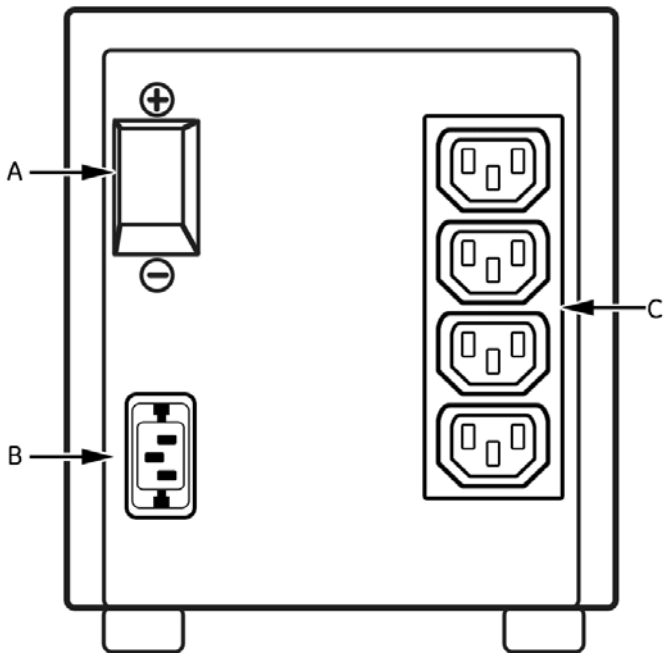
- ONEAC PCm Series 500—1000 VA Power Conditioner
  See "ONEAC PCm Series 500–1000 VA Power Conditioner" on page 2-39 for more information.
- Powervar ABC MED Series Power Conditioner
  See "Powervar ABC MED Series Power Conditioner" on page 2-41 for more information.

ONEAC PCm Series 500–1000 VA Power Conditioner

The MARS system uses a variety of models in the ONEAC PCm series 500 through series 1000 power conditioners. The features and controls are similar among the supported models.



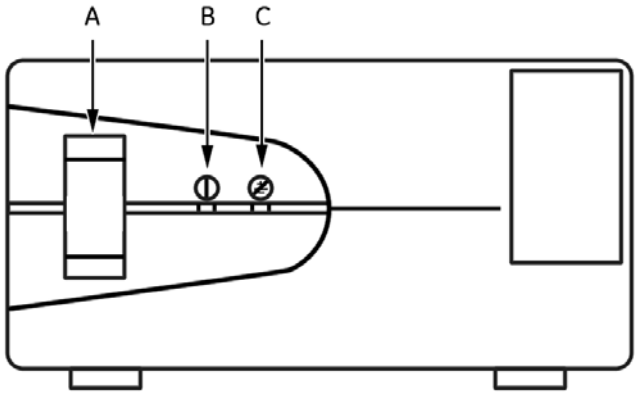
ONEAC ONm6PCm Series 500 – 1000 VA (front view)		
Item	Name	Description
A	Output Power LED	Indicates equipment is connected to the isolation transformer and drawing power.



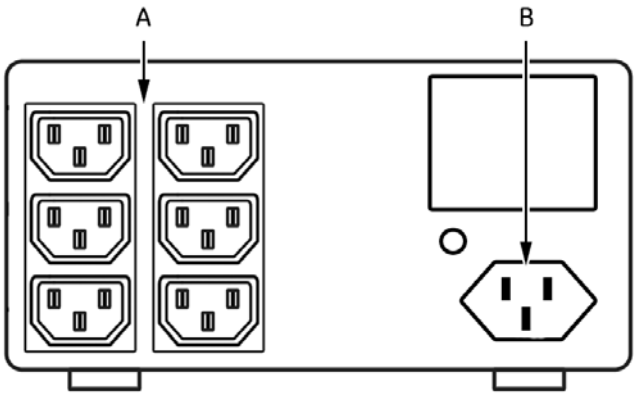
ONEAC ONm6PCm Series 500 – 1000 VA (rear view)		
Item	Name	Description
A	Power On/Off Button	Controls power to the UPS
B	Power Input	Connects to AC power. Use the AC power supply cord supplied with the UPS
C	Power Outlets	Connect equipment to the UPS

Powervar ABC MED Series Power Conditioner

The MARS system uses a variety of models in the Powervar ABC MED series power conditioners. The features and controls are similar among the supported models.



Powervar ABC MED Series Power Conditioner (front view)		
Item	Name	Description
A	Power On/Off Button	Controls power to the isolation transformer
B	Power LED	Indicates the isolation transformer is on and connected to AC power.
C	Safety Ground Missing LED	Indicates that a device connected to the isolation transformer is missing the safety ground.



Powervar ABC MED Series Power Conditioner (rear view)		
Item	Name	Description
A	Power Outlets	Connects equipment to the isolation transformer.
B	Power Inlet	Connects to AC power. Use the AC power supply cord supplied with the isolation transformer.

Monitors

Please refer to the owner's manual that shipped with the monitor for any necessary information.

Monitors		
Size	Brand	Model
17 inch	Compaq	V7550
18 inch	NEC	1880SX
19 inch	NEC	1990SXi
19 inch	HP	L1910
19 inch	HP	LE1911
21 inch	Sony	CPD-G520P

Printers

Please refer to the Owner's Manual that shipped with the printer for any necessary information. .

Printers		
Type	Brand	Model
LaserJet	HP	1200N
LaserJet	HP	P4200N
LaserJet	HP	P4250N
LaserJet	HP	P4015N
Laser	Ricoh	SP4100N

3 Network Setup

For your notes

Introduction

Before beginning this network setup, consult with the hospital Information Technology (IT) department and determine if the site is planning to use workgroups or a domain. If using workgroups, gather the user name, password, and computer name. If using domain, gather the user account domain and computer domain information.

Network Setup for Windows 2000/2003 Systems

MARS system's running Windows 2000 or Windows 2003 are shipped with one user account. Additional user accounts may be added.

Default Factory Setup

At the factory and during a rebuild, all MARS Holter Analysis server, client and standalone systems are setup to use Windows workgroups by default. A new workgroup (MARSWORKGROUP) is set up automatically at the MARS Holter Analysis server to provide secure client access to the drive shares.

A drive share with read/write/execute permission is set up automatically for "<server drive letter>:\gemsit" (with a drive share name of "gemsit") to allow the client to access the reports and slots directories.

The **mei** user account is automatically created and added to the MARSWORKGROUP. All new users added to the MARSWORKGROUP will have access to the drive shares.

IMPORTANT

To protect the MARS™ Holter Analysis System from viruses, the appropriate anti-virus software should be installed before connecting the system to the network. It is recommended that the customer turn on the anti-virus software auto protect option, and keep the virus definitions current to avoid virus infections. Please discuss virus protection with the hospital Information Systems (IS) department before proceeding with the network installation of this equipment.

In addition to installing anti-virus software, it is recommended that the customer limit drive share access for additional virus protection. This can be accomplished by changing the share permissions for the *gemsit* folder. It is recommended that permissions be set for individual users, rather than the entire MARSWORKGROUP or an entire domain. This will change the default factory setup.

Adding New Users to Workgroups

To add a new user to a workgroup you must add the user to the MARS Holter Analysis server and to the MARS Holter Analysis client.

NOTE

For technical support, call the Jupiter Remote On-Line Center at 1-800-558-7044. If you need technical support and you are not in the US, see "How to Reach Us..." at the front of this manual to determine who to contact for technical support.

To verify that the MARS™ Holter Analysis System is operating correctly, complete the "Checkout Procedure" on page 7-3.

Domain Network

If a customer has its own domain controller, the MARS Holter Analysis can be added to the domain. The advantage of using a domain controller over the workgroup is that is allows for centrally controlled user administration.

If you create a new user account on a domain controller, the new account is automatically added as a member of that domain.

Joining MARS Holter Analysis to a Domain

NOTE

This section is only needed if the customer intends to configure the MARS Holter Analysis to join a domain and does not want to use the workgroup default setup.

For technical support, call the Jupiter Remote On-Line Center at 1-800-558-7044. If you need technical support and you are not in the US, see "How to Reach Us..." at the front of this manual to determine who to contact for technical support.

The following are the general steps necessary to add the MARS Holter Analysis to the domain:

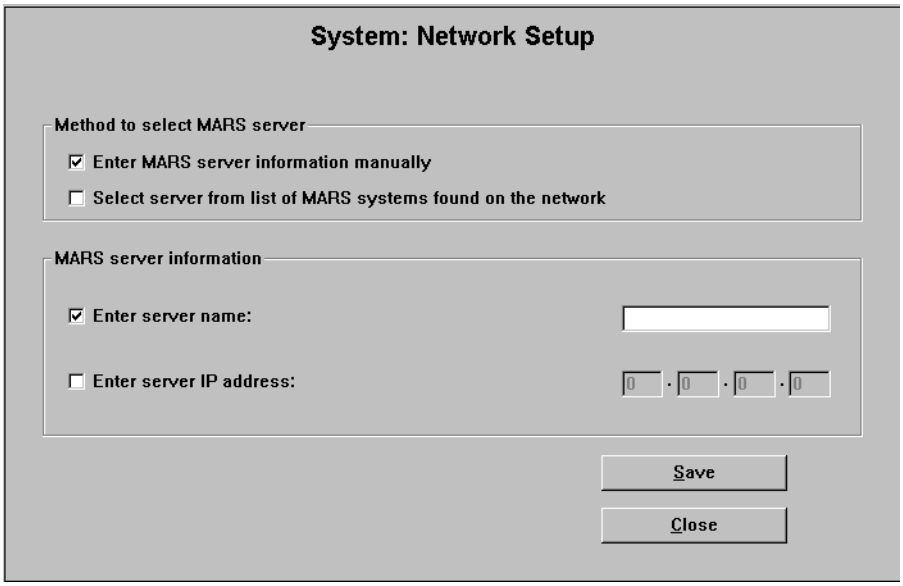
1. The customer must provide the domain name to be used.
2. Add the user names to the domain.
3. Configure the MARS Holter Analysis server and the clients to join the domain.

   NOTE

   Standalone units can also be added to the domain, but there is no advantage to doing this.
4. Configure the *gemsit* drive share on the server with full control permissions for the domain users.
5. Continue with "Network Setup for Clients" on page 3-5.

Network Setup for Clients

Use the following window to set up the client with the server name or server IP address.



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1. Launch the MARS application (see “Power On Procedure” on page 4-4).
2. Select *System* > *System Setup* > *Network*.
3. To enter a server name or IP address, select *Enter MARS server information manually* and then type in the server name or the IP address. Continue with step 4.

   or

   Choose *Select server from list of MARS systems found on the network*.

   a. A progress bar displays as the system searches for all MARS servers on the network.

   b. Select the server to which this client should connect.
4. Select *Save*.
5. To verify that the MARS™ Holter Analysis System is operating correctly, complete the “Checkout Procedure” on page 7-3.

Software Upgrade and Network Setup for Windows NT Systems

Standalone and Client Configurations

1. Determine if the MARS Holter Analysis system has Ethernet capabilities.
2. Add network drivers if necessary.
3. Set up the network.
4. Check out the system.

Ethernet Capabilities

If the system does not have an Ethernet card it cannot be attached to the network or communicate with the MUSE system. There is no network upgrade kit available for these units.

The systems can support the tape acquisition unit if the optional SCSI board is installed. See "Tape Acquisition Unit (Optional Device)" on page 5-9.

Determine if adding Network Drivers is Necessary

All MARS Holter Analysis systems that have a product code of PU have network capability. The PU product code units were manufactured in the United States, and run on a Compaq or Hewlett Packard box. You must confirm that units without the PU product code contain a network card.

Looking at the serial label on the back of the unit to determine:

if the MARS Holter Analysis...	then go to...
has a PU product code	"Software Upgrade and Network Setup for Windows NT Systems" on page 3-7
has catalog number 2006542-002	"Adding Network Drivers" on page 3-7

Adding Network Drivers

If you look at the back of the MARS Holter Analysis system (catalog number 2006542-002) and see an Ethernet connector, the system has network capabilities, but the network drivers must be installed. Use the Installation Guide, part number 2006531-006, for instructions on adding network drivers.

Software Upgrade for Windows NT

Before beginning this setup, consult with the hospital Information Technology (IT) department and determine if the site is planning to use workgroups or a domain. If using workgroups, gather the user name,

password, and computer name. If using domain, gather the user account domain and computer domain information.

NOTE
This section is for upgrading a MARS Holter Analysis standalone workstation to a client configuration, or to a new standalone configuration that has networking capabilities. The system must be running software revision 5.10 or higher to upgrade to version 7.

NOTE
See "Configuration Options" on page 2-6 for information about the standalone and client configurations. Windows NT does not support the MARS server software.

Enter Administrator Mode

You must be logged on as the administrator before performing software upgrades.

1. Determine the manufacturer name that appears on the front of the system box.
2. Reboot the system and log on as the administrator.
   - If you have a MARS Holter Analysis running on a Compaq or Hewlett Packard box:
     at the *user name* and at the *password* prompt, type **mei**.
     or
   - If you DO NOT have a Compaq or Hewlett Packard box:
     at the *user name* prompt, type **MHDAdmin** and at the *password* prompt, type **notnagel**.

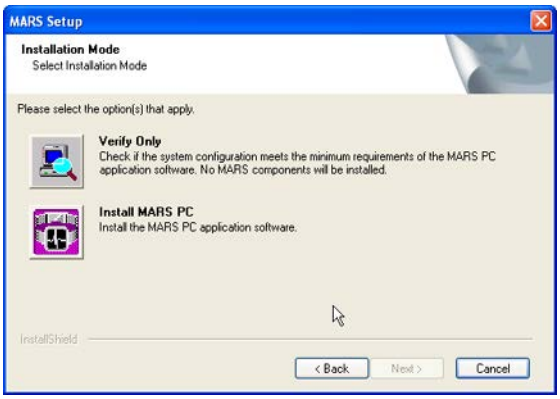
Begin Upgrade

NOTE
Depending on whether this is an upgrade or a new installation, some screens during the installation wizard may not be required. The installation procedure below is for a new installation. If any step does not appear during the installation process, go on to the next step.

Do not run any other applications while installing MARS Holter Analysis software. Close all windows before inserting the application CD.

1. The PC must be in Administrator Mode to load software. See "Enter Administrator Mode" on page 3-8.
2. Install the MARS dongle.
3. Insert the MARS Holter Analysis application CD into the CD drive. Allow the MARS installation program to start automatically.
4. Choose the desired language from the *Choose Setup Language* window and click *Next*.
5. The *Installing Dongle Drivers* message displays for about 7 seconds.
6. Click *Next* at the *Welcome to the InstallShield for MARS* window.

7. Read the *License Agreement*, and if you agree, click *Yes*.
8. The Installation Mode window is displayed.



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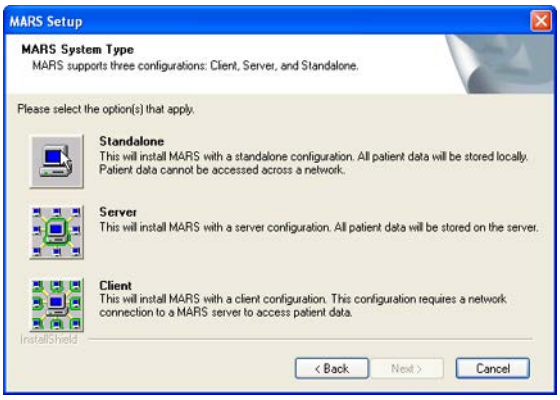
9. Click the *Verify Only* icon.
10. Click the *MARS System Type* icon to scan the computer for minimum requirements needed for that system type.



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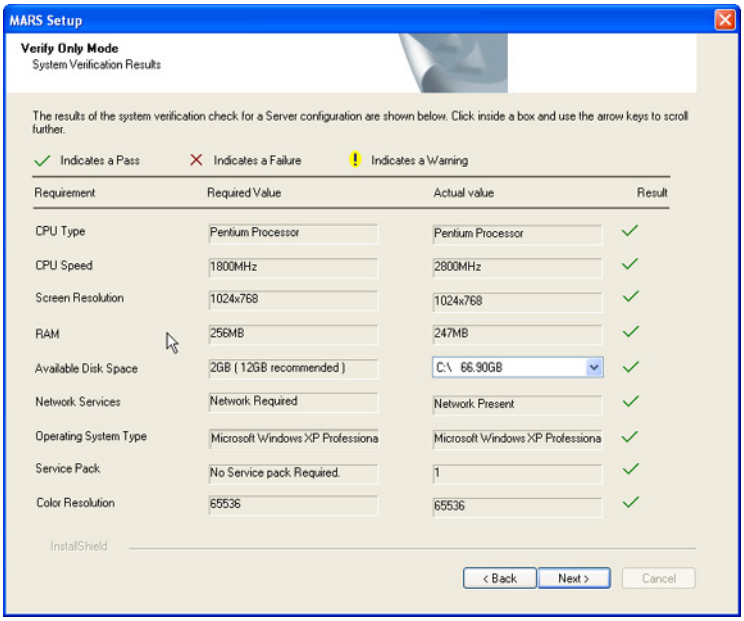
11. View the *System Verification Results* to verify that the computer has the minimum requirements to install MARS v7.



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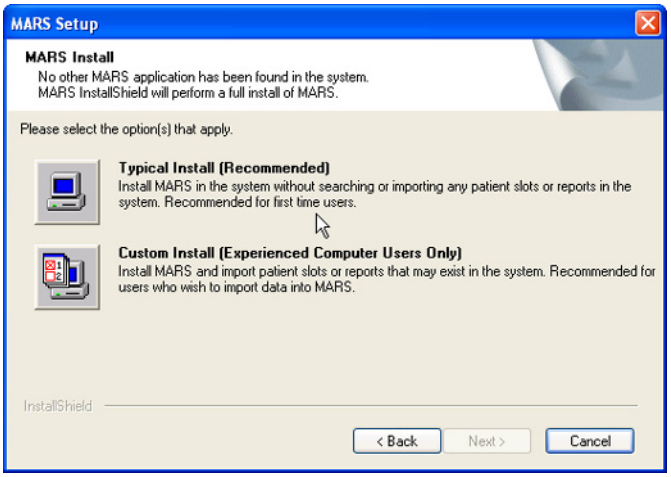
12. Click *Back* and then *Back* again to go back to the installation wizard.

    NOTE

    Click *Next* and then *Print* to capture the report in SnagIt and save the report as a JPEG image. Then click *Finish* to exit the installation wizard. If you choose to print the report, you must start the installation from the beginning.

13. Click the *Install MARS PC* icon.
14. At the *MARS Install* window, select either *Typical install or Custom Install*.



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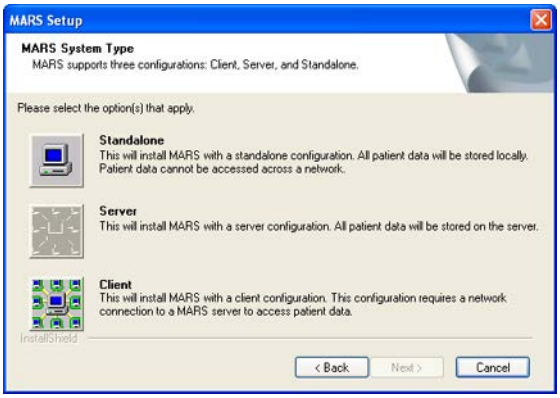
15. Select the *MARS System Type*.



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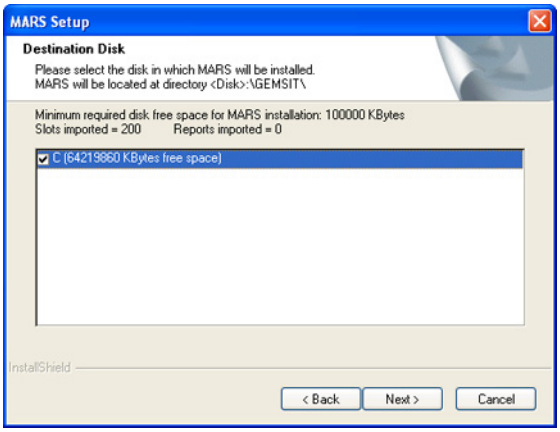
16. Click *Next* at the *Destination Disk* window.



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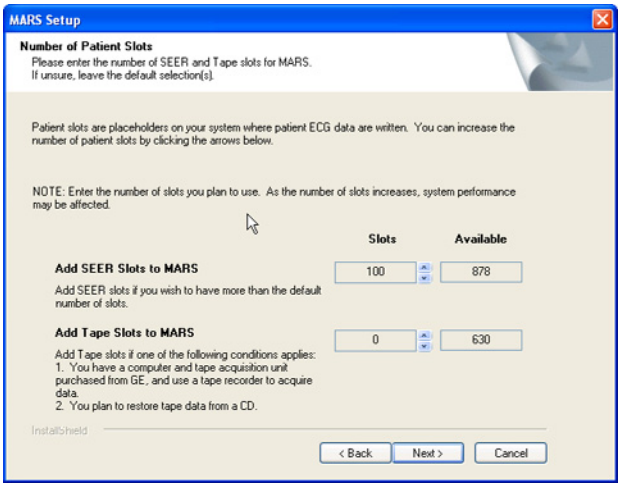
NOTE

Click *Yes* if you get a popup stating *The directory where MARS will be installed already exists*.

17. Select the desired number of *SEER Slots* and *Tape Slots* for MARS and click *Next*.



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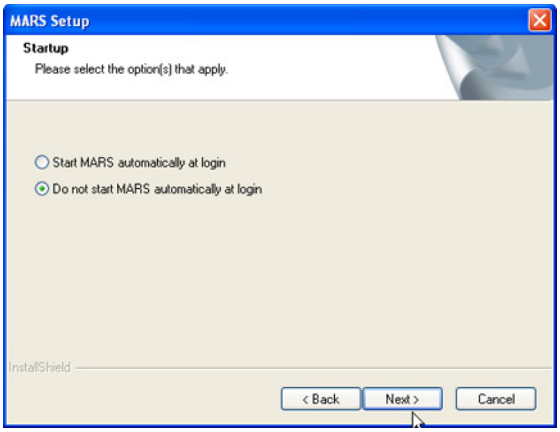
18. Select the *OmniDrive Driver Setup* for the MARS system:

- *OmniDrive USB Professional* – for use with a USB port. If USB is

stated on the OmniDrive device, select this option.

- *OmniDrive Professional* – for use with a parallel port

19. Select the desired *Startup* option and click *Next*.



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    a. Messages pop up indicating the installation of *Flash Card Reader*, *PKZip*, and *pcAnywhere*.

    b. The MARS installation begins.

    c. The installation may take from 5 to 15 minutes. Do not interrupt the installation.

20. At the *Would you like to view the installation report?* prompt, click:

    - *Yes* – to print the installation report to SnagIt
    - *No* – to skip the installation report

21. Select *Yes, I want to restart my computer now* and click *Finish*.

    The computer restarts. MARS v7 is now installed.

22. Remove the CD from the drive and store it in a secure location.

23. Go to "Verify Software Version" on page 3-12.

Verify Software Version

24. Start the MARS Holter Analysis application.

    a. Click on *Help.*

    b. Click on *About.*

    c. Verify that the correct revision appears.

NOTE

If any other revision appears, call GE Healthcare technical support.

25. The upgrade is complete.

    Go to "Network Setup for Windows NT" on page 3-13.

Network Setup for Windows NT

1. Right-click *Network Neighborhood* on the desktop.
2. Select *Properties*.
3. Select *Protocols*.
4. If *TCP/IP Protocol* is listed, right-click on it and select *Properties*. Proceed to step 6.
5. If *TCP/IP Protocol* is not listed, select *Add*.
   a. Select *TCP/IP Protocol*.
   b. Select *OK*.
   c. Select *Yes* or *No* to DHCP Question.
   d. Click *Continue* at the *Windows NT Setup* window.
   e. Click *Close* in the Network window.
6. If using DHCP, select *Obtain an IP address from a DHCP Server* and select *OK*.

   Or

   If not using DHCP:

   a. Enter the *IP address*, *Subnet mask*, and *Default gateway* information.
   b. Select *OK*.
7. Select *Yes* at the *Restart your computer?* window.
8. Logon to the computer as the administrator.
9. Right-click *Network Neighborhood* on the desktop.
10. Select *Properties*.
11. Select the *Identification* tab.
12. Select *Change*.
13. Enter your unique *Computer Name*.
14. If you select *Workgroup*, enter a unique workgroup name or to add MARS workgroup, type **MARSWORKGROUP**.

    Or

    If you select *Domain*, enter the domain name given by the hospital IT department.
15. Select *OK*.
16. Select *Close*.
17. At the *Restart* message, click *Yes*.
18. Go to “Network Setup for Clients” on page 3-5 to complete the network setup for the client.

For your notes

4 Maintenance

For your notes

Introduction

Maintenance Guides

For further information please reference the appropriate OEM manuals for the recommended maintenance of their product. To download OEM manuals please see “OEM Documentation and Support” on page 1-6.

For technical support, call the Jupiter Remote On-Line Center at 1-800-558-7044. If you need technical support and you are not in the US, see “How to Reach Us...” at the front of this manual to determine who to contact for technical support.

Items Requiring Maintenance

- MARS Holter Analysis client
- MARS Holter Analysis server
- MARS Holter Analysis standalone
- Monitor
- DVD-RW or CD-RW Drive
- Printer
- UPS or Isolation Transformer

Recommended Maintenance

GE Healthcare recommends that you perform the tests described in this chapter:

- Every 6 months as part of routine maintenance
- Whenever internal assemblies are serviced
- More frequently if indicated

A regular equipment maintenance program helps prevent unnecessary equipment and power failures and also reduces possible health hazards. This chapter contains instructions for the following recommended maintenance:

- Inspecting and cleaning the equipment
- Domestic electrical safety tests
- Workstation power supply test
- Checkout procedure

NOTE

Unless you have an Equipment Maintenance Contract, GE Healthcare does not assume the responsibility for performing the recommended maintenance procedures. The sole responsibility rests with the individual or institution using the equipment. GE Healthcare service personnel may, at their discretion, follow the procedures provided in this manual as a guide during visits to the equipment site.

Required Tools and Supplies

In addition to a standard set of hand tools, you will need the special tools and items listed below to maintain or check out the system.

Table 21. Required Tools and Supplies

Item	Part Number
DVOM	N/A
Leakage current tester	MT-1216-01 (120V), MT-1216-02 (240V), or equivalent
CD-ROM Cleaning Kits	416627-001
Tape Cleaning and Demagnetizer kit (Used on tape acquisition unit)	3613-902
Holter Installation Tape	3613-602

Power On Procedure

1. Turn on the workstation.
2. Turn on the monitor power switch. Several screens appear momentarily.

   NOTE
   Watch for error messages on the screen. Reference the OEM Troubleshooting Guide that shipped with the MARS™ Holter Analysis System. The Troubleshooting Guide is also available on the Internet. For more information, see “OEM Documentation and Support” on page 1-6.

3. If using a local parallel printer, turn on the local parallel printer.
4. Press **Crtl** + **Alt** + **Delete** to access the logon window. Use the defaults to logon. (The defaults can be changed. Contact the system administrator if these logons do not work.)
   - *User Name* is **mei**
   - *Password* is **mei**
5. Click *OK*. The MARS Holter Analysis application screen appears.

   NOTE
   The MARS Holter Analysis application screen appears only if this option was selected during the software installation.

Safe Shutdown Procedure

CAUTION
It is important to exit the MARS application before shutting down the system. Failure to do so may result in the loss of data and damage to the MARS workstation.

NOTE
After exiting the MARS application, the remaining shutdown steps are the standard Windows shutdown procedure. Follow the standard process for shutting down the computer.

1. If you are shutting the computer down prior to MARS logon, hold down the following keys simultaneously: **Ctrl + Alt + Delete** and skip to step 5. If you need to exit the MARS application, begin with step 2.
2. Click *System* on the menu bar.
3. Click *Exit* on the pulldown menu. The MARS application will close.
4. Click *Start* located in the lower left corner of the display.
5. Select *Shut Down*.
6. Select *Shut down* from the pull-down list.
7. Select *OK*.

Inspection and Cleaning

Visual Inspection

Perform a visual inspection regularly. Turn off the unit and remove power before making an inspection or cleaning the unit.

- Check the case and display screen for cracks or other damage.
- Regularly inspect all cords and cables for fraying or other damage. Perform safety tests on any repaired line cords.
- Inspect all plugs, cables, and connectors for bent prongs or pins.
- Verify that all cords, socketed components, and connectors are securely seated.
- Inspect keys and controls for proper operation.
  - Power switches should not stick in one position.

Check Cooling Fans

Check operation of fans in:

- client workstation
- server workstation
- standalone workstation

With the workstation operating verify that all fans contained in the unit are operating properly.

Cleaning Precautions

Turn off the unit and remove all power before inspecting or cleaning.

Do not immerse any part of the equipment in water.

Do not use organic solvents, ammonia based solutions, or abrasive cleaning agents which may damage equipment surfaces.

Ventilation

Position the workstation to ensure adequate ventilation. Poor ventilation can cause overheating and damage system components.

- Do not place the workstation in a position where the ventilation holes in the front and rear are blocked or restricted.
- Do not place the system near ducts, pipes or equipment that generate heat.

Exterior Cleaning

Clean the exterior surfaces once per month, and more frequently if needed, with a clean, soft cloth and a mild dishwashing detergent diluted in water.

- Wring the excess water from the cloth. Do not drip water or any liquid on open vents, plugs, or connectors.
- Dry the surfaces with a clean cloth or paper towel.

Cleaning the Monitor Screen

NOTE
Never use abrasive materials to clean the screen. They can damage the anti-reflective coating.

Wipe the screen with a soft, dry, clean cloth to remove dust.

To remove fingerprints and other soil:

1. Wipe the screen with a soft cloth moistened with a solution of isopropyl alcohol, water and mild detergent.
2. Rinse the screen immediately with a cloth dampened with clean water.
3. Dry the screen with a soft, clean cloth.

Cleaning the System Interior

WARNING
Turn off power and disconnect power cord from AC power source before removing the cover.

The factory seals the equipment before it leaves. There should be no dust buildup on the surfaces of the interior PCB assemblies and components when you receive it.

Follow these steps to clean the system interior.

1. Power off the workstation by following the “Safe Shutdown Procedure” on page 4-5.
2. Unplug the AC power cord.
3. Remove the system cover to clean the interior. See the OEM’s Service Manual for detailed information.
4. Replace the cover.

Cleaning the CD-RW Drive or DVD-RW Drive

Follow these steps to clean the CD-RW or DVD-RW drive.

1. Open the CD-RW or DVD-RW drive.
2. Insert the cleaning disk, brushes down, into the drive.
3. Close the CD-RW or DVD-RW drive. The activity led blinks for about 10 seconds.
4. Remove the cleaning disk from the drive.
5. Close the CD-RW or DVD-RW drive

Cleaning the Printer

For maintenance please see the OEM User's manual that shipped with the printer. The manual can also be located on the OEM website. For further information please see "OEM Documentation and Support" on page 1-6.

Cleaning the Tape Acquisition Unit

Cleaning and inspecting the tape acquisition unit involves several steps, including:

- Demagnetizing and cleaning the tape acquisition unit
- Cleaning the tape acquisition unit interior

NOTE
Demagnetize the tape acquisition unit, clean the tape drive, and check out the tape acquisition unit on a weekly basis.

Cleaning and Demagnetizing the Tape Drive

The cleaning and demagnetizing kit (PN 3613-902) performs cleaning of the audio head and demagnetization simultaneously, removing contaminants and magnetism build up.

NOTE
While running, the cleaning cassette will emit a buzzing sound much louder than a normal tape. This is normal and does not indicate a problem with the unit.

1. Insert the cleaning cassette into the tape acquisition unit. Gently push the cleaning cassette into the drive opening until the cleaning cassette clicks into place.
2. Turn release lever to its up position.
3. The *Tape Download/Analysis Options* window appears and the cleaning tape runs briefly (less than a second) and stops.

   NOTE
   An error message may appear, if the correct slot type is not available or all slots are full. Click *Cancel* in the error message box. The message box will disappear and the cleaning cassette will run normally.

If the cleaning cassette continues to run for more than a few seconds, click *Cancel* in the *Tape Download/Analysis Options* window. This will stop the cleaning process. Contact MARS Holter Analysis technical support.

4. Click *Cancel* in the *Tape Download/Analysis Options* window. The *Tape Download/Analysis Options* window closes.
5. Push tape lever down to eject tape.

Interior Cleaning

The factory seals the equipment before it leaves. There should be no dust buildup on the surfaces of the interior PCB assemblies and components when you receive it.

However, if dust is an environmental problem, use a commercially available dust remover (compressed air). Follow the manufacturer's directions for its use.

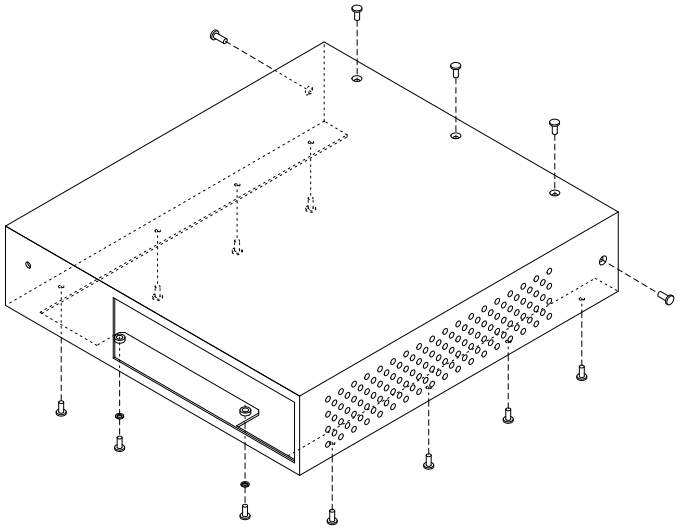
WARNING
Only qualified personnel should dissemble this unit.

Turn off the power and disconnect power cord from the AC power source before removing the cover.

Opening the Unit

1. Power off the workstation.
2. Turn off the tape acquisition unit power switch.
3. Disconnect the tape acquisition unit power cord from the back of the UPS.
4. Remove the fifteen retaining screws from the tape acquisition unit.

NOTE
The tape acquisition unit uses fifteen screws to secure the cover in place. To reduce EMI emissions, replace all fifteen screws securely when reassembling the unit.



5. Remove the tape acquisition unit cover. Slide the tape acquisition unit cover forward.

Reassembling the Unit

1. Slide the tape acquisition unit cover over the front of the tape acquisition unit.
2. Install the fifteen retaining screws to secure the cover to the unit. Hand tighten all screws.

   NOTE
   The tape acquisition unit uses fifteen screws to secure the cover in place. To reduce EMI emissions, replace all fifteen screws securely when reassembling the unit.

3. Turn on the tape acquisition unit.
4. Power on the workstation. See “Power On Procedure” on page 4-4.

UPS

Battery replacement is recommended every 3-6 years. Please see the OEM User’s Guide for the battery replacement procedure.

Checkout Procedure

Follow the “Checkout Procedure” on page 7-3.

5 Troubleshooting

For your notes

Theory of Operation

The theory of operation provides a very broad overview of the system hardware and the various MARS Holter Analysis configurations.

Configurations

There are three different MARS Holter Analysis network configurations available using a standard Ethernet TCP/IP network. The MARS Holter Analysis can be configured as a client, a server, or a standalone unit.

Standalone

The MARS Holter Analysis standalone stores patient data locally, and the saved patient reports can be sent to a MUSE server across the network. The MARS Holter Analysis standalone cannot receive patient data from other MARS systems.

Client

The MARS Holter Analysis client allows reports to be edited and printed. The MARS Holter Analysis client-server configuration allows the MARS Holter Analysis clients to access and automatically send patient data to the MARS Holter Analysis server via the network. Patient reports can be sent to a MUSE server.

Server

MARS Holter Analysis servers store the patient data, and “serve” file requests from other MARS Holter Analysis clients on the network. All patient data will be stored on the MARS Holter Analysis server and can be accessed by MARS Holter Analysis clients. The server can support a maximum of 25 MARS Holter Analysis clients. The patient reports can also be sent to a MUSE server.

System Hardware

The system hardware components include a motherboard, CPU processor(s), hard drive or drives, physical RAM, an internal CD-RW or DVD-RW drive, floppy diskette drive, two separate Ethernet network adapters, and a power supply.

It also contains audio ports, an internal speaker, parallel ports, serial ports, and USB ports. PCI expansion slots connect directly to the system BUS and allow for additional network interface cards and other devices.

The motherboard contains the main ethernet interface for connecting to the network. MARS non-realtime devices, such as printers or RSS access units, have independent ports.

General Fault Isolation

Assistance

For technical support, call the Jupiter Remote On-Line Center at 1-800-558-7044. If you need technical support and you are not in the US, see “How to Reach Us...” at the front of this manual to determine who to contact for technical support.

First Things to Ask

If the unit is not working properly, start by asking yourself these basic questions.

1. Are the unit and all peripherals turned on?
2. Have there been any changes in the use, location, or environment of the equipment that could cause the failure?
3. Has the unit been modified in any way, either in software or hardware?
4. Is operator error the cause of the problem? Try to repeat the user’s scenario exactly and compare that to the proper operation of the equipment. Check the operator’s manual as necessary.

Visual Inspection

A thorough visual inspection of the equipment can save time. Small things — disconnected cables, foreign debris on circuit boards, missing hardware, loose components — can frequently cause symptoms and equipment failures that may appear to be unrelated and difficult to track.

Read the disassembly guidelines in the product’s OEM manual before you perform an internal visual inspection of the components.

Take the time to make all the recommended visual checks (refer to the following visual inspection chart) before starting any detailed troubleshooting procedures.

Table 22. Visual Inspection List

Area	Look for the following problems
I/O Connectors and Cables	■ Fraying or other damage ■ Bent prongs or pins ■ Cracked housing ■ Loose screws in plugs
Interface Cables	■ Excessive tension or wear ■ Loose connection ■ Strain reliefs out of place

Table 22. Visual Inspection List (Continued)	
Area	Look for the following problems
Circuit Boards	■ Moisture, dust, or debris (top and bottom) ■ Loose or missing components ■ Burn damage or smell of over-heated components ■ Socketed components not firmly seated ■ PCB not seated properly in edge connectors ■ Solder problems: cracks, splashes on board, incomplete feedthrough, prior modifications or repairs
Ground Wires/ Wiring	■ Loose wires or ground strap connections ■ Faulty wiring ■ Wires pinched or in vulnerable position
Mounting Hardware	■ Loose or missing screws or other hardware, especially fasteners used as connections to ground panes on PCBs
Power Source	■ Faulty wiring, especially AC outlet ■ Circuit not dedicated to system ■ (Power source problems can cause static discharge, resetting problems, and noise.)

Platform-specific Guidelines

For platform-specific guidelines, refer to the OEM service manuals and troubleshooting guides for troubleshooting the MARS™ Holter Analysis System. The OEM troubleshooting guide is shipped with the unit and is also available on the OEM website. For further information see “OEM Documentation and Support” on page 1-6.

For technical support, call the Jupiter Remote On-Line Center at 1-800-558-7044. If you need technical support and you are not in the US, contact your GE Healthcare representative.

Platform-specific Error Codes

For a list of Power-On-Self-Test (POST) messages please reference the OEM troubleshooting guide that shipped with the MARS™ Holter Analysis System. The troubleshooting guide is also available on the OEM website. For further information please see “OEM Documentation and Support” on page 1-6.

Replacing Workstation Hardware and Peripherals

Use the troubleshooting process located in the OEM service manual for the additional SCSI, serial, and parallel boards. See “Replacing SCSI, Serial or Parallel (LPT) Boards” on page 5-6 for additional board locations.

See the OEM service manual for additional detailed instructions. If you have a question that is not answered in the OEM service manual or if you would like further assistance, call the Jupiter Remote On-Line Center at 1-800-558-7044. If you need technical support and you are not in the US, see “How to

Reach Us...” at the front of this manual to determine who to contact for technical support.

Replacing SCSI, Serial or Parallel (LPT) Boards

The information provided for replacing SCSI, serial or parallel (LPT) boards applies to Compaq Evo D510, Hewlett Packard (HP) D530 CMT, and HP dc7100 CMT platforms only. They do not apply to the HP dc7600 CMT, the HP dc5750, or the HP rp5700 systems.

Confirm you have the correct location before removing and replacing any circuit boards.

NOTE

The image will not work if the mother board configuration below is not followed.

The parallel (LPT) board has an additional connector (referred to as LPT 3) on it, which the card reader plugs into. The parallel (LPT) board plugs into the PCI 2 mother board slot. See the Mother Board Slots table below for more information.

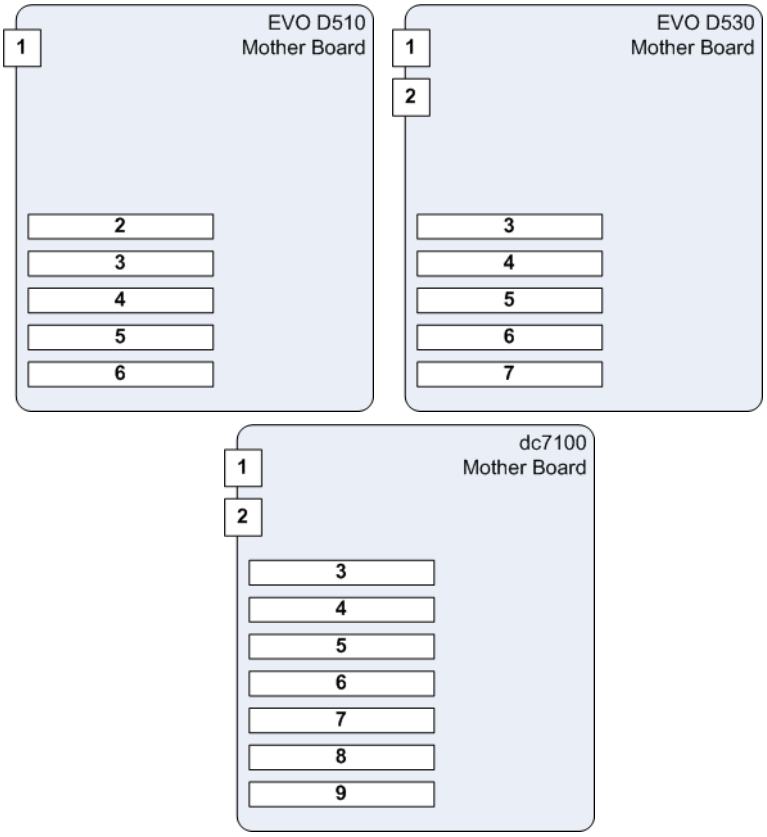


Table 23. Mother Board Slots			
#	D510	D530	dc7100
1	Serial Port. Connects to UPS / Isolation Transformer	Serial Port. Connects to modem.	Serial Port. Connects to UPS / Isolation Transformer
2	PCI Slot: Contains SCSI board. Connects to optional tape acquisition device	Serial Port. Connects to UPS / Isolation Transformer	Parallel Port. Connects to printer.
3	PCI Slot. Contains parallel port; connects to printer.	PCI Slot: Contains SCSI board. Connects to optional tape acquisition device	PCI Slot: Contains Serial Port. Connects to modem.
4	PCI Slot. Empty	PCI Slot. Contains parallel port; connects to printer.	PCI Slot. Empty
5	PCI Slot: Contains Serial Port. Connects to modem.	PCI Slot. Empty	PCI Slot: Contains SCSI board. Connects to optional tape acquisition device
6	PCI Slot Contains spare Serial Ports.	PCI Slot. Empty	PCI Slot Contains spare Serial Ports
7		PCI Slot Contains spare Serial Ports	PCI Slot. Empty
8			PCI Slot. Empty
9			PCI Slot. Empty

Monitor

The monitor is a field replaceable unit.

Fault Detection

If the monitor is not working correctly, try the following:

- Verify the power and video connections.
- Follow the shutdown procedure in “Safe Shutdown Procedure” on page 4-5, to shutdown the system; then power the system on again.
- Reference the manual that came with the monitor.
- Contact tech support for further assistance.

Keyboard

The keyboard is a field replaceable unit.

Mouse

The mouse is a field replaceable unit.

Printer

The printer is a field replaceable unit.

For troubleshooting please see the OEM User’s manual that shipped with the printer. The manual can also be located on the Hewlett Packard website. For further information please see “OEM Documentation and Support” on page 1-6.

Isolation Transformer

The isolation transformer is a field replaceable unit.

For troubleshooting please see the OEM manual that shipped with the UPS. The manual can also be located on the manufacturer’s website. For further information please see “OEM Documentation and Support” on page 1-6.

If the isolation transformer is not working correctly, do the following:

1. Verify the connections.
2. Verify the wall outlet is not faulty by plugging the unit into a different outlet. Have a qualified electrician repair any faulty outlets.
3. If necessary, contact technical support for further assistance.

Uninterruptible Power Supply

The UPS is a field replaceable unit.

For troubleshooting please see the OEM manual that shipped with the UPS. The manual can also be located on the manufacturer's website. For further information please see "OEM Documentation and Support" on page 1-6.

NOTE
Only use the serial cable which was shipped with the UPS.

If the UPS is not working correctly, do the following:

1. Verify the connections.
2. Verify the wall outlet is not faulty by plugging the unit into a different outlet. Have a qualified electrician repair any faulty outlets.
3. Press and hold the **test** button for three seconds. If the **test** LED illuminates see the "Troubleshooting" section of the OEM manual for further information.
4. If necessary, contact technical support for further assistance.

RSS Analog Modem

The RSS modem is a field replaceable unit.

The MARS™ Holter Analysis System uses a non-networked analog modem for Remote System Support (RSS). The RSS access unit allows GE Healthcare to maintain, and if necessary, to diagnose and to repair the workstation software in a timely manner.

Fault Detection

If the modem is not working correctly, do the following:

1. Verify the connections.
2. Verify the power supply plugged into the modem is working.
3. Verify the software is running by:
   a. Select *Control panel.*
   b. Select *Services*.
   c. Verify *pcAnywhere Host Service* has a status of *Started*.

      If necessary start the Host service and configure it to start automatically.
4. Contact technical support to verify that they can remotely access the system.

Tape Acquisition Unit (Optional Device)

The tape acquisition unit is a field replaceable unit.

The tape acquisition is an optional device. The acquisition unit reads and downloads 8500 tapes to the MARS™ Holter Analysis System.

The HP dc7600 CMT, HP dc5750, and HP rp5700 do not support the tape acquisition unit.

Fault Detection

If the tape acquisition unit is not working correctly, do the following:

1. Verify the connections.
2. If necessary, follow the shutdown procedure in "Safe Shutdown Procedure" on page 4-5, to shutdown the system; then power the system on again.

   Refer to the operator's manual for the correct shut down procedures.
3. Verify data from a tape can be acquired.

   NOTE
   Refer to the MARS Holter Analysis operator's manual for further assistance on acquiring data from the tape acquisition unit.

Replace / Install the SCSI Board for the Tape Acquisition Unit

The SCSI board/tape acquisition unit is available in two separate kits:

- Domestic Kit – See Table 15, "SCSI Board for Tape Acquisition (Domestic) Kit PN 2026559-001 (not compatible with HP dc7600 CMT systems)," on page 8-11 for ordering SCSI boards and Tape Acquisition units with a 110v internal power supply.
- International Kit – See Table 16, "SCSI Board for Tape Acquisition (International) Kit PN 2026559-002 (not compatible with HP dc7600 CMT systems)," on page 8-11 for ordering SCSI boards and Tape Acquisition units with a 220v internal power supply.

CAUTION
Electrostatic discharge (ESD) can harm the SCSI board. The following guidelines help protect the board.

- Discharge any static charge you may have built up before handling the SCSI board. (Touch a metal surface to discharge a spark.)
- Handle the SCSI board by its edges. Do not touch the semi-conductor components on the board.

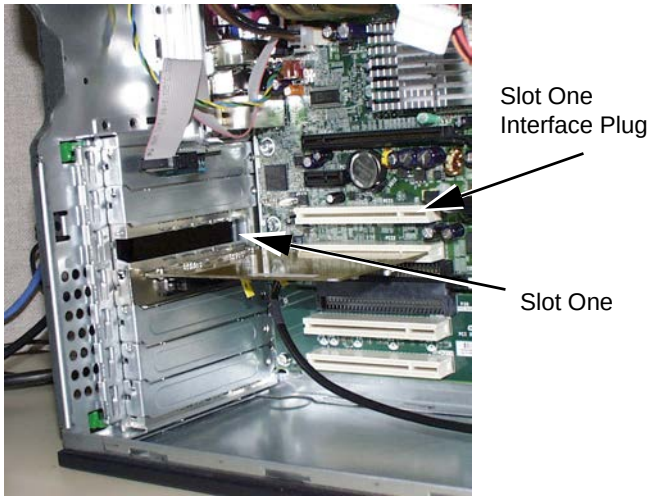
The SCSI board installation applies to all three hardware systems with one difference. For:

- HP dc7100 – install the SCSI board into slot 1 (as shown in the picture below).

- Compaq D510 and HP D530 – install the SCSI board into slot 1 (if not already being used). If slot 1 is already used, install in any available slot with an interface plug.

1. Shutdown the MARS™ Holter Analysis System, turn off the power, and remove the power cord.
2. Remove the side cover.
3. Remove the cover from slot 1. (Or an available slot if D510 and D530.)

   NOTE
   The picture below shows an HP dc7100 system with a hinged locking device for the slot covers. Other systems may have a screw fastener for the slot covers.



4. Align the plug of the SCSI board with the interface plug and, using an even pressure along the edge of the SCSI board, gently press the SCSI board into place.
5. Fasten the SCSI board into the slot using the slot fasteners.
6. Plug in the power cord.

BIOS Setup

The BIOS setup applies to all three hardware systems, with one difference during the first step.

1. Boot up the system and during system boot perform one of the following for the appropriate hardware:
   - For dc7100 – press **Esc** key when the *HP Invent* blue screen is displayed.
   - For D510 and D530 – Press **Ctrl + A** to enter the *Adaptec SCSISelect* utility, when *Adaptec SCSI* messages are displayed.
2. Using the arrow keys highlight *29320 A* device and press **Enter** to configure.

3. If *Disable HostRAID Support* option is not displayed, using arrow keys highlight *Configure/View SCSI Controller Settings* and press **Enter**.
4. Using arrow keys highlight *Disable HostRAID Support* option if it is displayed and press **Enter**.
5. Press **Esc** (twice, if you were in *Controller Settings* screen) to return to the SCSI device selection screen.
6. Using the arrow keys highlight *29320 B* device and press **Enter** to configure.
7. If *Disable HostRAID Support* option is not displayed, using arrow keys highlight *Configure/View SCSI Controller Settings* and press **Enter**.
8. Using arrow keys highlight *Disable HostRAID Support* option if it is displayed and press **Enter**.
9. Press **Esc** (twice, if you were in *Controller Settings* screen) to return to the *SCSI device selection* screen.
10. Press **Esc** to exit the *Adaptec SCSISelect* utility.
11. Select **Yes** and press **Enter** to exit the utility and reboot the system.

The Tape Acquisition unit can now be connected to the MARS Workstation.

Card Reader – Omni Drive (Optional Device)

The card reader is a field replaceable device.

Some MARS™ Holter Analysis Systems are shipped from the factory with an internal card reader device. Other MARS™ Holter Analysis Systems are shipped from the factory with an external card reader device. The card reader reads and downloads SEER MC and SEER Light data cards to the MARS™ Holter Analysis System.

Fault Detection

If the card reader device is not working correctly, do the following:

1. Verify the connections.
2. If necessary, follow the shutdown procedure in “Safe Shutdown Procedure” on page 4-5, to shutdown the system; then power the system on again.
3. Verify the SEER Light data can be acquired.

   NOTE
   Refer to the MARS Holter Analysis operators manual for further assistance on acquiring data from a SEER device.

Replacing the Internal Omni Drive Card Reader

When replacing the internal card reader:

1. Connect the ribbon cable to the LPT-3 connector. The LPT-3 connector is on the parallel port extension card, which is located inside the EVO

D510 and EVO D530 system. See “Replacing SCSI, Serial or Parallel (LPT) Boards” on page 5-6 for additional information.

2. Connect the power connector on the card reader to the power supply.

Installing / Replacing the External Omni Drive Card Reader

There is no power connection for the external Omni Drive card reader; it receives power via the USB port.

NOTE
The USB card reader cannot be used with Windows NT systems.

1. If installing the card reader for the first time:
   a. Connect the USB cable to any USB port.
2. If replacing the card reader:
   a. Remove the old USB OmniDrive unit, noting the port to which it was connected.
   b. Connect the USB cable from the new USB OmniDrive to the same USB port where the old one was connected.
3. If necessary, logon to the system.
4. The *Found New Hardware* window will appear. If the Hardware Wizard asks for OmniDrive software, insert the MARS Holter Analysis Support CD. Browse to the location of the OmniDrive software.

   NOTE
   If the card reader (Omni Drive) drive letter assigned is other than *O:* it will have to be changed:

   a. Right-click on the *My Computer* icon on the desktop. Select *Manage*.
   b. Click on *Disk Management.*
   c. Right-click on *Disk 1 Removable* and **s**elect *Change Drive Letter.*
   d. Select *Edit.*
   e. Select *O:.*
   f. Click *OK.*
   g. Click *Yes.*
   h. Close the *Computer Management* window.

DVD-RW, CD-RW, or Floppy Drive

The DVD-RW, CD-RW and floppy drives are field replaceable units.

For troubleshooting please see the OEM User’s manual. The manual is available on the website. For further information please see “OEM Documentation and Support” on page 1-6.

If the device is not working properly, do the following:

1. Verify that the device can archive data to the correct media. Reference the MARS Holter Analysis operators manual for further assistance on archiving data.
2. Verify the connections.
3. If necessary, follow the shutdown procedure in “Safe Shutdown Procedure” on page 4-5, to shutdown the system; then power the system on again.
4. If still not working, replace the unit.

SEER Light Connect Device

WARNING

LEAKAGE CURRENT—Electrical shock to patient could result from component failure and lack of power isolation.

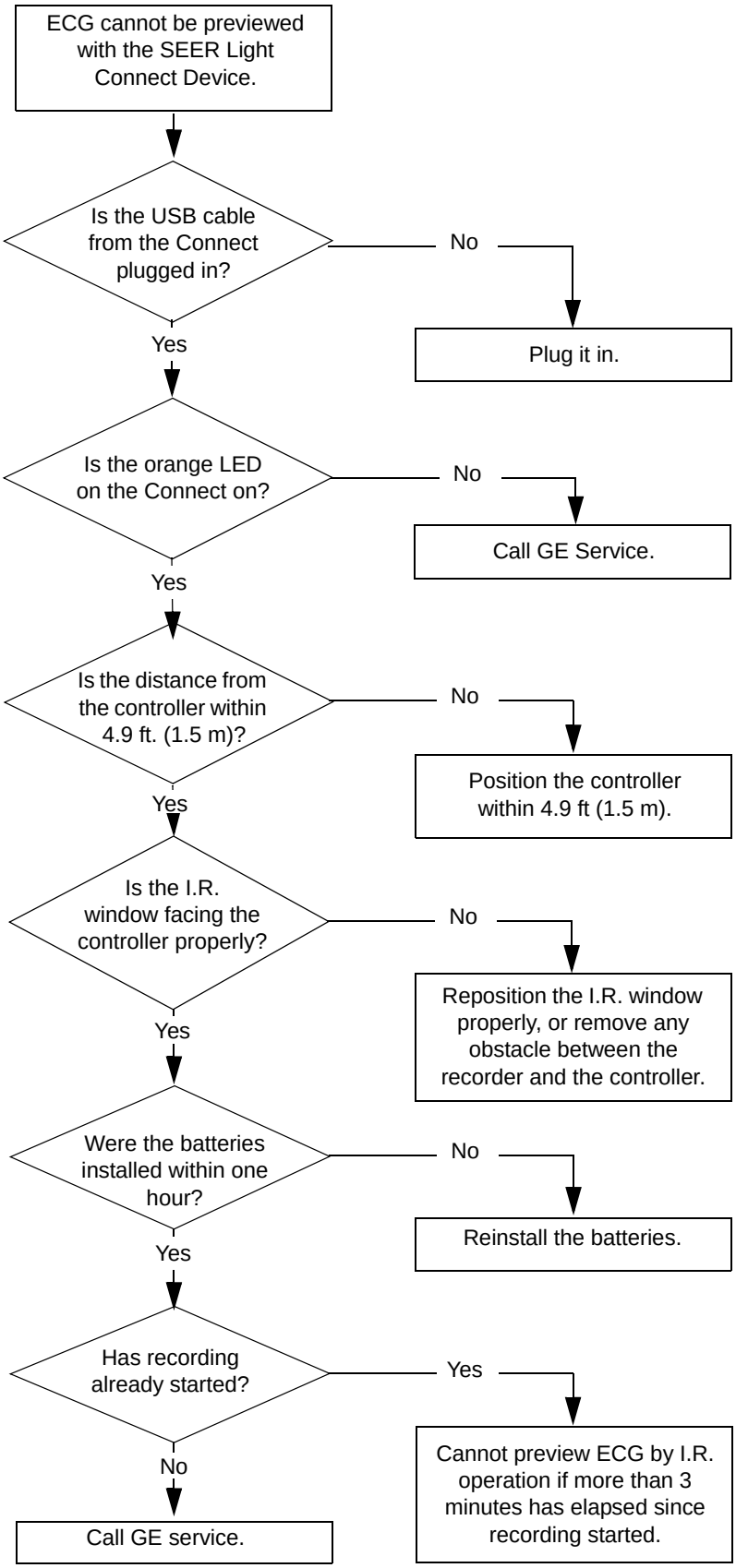
In the event this system is used in the patient vicinity, it must be configured in such a way that it and all of its electrically-connected peripheral devices are isolated from mains power to prevent excessive leakage current to the patient. This can be accomplished through the use of isolated mains power, or a medical grade isolation transformer (in compliance with UL 60601, CAN/CSA C22.2 No. 601.1, IEC 60601-1) with this system. All non-medical peripheral devices shall comply with IEC and ISO safety standards that are relevant to that equipment (i.e., IEC 60950, UL 60950).

Use of the SEER Light Connect device in the patient vicinity requires that these measures are observed.

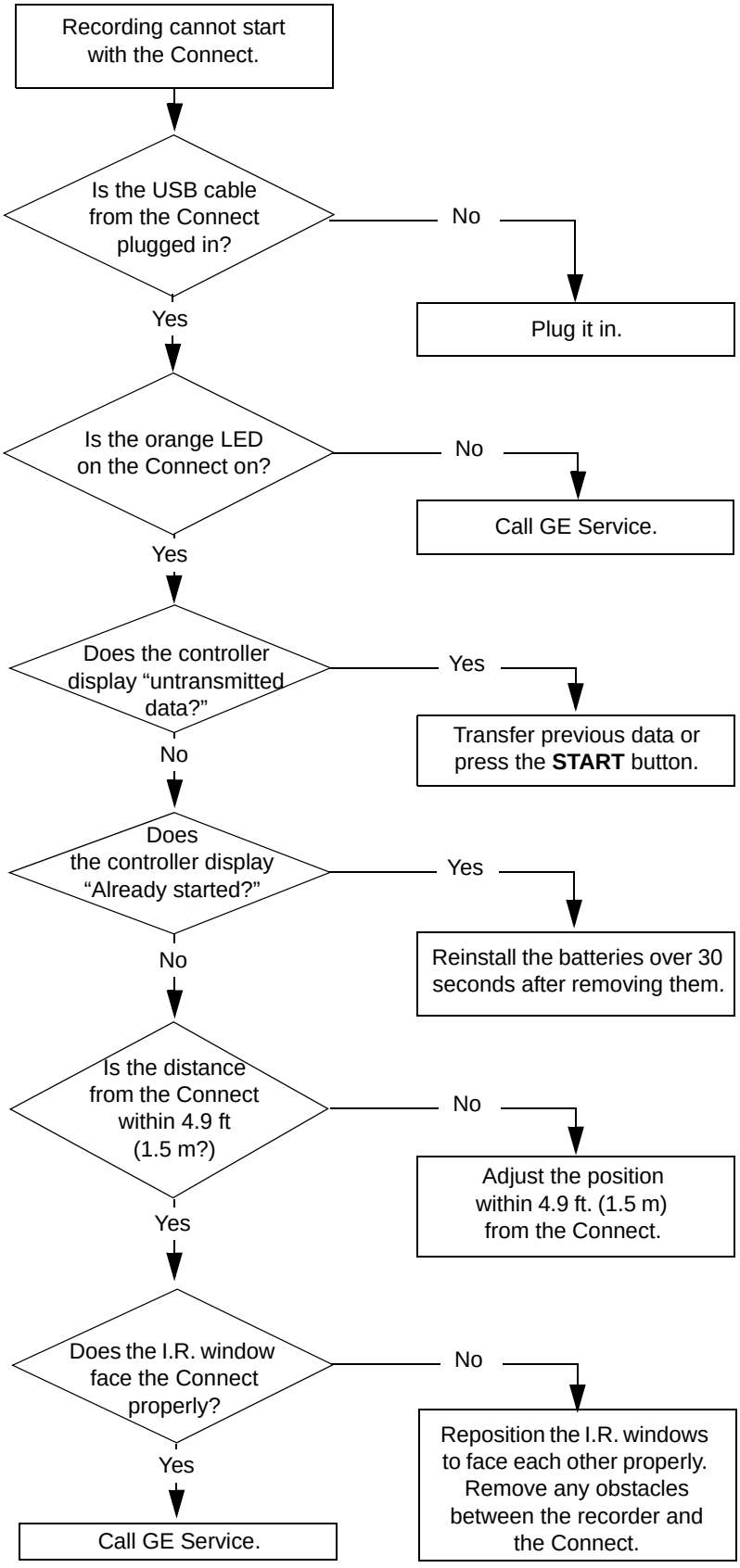
Software Version

To view the software version of the SEER Light Connect device, click *About* in the SEER Light Hookup window.

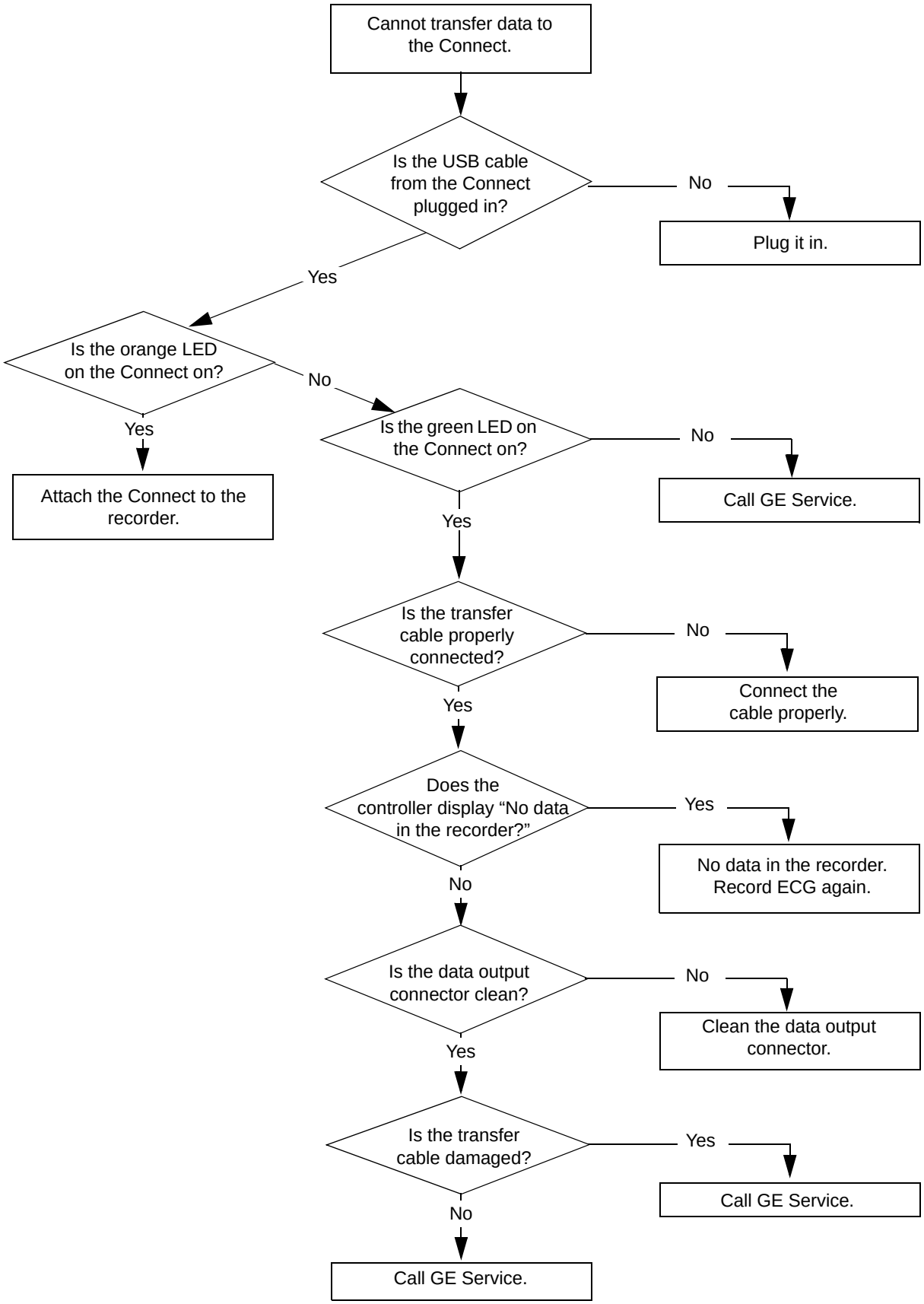
ECG Cannot Be Previewed with SEER Light Connect Device



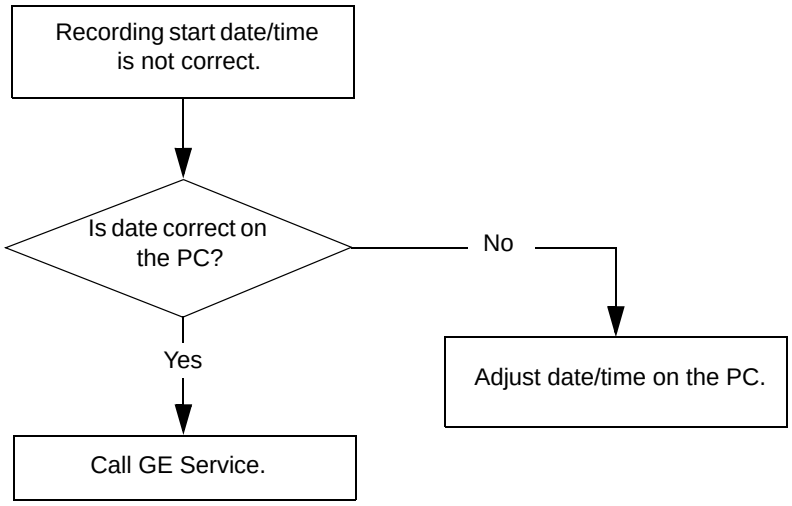
Recording Cannot Start with the SEER Light Connect Device



Cannot Transfer Data from the Recorder to the SEER Light Connect Device



Recording Start Date/Time is Not Correct



6 System Rebuild

For your notes

Introduction

If a MARS system becomes corrupt, it may be necessary to rebuild it. This chapter describes that process.

Process Overview

The general rebuild process remains the same regardless of what platform the system runs on or whether it is a standalone system, a client, or a server. It consists of the following tasks:

1. Backing up configuration and activator codes.
2. Re-imaging the platform.
3. Install MultiTech MT9234ZBA Modem driver, if applicable.
4. Re-installing the MARS application.
5. Installing an external card reader.

   Applies only for the dc7100, dc7600, dc5750, and rp5700 platforms.
6. Increasing the number of installed licenses.

   Applies only to servers running 25 clients.
7. Restoring the configuration and activator codes.
8. Setting the operating system language.

   Applies only to systems running Windows 2000.
9. Installing the SEER Light Hookup.

Although the general process is the same for all platforms and system roles, specific steps within each task may differ. Platform– or system–dependent differences are noted where applicable.

Requirements

To rebuild a MARS system, you need the following equipment:

Item	Description
MARS Image CD	The Image CD you need depends on both the hardware platform you are imaging and whether the system will be used as a standalone system, a client system, or a server.
MARS Application CD	The Application CD you need depends on which version of the MARS application you will be re-installing.
MARS Support CD	The Support CD you need depends on which version of the MARS application you will be re-installing
USB Storage Device	This can be either an external USB floppy drive or a USB flash drive.
USB Dongle	This is required to install and run the MARS application.

Backing Up Configuration and Activator Codes

System configuration and activator codes must be saved to an external backup device before the rebuild begins. The device may be a floppy disk drive, CD-ROM drive, or USB flash drive, depending on the platform to be rebuilt. The backup will be restored after the rebuild is complete.

Refer to the following instructions to create the backup.

1. Launch the MARS application.
2. Insert the storage media in the appropriate drive.
3. Select *System* > *System Setup* > *Backup and Restore*.
4. Set the *Backup Systems Setup* check box.
5. Complete the *Enter a name for the backup* field.

   A name is required and can be up to 70 characters long.

   NOTE

   The name entered here is used to identify the backup file, *xxx.mars*, where xxx equals the name entered in this field.
6. Complete the *Enter comments for the backup* field.

   Comments are optional and can be up to 70 characters long.
7. Click *Apply*.
8. Select the appropriate drive from the *Browse for Folder* dialog box and click *OK*.

   The backup begins. When it is complete, the *Backup operation completed successfully* message opens.
9. Click *OK*.

   The *Backup operation completed successfully* message closes.
10. Remove the backup disk.

Re-imaging the MARS Platform

To restore the MARS Holter Analysis Workstation to its original factory state, a disk image is used. This is a destructive process: the hard drive is formatted and all existing data is overwritten. Therefore, disk imaging is suggested only when all other system recovery attempts have failed. This process can take between one to two hours to complete.

Do not proceed with this step if there is any confusion about disk imaging and its impact on the MARS™ Holter Analysis System. For further assistance, call technical support.

Identifying Your Platform

The re-imaging process differs slightly depending on the platform to be re-imaged. Before proceeding with the re-imaging, refer to the following table to determine which set of instructions to use.

If your platform is the...	as seen on...	refer to...
"Compaq EVO D510, Front View"	page 2-13	"Re-imaging the HP rp5800 Platform" on page 6-11
"HP EVO D530, Front View"	page 2-16	
"HP dc7100, Front View"	page 2-19	
"HP dc7600, Front View"	page 2-21	
"HP dc5750, Front View"	page 2-23	"Re-imaging the HP rp5700 or dc5750 Platform" on page 6-5
"HP rp5700, Front View"	page 2-25	
"HP rp5800, Front View"	page 2-27	"Re-imaging the HP rp5800 Platform" on page 11

If your platform is not listed, refer the system rebuild instructions located in the Service Manual that shipped with the system.

After you complete the system rebuild, you must install the MARS application software.

Re-imaging the HP rp5700 or dc5750 Platform

The re-imaging process is nearly identical for standalone, client, and server systems. The only difference is the image CD used during the process. The general process consists of the following tasks:

1. Setting the boot order.
2. Loading the image.
3. Activating the operating system.
4. Changing the AW_Host service.
5. Setting the BIOS version.
6. Configuring the BIOS.

Setting the Boot Order

Use the following procedure to set the MARS platform's boot order. This ensures the platform will boot from the image CD in the next procedure.

1. Boot or reboot the MARS platform.
2. Press and hold the F10 key during reboot until a list of languages opens.
3. Select *English* and press Enter.

   The *Hewlett-Packard Setup Utility* opens.
4. Select *Storage* > *Boot Order*.

   The *Boot Order* window opens.
5. Verify the boot order is as follows:

   ATAPI CD-ROM
   Hard Drive

   If any other device is included, or if the order is different, change the order to match accordingly.
6. Press F10 to accept the changes.
7. Select *File* > *Save Changes and Exit*.

   The system reboots. Proceed to "Loading the Image".

Loading the Image

Use the following procedure to load the factory image onto the HP dc5750 or HP rp5700 platform.

1. Insert the image media into the MARS platform's optical drive.

   Refer to the following table to identify which media to use.

	Standalone/Client	Server
HP dc5750	MARS DC5750 XP CD PN 2037289-001	MARS DC5750 Server 2003 CD PN 2037288-001
HP rp5700	MARS RP5700 XP DVD PN 2044120-001	MARS RP5700 Server DVD PN 2044119-001

2. Boot or reboot the computer.

   The system boots to a command prompt asking if you want to image the computer.
3. Press *Y*.

   A command prompt appears asking you to confirm your selection.
4. Press *Y*.

   The image begins to load onto the computer. When it is done, it will verify the image was applied successfully and display a status message.

NOTE

Both prompts are timed for 15 seconds. If you do not press a key within that time, the prompt will time out and you will return to root prompt. If this occurs, type clone and press Enter to run the re-imaging process.

5. Remove the image CD and reboot the computer.

   One of two things happens, depending on which platform is being rebuilt.

   - On the HP dc5750, the system runs through a series of screens while it sets up the operating system. When it is done, it will display the logon window. Skip to step 8.
   - On the HP rp5700, the *Your Product Key* window opens. Proceed to step 6.

6. On the *Your Product Key* window, click *Next*.

   The *Do you want to enter your product key now?* window opens.

7. On the *Do you want to enter your product key now?* window, click *No*.

   The system runs through a series of screens while it sets up the operating system. When it is done, it will display the logon window. Proceed to step 8.

8. Enter the Username and Password and press Enter.

   If you do not know the Username or Password to use, contact technical support. In the United States, this would be the Jupiter Remote On-Line Center at 1-800-558-7044. Outside of the United States, refer to “How to Reach Us…” at the beginning of the manual.

9. Proceed to “Activating the Operating System”.

Activating the Operating System

MARS v7.2 standalone and client systems run on Microsoft Windows XP. MARS v7.2 server systems run on Microsoft Windows Server 2003. In both cases, the OS must be activated within 14 days of installation.

1. From the Windows desktop, select *Start > Activate Windows*.
2. Follow the on-screen prompts to activate Windows.
3. When prompted for the Product Key, enter the Product Key on the Windows label attached to the MARS computer.
4. After the system has been activated, proceed to “Adjusting System Date and Time”.

Adjusting System Date and Time

After activating the operating system, verify that the system’s date and time settings are correct. If not, adjust them accordingly.

Changing the AW_Host Service

By default, a Windows Explorer window opens each time you insert a SEER memory card. To change this behavior, use the following procedure to modify the AW_Host service.

1. From the MARS desktop, select *Start > Run*.

   The *Run* dialog box opens.

2. Type **regedit** and click OK.

   The *Registry Editor* opens.

3. In the left hand pane, select *HKEY_LOCAL_MACHINE > System > CurrentControlSet > Services > AW_HOST*.

4. In the right-hand pane, right-click on *Start* and select *Modify*.

   The *Edit DWORD Value* dialog box opens.

5. Change the Value Data to 1 and click *OK*.

   The *Edit DWORD Value* dialog box closes.

6. Close the *Registry Editor*.

Installing MultiTech MT9234ZA Modem Driver

Refer to the *MultiTech Modem MT9234ZBA Driver Installation Instructions* (PN 2046472-001) to install the MultiTech MT9234ZBA Modem Driver, if applicable. This step is not needed if you have a MT5634ZBA modem.

Setting the BIOS Version

For MARS v7.2 systems to operate correctly, they must be updated with the appropriate BIOS, as indicated in the following table:

	BIOS Version
HP dc5750	2.10
HP rp5700	1.06

Use the utility found on the MARS Support CD to update to the correct version of the BIOS.

1. From the Windows desktop, insert the appropriate MARS Support CD into the optical drive.

	Support CD	Part Number
HP dc5750	MARS V7 DC5750 SUPPORT CD	2025437-004
HP rp5700	MARS V7 RP5700 SUPPORT CD	2025437-005

2. From within Windows Explorer, run the appropriate file.

For	Run this file
HP dc5750	D:\DC5750_HPQFLASH\HPQFLASH.EXE
HP rp5700	D:\RP5700_HPQFLASH\HPQFLASH.EXE

Replace *D*:\ with the letter of the optical drive.

A window opens to guide you through the process of flashing the BIOS with the correct version

3. Follow the prompts, clicking *Next* when appropriate.

   When the flash is complete, a window opens to let you know the BIOS was updated and informing you the system will be rebooted for the change to take effect.

4. Click *Restart* to reboot the system.

   If you do not, the system will reboot automatically after one minute.

5. Log on to the MARS platform and proceed to "Configuring the BIOS".

Configuring the BIOS

To ensure that all MARS systems operate consistently, the BIOS settings must be configured consistently across all systems. To do this, you can load the *CPQSETUP.TXT* file from the MARS Support CD within the BIOS. This requires that the file be copied from the support CD to the root directory of a USB device, either a USB floppy drive or a USB flash drive.

1. From the Windows desktop, insert the appropriate MARS Support CD into the optical drive.

	Support CD	Part Number
HP dc5750	MARS V7 DC5750 SUPPORT CD	2025437-004
HP rp5700	MARS V7 RP5700 SUPPORT CD	2025437-005

2. Insert your USB device into any available USB port.
3. Copy the appropriate file from the support CD to the root directory of the USB device.

For	Copy this file
HP dc5750	D:\DC5750 BIOS Settings\CPQSETUP.TXT
HP rp5700	D:\RP5700 BIOS Settings\CPQSETUP.TXT

   Replace *D:*\ with the letter of the optical drive.

4. Remove the MARS Support CD, but leave the USB device in place.

   The BIOS Utility will not be able to detect the USB device if the device is not attached while the system reboots.

5. Reboot the system.
6. When the *HP Invent* splash screen appears, press F10 to load the *Hewlett-Packard BIOS Utility*.
7. Select *English* and press Enter.

   The *Hewlett-Packard Setup Utility* opens.

8. Select *File* > *Replicated Setup*.

   The *Replicated Setup* options open.

9. Select the *Restore From Removable Media* option and press F10 to accept the selection.

   You are prompted to select the device from which to restore the configuration.

10. Select *USB* and press F10.

    When the configuration has been restored, a success message appears.

    NOTE

    If the BIOS Utility cannot detect the USB device, an error message opens. Verify the USB device is seated firmly in the port and repeat from step 5.

11. Press any key to close the success message.

12. Select *File* > *Save Changes and Exit*.

    The BIOS configuration is saved and the system reboots. You are now ready to reinstall the MARS application. Proceed to "Re-installing the MARS Application" on page 6-21.

Re-imaging the HP rp5800 Platform

The HP rp5800 platform is used as a Client System with the Windows XP operating system.

The re-imaging process varies slightly depending on the platform's operating system. You may only re-image a system with the same operating system with which it was shipped. To identify the operating system, refer to the Windows tag located on the side or top of the device.

The rebuild process consists of the following tasks:

1. Setting SATA emulation and boot order.
2. Loading the image.
3. Configuring the operating system.
4. Activating the operating system.
5. Installing the modem driver.
6. Installing required service packs.
7. Applying computer names.
8. Reinstalling the MARS application.

Each task is described in the detail in the following sections.

Setting SATA Emulation and Boot Order (All Configurations)

Use the following procedure to verify and, if necessary, set the MARS platform's SATA emulation mode and boot order to ensure the platform boots from the image CD in the next procedure. This procedure is identical regardless of the platform's operating system.

1. Boot the computer.
2. While the computer boots, press and hold F10 until the *Hewlett-Packard Computer Setup* utility opens.
3. Select *Storage* > *Storage Options* and press Enter.

   The *Storage Options* window opens.
4. Verify the *SATA Emulation* field is set to *IDE Mode*.
5. Do one of the following:
   - If the *SATA Emulation* field is set to *IDE Mode*, press Esc to close the *Storage Options* window without making any changes.
   - If *SATA Emulation* is not set to *IDE Mode*, do the following:
     a. Press the down arrow key to move the cursor to the *SATA Emulation* field.
     b. Press the right arrow key until *IDE Mode* is selected.

        NOTE
        When you first press the right arrow key, a message opens to warn you that changing SATA emulation may prevent access to the hard drives and degrade or corrupt the current volumes. Press Enter to close the message.

     c. When *IDE Mode* is displayed, press F10 to accept the change. The *Storage*

Options window closes, and you return to the *Storage* menu.

6. Select *Storage* > *Boot Order* and press Enter.

   The *Boot Order* window opens.

7. Verify the boot devices listed under *Legacy Boot Sources* are in the following order:

   - ATAPI CD/DVD Drive
   - Hard Drive
     - SATA0
     - USB Hard Drive
   - USB Floppy/CD
   - Network Controller

   NOTE
   The GE configuration for the rp5800 does not use EFI boot sources.

8. Do one of the following:

   - If the boot order is correct, press Esc to close the *Boot Order* window without making any changes.
   - If the boot order is incorrect, do the following:
     a. Press the down arrow key to move the cursor to the boot device to be moved.
     b. Press Enter to select the boot device.
     c. Press the up and down arrow keys to move the selected boot device to the correct position in the list.
     d. When the boot device is in the correct position, press Enter to deselect it.
     e. Repeat step a through step d until all the boot devices are in the correct order.
     f. When the boot order is correct, press F10 to accept the changes. The *Boot Order* window closes, and you return to the *Storage* menu.

9. Select *File* > *Save Changes* and *Exit* and press Enter to save your changes.

   The *Save Changes* and *Exit* window opens and prompts you to confirm that you want to save your changes and exit the setup utility.

10. Select *Yes* and press Enter.

    Your changes are saved, the *Hewlett-Packard Computer Setup* utility closes, and the system reboots. Proceed to “Loading the Image”.

Loading the Image

Use the following procedure to load the factory image onto the HP rp5800 platform.

1. Insert the image media into the MARS platform's optical drive.

   Windows XP image part number: 2070506-002.

2. Reboot the computer.

   The system boots to the *MARS RP5800 System Image* screen, which warns you that you are about to permanently overwrite the contents of the hard drive and asks if you want to continue.

3. Press *Y*.

   The image begins to load onto the computer. When it is done, it verifies the image was applied successfully and displays the following status message:

   ```
   Imaging Results:
      Cloning: Success
      CRC Check: Success
   ```

4. Remove the image CD from the optical drive.
5. Proceed to "Configuring the Operating System".

Configuring the Operating System

Use the following procedure to configure the Windows XP Professional operating system on client platforms running the MARS v7 application.

1. Reboot the computer.

   When the computer reboots, the *Windows XP Professional Setup* window opens.

2. Click *Next.*

   A license agreement window opens.

3. Select the *I accept this agreement* option and click *Next*.

   The *Your product key* window opens.

4. Enter the product key, found on the Windows label attached to the MARS computer, and click *Next.*

   The system performs a series of setup tasks. When the setup tasks are complete,the computer reboots and the *Logon* window opens with the *Administrator* user account selected by default.

5. Enter the Administrator's password and click *OK*.

   The Windows desktop opens.

   NOTE
   If you do not know the password for the Administrator, contact Technical Support.

6. Verify the Windows desktop opened without error.
7. Verify the system's date and time settings are correct.

If the date and time settings are incorrect, adjust them accordingly. Refer to Windows Help for instructions on changing the system date and time, if necessary.

8. Proceed to "Activating the Operating System".

Activating the Operating System

Use the following procedure to activate your Windows XP system.

1. From the Windows desktop, select *Start* > *Activate Windows*.

   The *Activate Windows* window opens.

2. Select the appropriate activation option.
   - To activate Windows over the Internet, select *Yes, let's activate Windows over the Internet now.*
   - To activate Windows over the telephone, select *Yes, I want to telephone a customer service representative to activate Windows*.
3. Click *Next* and follow the on-screen instructions to complete the activation.
4. When the activation is complete, proceed to "Installing the Modem Drivers" on page 14.

Installing the Modem Drivers

The HP rp5800 ships with the Multitech MT9234ZBA modem. The drivers for this modem are included in the system images. You do not need to do anything further to install drivers for this modem.

Installing Required Service Packs

Hewlett-Packard rp5800 systems are imaged using the most current service packs available at the time of shipment. Additional service packs should not be needed.

At the time of publication, the images included the following operating systems and service packs:

Image Part Number	Operating System	Service Packs
2070506–002	Windows XP Professional	SP3

Applying Computer Names

The re-imaging process assigns a default computer name to the computer and assigns it to a workgroup. You need to reassign the original computer name and, if necessary, join the computer the same domain it was on before. Failure to reassign the computer's original name and domain, especially on MARS servers, can create connectivity issues with MARS clients, MARS web clients, and the Morpheus Hx server, if those systems are in use at the site.

Reinstalling the MARS Application

You are now ready to reinstall the MARS application. Proceed to "Re-installing the MARS Application" on page 21 for instructions.

Re-imaging Earlier Platforms

This section explains how to reimage the MARS Holter Analysis System on the following platforms: Compaq EVO D510, HP EVO D530, HP dc7100, and HP dc7600. If you have an earlier system, refer to the Service Manual that accompanied the system for instructions on re-imaging the system.

The procedure for re-imaging earlier MARS systems is essentially the same for standalone, client, and server systems. Differences in the process due to platform or system roles are noted. The procedure consists of the following basic steps:

1. Changing the system boot sequence.
2. Loading the image.
3. Configuring the operating system.
4. Configuring the UPS.
5. Configuring pcAnywhere.

   Applies only for the Compaq EVO D510 and HP EVO D530 systems.
6. Resetting the system boot sequence.

Changing the Boot Sequence

Use the following instructions to change the sequence in which the system searches for bootable devices. This is necessary to ensure that the system can boot from the MARS Image CD.

1. Insert the appropriate MARS Image CD.
2. Reboot the system.
3. During the reboot, press and hold F10 to enter the BIOS setup.
4. Enter the system password if prompted.

   If you do not know the password, contact technical support for assistance.
5. When prompted to select a language, select *English* and press Enter.

   The BIOS setup window opens.
6. Select *Storage* > *Boot Order*.

   A list of valid boot devices, listed in the sequence in which the system will read them, opens.
7. Verify the boot order is as follows:

   ATAPI CD-ROM
   Hard Drive

   If any other device is included, or if the order is different, change the order to match accordingly.

8. Press F10 to accept the changes.
9. Select *File* > *Save Changes and Exit*.

   The system reboots. You are now ready to load the MARS platform image.

Loading the Image

Use the following procedure to load the factory image onto the platform.

1. Insert the image CD into the MARS platform's CD-ROM drive.
2. Boot or reboot the computer.

   The system boots to a command prompt asking if you want to image the computer.
3. Press *Y*.

   A command prompt appears asking you to confirm your selection.
4. Press *Y*.

   The image begins to load onto the computer. When it is done, it will verify the image was applied successfully and display a status message.

   NOTE

   Both prompts are timed for 15 seconds. If you do not press a key within that time, the prompt will time out and you will return to root prompt. If this occurs, type clone and press Enter to run the re-imaging process.
5. Remove the image CD and reboot the computer.

   You are now ready to configure the operating system.

Installing MultiTech MT9234ZA Modem Driver

Refer to the *MultiTech Modem MT9234ZBA Driver Installation Instructions* (PN 2046472-001) to install the MultiTech MT9234ZBA Modem Driver, if applicable. This step is not needed if you have a MT5634ZBA modem.

Configuring the Operating System

When you boot the operating system for the first time after loading the image, the operating system runs through a setup process that allows you to accept the license agreement and configure the operating system.

1. If necessary, boot or reboot the MARS system.

   The log on window opens.
2. Enter your Username and Password and press Enter.

   If you do not know the username or password, contact technical support. In the United States, this would be the Jupiter Remote On-Line Center at 1-800-558-7044. Outside of the United States, refer to "How to Reach Us…" at the beginning of the manual.

   After you log on, the system begins to finish the installation process. Several screens will flash to indicate the current status. When this is done, a *License Agreement* window opens.
3. Select *I accept this agreement* and click *Next.*

The *Regional Settings* window opens.

4. Click *Next*.

   The *Personalize Your Software* window opens.

5. Complete the *Name* and *Organization* fields with the customer's organization information and click *Next*.

   The *Product Key* window opens.

6. Enter the 25 digit product key located on the Microsoft label on top of your system and click *Next*.

   The *Computer Name and Administrator Password* window opens.

7. Enter a unique *Computer Name* and administrator password and click *Next*.

   The *Modem Dialing Information* window opens.

   NOTE

   No other computer on the network can have the same computer name.

   If you do not know what administrator password should be, contact technical support.

8. If you are rebuilding a standalone system with an attached modem, answer each question on the *Modem Dialing Information* window and click *Next*.

   The *Date and Time Settings* window opens.

9. Enter the correct date and time, select the correct time zone, and click *Next*.

   The *Network Settings* window opens.

10. Select *Typical Settings* and click *Next*.

    The Workgroup or Computer Domain window opens.

11. Select *No*, *this computer is not.,* type MARSWORKGROUP, and select *Next.*

    A setup summary window opens.

12. Click *Finish* to reboot the system.

    Upon reboot, the *Welcome to the Network Identification* wizard opens.

13. Click *Next*.

    The *Users of this Computer* window opens.

14. Select *Users must enter...* and click *Next.*

    A summary window opens.

15. Click *Finish*.

    The log on prompt opens.

16. Enter the Username and Password and click *OK*.

    If you do not know the username and password, contact technical support for assistance.

    You should now be logged on to the operating system and ready to continue with the rest of the system configuration.

Configuring the UPS

Some systems will be operated WITH a Uninterrupted Power Supply (UPS), and some will be operated WITHOUT a UPS. In either case, you must configure the system to work accordingly.

Disabling the UPS Software

If you are setting up a machine WITHOUT a UPS, use the following instructions to disable the UPS software:

1. Click *Start* > *Programs* > *Startup*.
2. Right-click on *LSIII Executor* and select *Delete*.
3. Click *Yes* to confirm the file deletion.
4. Right-click on the *My Computer* icon on the desktop. Select *Manage*.
5. Expand *Services and Applications.*
6. Click on *Services*.
7. Locate and right-click on *LanSafe III Power Monitor Service.* Select *Properties*.
8. Select *Disabled for Startup Type.*
9. Click *OK*.
10. Close the *Computer Management* window.

Reinstalling UPS Drivers

If you are setting up a machine WITH a UPS, use the following instructions to reinstall the UPS drivers:

1. If the *Found New Hardware Wizard* opens when you log on, click *Next.*
2. Insert the MARS Support CD in the CD-ROM drive.
3. At the *Install Hardware...* screen, verify the device is a *Powerware UPS* and click *Next*.
4. At *Locate Driver Files* screen, click *Next*.
5. Verify that the *Windows found a driver for this device...* message is displayed. Click *Next*.
6. At the *Lansafe III Setup* dialog, click *Yes*.
7. Note that the *LanSafe III Setup* window appears. Click *Install*.
8. In the *Introduction to UPS Groups* window, select *No* and click *Continue*.
9. In the *UPS model selection* window, verify *Powerware 5115* is selected. Click *Continue*.
10. In the *Communication Port Selection* window, verify that *COM 1* is selected. Click *Continue*.
11. In the *UPS Access Code* window, type in WERIOP and click *Continue*.
12. In the *Shutdown Timing Options* window, leave default options and click *Continue*.
13. In the *Install Path* window, leave the default path and click *Continue*.
14. A window appears saying that the software was successfully installed. Click *OK*.
15. Click *Finish*.

Configuring pcAnywhere v11.5

If you are rebuilding the Compaq EVO D510 or HP EVO D530, use the following instructions to configure pcAnywhere.

NOTE
For dc7100 and dc7600 systems, skip to "Resetting the Boot Sequence" on page 6-19.

1. From the Windows desktop, double-click the *Symantec pcAnywhere* icon on the desktop.

   The *Symantec pcAnywhere* window opens.

2. Select *Edit* > *Preferences*.
3. On the *Host Operation* tab, select *Windows Computer Name*.
4. On the *Remote Operation* tab, adjust the *Video Quality* slide to *100*.
5. For the *Color scale* select *256 colors*.
6. Select *Use pcAnywhere cache file* and *Optimize desktop for remote control*.
7. Click *OK*.
8. Close the *pcAnywhere Manager* window.

   g. To restart the system, select *Start* > *Shutdown* > *Restart*.

   NOTE
   For the next step, do NOT select *Apply*.

   ◆ Select *Yes* > *OK*.

9. If you are rebuilding a standalone workstation go to step 5. If you are building a client workstation, do the following:

   a. Select the modem in the *pcAnywhere Manager* window.

   b. Right-click *Delete*.

   c. Click *Yes* to confirm the deletion.

10. Close the window.
11. Select *Start* > *Shutdown* > *Restart.*

Resetting the Boot Sequence

When you are done re-imaging your platform, use the following instructions to change the boot order of the pc.

1. Reboot the system.
2. During the reboot, press and hold F10 to enter the BIOS setup.
3. Enter the system password if prompted.

   If you do not know the password, contact technical support for assistance.

4. When prompted to selected a language, select *English* and press Enter.

   The BIOS setup opens.

5. Select *Storage* > *Boot Order*.

A list of valid boot devices, listed in the sequence in which the system will read them, opens.

6. Verify the boot order is as follows:

   ATAPI CD-ROM
   Diskette Drive
   Hard Drive
   USB Devices
   Ethernet Controller

   If any other device is included, or if the order is different, change the order to match accordingly.

7. Press F10 to accept the changes.

8. Select *File* > *Save Changes and Exit*.

   The system reboots. You are now ready to re-install the MARS application. Refer to "Re-installing the MARS Application" on page 6-21.

Re-installing the MARS Application

The process for re-installing the MARS Holter Analysis System application software is nearly identical regardless of the hardware platform or software version. Minor differences do exist depending on whether the you are re-installing a standalone system, a client, or a server. Those differences are noted where appropriate.

In addition, if you are rebuilding a client system, you must uninstall the modem after re-installing the application.

Re-installing the Application Software

Use the following instructions to install the MARS application software.

1. Insert the system's dongle into a USB port.

   If the dongle is not inserted, the software will not install.

2. Insert the MARS Holter Analysis Application CD into the CD drive.

   The setup program starts automatically and the *Choose Setup Language* window opens.

   NOTE

   If the installation does not start automatically, open Windows Explorer, browse to the root directory of your CD drive, and double-click *setup.exe*.

3. Select the desired language at the *Choose Setup Language* window and click *Next*.

   The *Welcome to the InstallShield Wizard for MARS* window opens.

4. Click *Next*.

   The *License Agreement* window opens.

5. Read the license agreement and click *Yes*.

   The *Installation Mode* window opens.

6. Click the *Install MARS PC* button.

   The *MARS Install* window opens.

7. Click the *Typical Install (Recommended)* button.

   The *MARS System Type* window opens.

8. Select the type of system you are rebuilding.

   - To rebuild a standalone system, click the *Standalone* button.
   - To rebuild a client system, click the *Client* button.
   - To rebuild a server, click the *Server* button.

     The *Server* button is only available if you re-imaged the platform using the server image. If you used the standalone/client image, the button will be grayed out.

   The *Destination Disk* window opens.

9. Select the check box for the desired drive and click *Next.*

You may select any of the drives listed in the *Destination Disk* window. If a drive does not have enough space available the *"Not enough free space"* message will appear next to the drive.

If you selected Standalone or Server systems, the *Number of Patient Slots* window opens. Proceed to step 10.

If you selected a Client system, the *OmniDriver Setup* window opens. Skip to step 12.

10. On the *Number of Patient Slots* window, enter the desired number of *SEER* and *Tape* slots by clicking on the arrows to the right of each field.

    The minimum number of slots must 5. Enter the fewest number of slots you intend to use. System performance decreases as the number of slots increases. Refer to "Slot Installation/Time Consumption Report" on page B-3 for specific information.

11. Click *Next*.

    The *OmniDriver Setup* window opens.

12. Select the appropriate driver for your system and click *Next*.

    - If your system has an internal card reader, select *OmniDrive Professional*.
    - If your system has an external card reader, select *OmniDrive USB Professional*.

    The *Startup* window opens.

13. Select the desired option and click *Next*.

    - If running only MARS Holter Analysis software, select the *Start MARS automatically at login* option.
    - If also running CardioSoft, select the *Do not start MARS automatically at Login* option.

    The MARS Holter Analysis software installation begins. It takes approximately 5 – 15 minutes to install, depending on the number of slots being created. When it is complete, the *Install Shield Wizard Complete* window opens.

14. Remove the CD from the drive and click *Finish*.

    The MARS Holter Analysis system will reboot.

15. Store the CD in a safe location.

16. Do one of the following:

    - If you installed the client software, proceed to "Uninstalling the Modem on Client Systems" on page 6-22.
    - If you installed standalone or server software, skip to "Restoring MARS Configuration and Activator Codes" on page 6-26.

Uninstalling the Modem on Client Systems

If you are setting up a MARS Holter Analysis client system, you need to uninstall the modem.

1. Open the Windows *Control Panel* and double click the *Phone and Modem Options* icon.

   The *Phone and Modem Options* window opens.

2. On the *Modems* tab, highlight the appropriate modem model and click *Remove*.

You are prompted to confirm the deletion.

3. Click *Yes*.
4. Click *OK* to close the *Phone and Modem Options* window.
5. Double click the *Symantec pcAnywhere* icon on the desktop.

   The *pcAnywhere Manager* window opens.

6. Click the *Hosts* button.

   The *Hosts* window opens.

7. Right-click the *MODEM icon* and select *Properties.*

   The *Modem Properties* window opens.

8. On the *Settings* tab, deselect *Launch with Windows* and click *OK*.

   The *Modem Properties* window closes and returns to the *Hosts* window.

9. Right-click the *DIRECT* icon and select *Properties.*

   The *Direct Properties* window opens.

10. On the *Settings* tab, select *Launch with Windows* and click *OK*.

    If you are rebuilding a dc7100 or dc7600 platform, a dialog box may appear stating that another connection has already been selected to launch with Windows and asking if you would rather use this connection instead. Click *Yes*.

    If you are rebuilding any other platform, or after you answer Yes to the dialog box, the *Direct Properties* window closes.

11. Close the *Hosts* and *pcAnywhere Manager* windows.
12. Go to “Installing an External Card Reader” on page 6-24.

Installing an External Card Reader

The dc7100, dc7600, and dc5750 platforms may come with an external USB OmniDrive card reader. Before the reader can be used, you must set up your system accordingly.

NOTE

If you are not rebuilding a dc7100 or dc7600, skip to "Increasing the Number of Installed Licenses" on page 6-25.

If the external card reader is attached to the system when you boot up, it will be installed automatically and the *Found New Hardware* window will open. If the card reader was assigned any drive letter other than *O:*\, use the following instructions to change it.

1. From the Windows desktop, right-click on the *My Computer* icon and select *Manage*.

   The *Computer Management* window opens.

2. Click on *Disk Management.*

   A list of attached disk drives appears in the right-hand pane.

3. Right-click on *Disk 1 Removable* and select *Change Drive Letter.*

   The *Change Drive Letter* window opens.

4. Select the drive letter for Disk 1 and click *Change….*

   The *Change Drive Letter* dialog box opens.

5. From the *Assign the following drive letter* field, select *O:* and click *OK.*

   A dialog box opens to warn you that some programs may not work if you change the drive letter and to ask if you want to continue.

6. Click *Yes.*

7. Close the *Computer Management* window.

Increasing the Number of Installed Licenses

If you are rebuilding an enterprise server with 25 clients, use the following instructions to increase the number of installed Windows Client Access Licenses from 5 to 25:

NOTE

If you are rebuilding a standalone or client system, skip to "Restoring MARS Configuration and Activator Codes" on page 6-26.

1. Select *Start* > *Programs* > *Administrative Tools* > *Licensing*.

   The *Enterprise Licensing* window opens.

2. On the *Product View* tab, click *Windows Server.*
3. Select *License* > *Properties*.
4. On the *Server Browser* tab, double-click on the name of this server.

   The *Properties of Windows Server* window opens.

5. Click *Edit*.

   The *Per Server Licensing* window opens.

6. Verify that *Per Server* licensing mode is selected and click *Add License.*

   The *New Client Access License* window opens.

7. Verify that *Windows Server* is selected for *Product*.
8. Enter 20 for *Quantity* and click *OK*.

   The *New Client Access License* window closes and returns to the *Per Server Licensing* window.

9. Select *I Agree that. and* click *OK*.

   The *Per Server Licensing* window closes and returns to the *Properties of Windows Server* window.

10. Click *OK*.

    The *Properties of Windows Server* window and returns you to the *Enterprise Licensing* window.

11. Close the *Enterprise Licensing* window.

Restoring MARS Configuration and Activator Codes

This step restores the system configuration and activator codes from the backup created in "Backing Up Configuration and Activator Codes" on page 6-4.

1. Launch the MARS application.
2. Place the backup medium into the appropriate drive.
3. Select *System* > *System Setup* > *Backup and Restore*.
4. Select the *Restore Systems Setups* check box.
5. Select the *Restore activator codes* check box (if the system setup includes activator codes).
6. Click *Apply*.
7. Select the appropriate drive from the *Open* window.
8. Select the *xxx.mars* file and click *Open*.

   (Where xxx is the file name created at time of the backup.)
9. Click *Yes* at the prompt, *You are about to restore the following backup*.
10. Click *OK* at *The restore completed successfully* message.

    The MARS application closes automatically.
11. Remove the backup medium.

If the system you rebuilt runs on the Windows 2000 operating system, continue with "Setting the Language" on page 6-27. Otherwise, skip to "Installing SEER Light Hookup" on page 6-28.

Setting the Language

The MARS Holter Analysis system is set to English at the factory, but it provides additional support for Chinese (simplified), Danish, Dutch, French, German, Italian, Japanese, Norwegian, Russian, Spanish, and Swedish.

Setting the Application Language

Use the following procedure to change the language if the order calls for a non-English language. If the order is for English, skip to "Installing SEER Light Hookup" on page 6-28.

1. Log on to the MARS system.
2. Run the MARS application.
3. Select *System* > *System Setup* > *Language*.
4. Select the desired language.
5. Click *Save Changes*.
6. When prompted to confirm the change, click *OK*.
7. Close and restart the MARS application.
8. Verify the application is displayed in the correct language.

   If the language does not display properly, skip to "Setting the Operating System Language" on page 6-27.
9. Proceed to "Installing SEER Light Hookup" on page 6-28:

Setting the Operating System Language

If the order is for a non-Unicode language (such as Russian, Japanese, and Simplified Chinese), the language may not display properly in the MARS application unless the language is also selected at the OS level. Use the following instructions to change the OS language.

1. From the MARS desktop, select *Start* > *Settings* > *Control Panel* > *Regional and Language Options*.
2. On the Advanced tab, select the appropriate language in the *Language for Non-Unicode Programs* drop down list.
3. Click *Apply*.
4. When prompted to confirm the selection, click *Yes*.
5. When prompted to restart your system, click *OK*.

Installing SEER Light Hookup

If the MARS Holter Analysis System will be used in conjunction with a SEER Light Connect device, use this task to install the software before you connect the device to the system.

To install the software, you must have administrator privileges and the system must be running Windows 2000, 2000 Server, XP, or 2003 Server. You cannot install the software on Windows NT, 98, or ME.

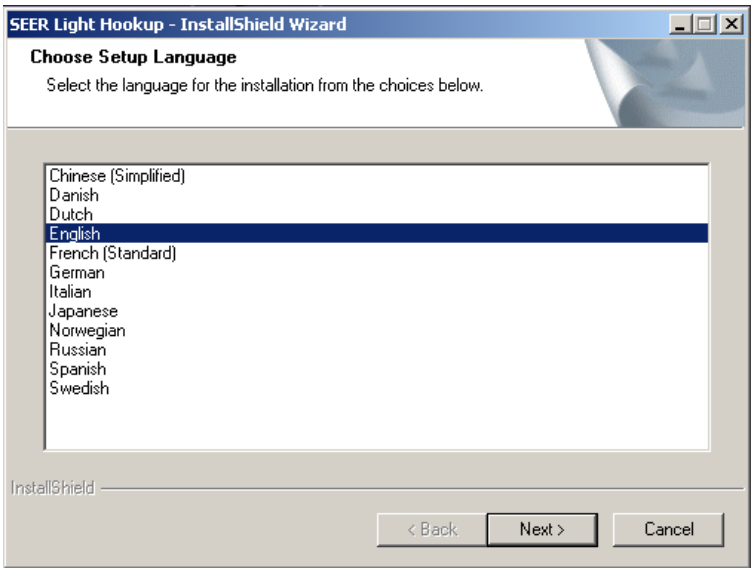
NOTE

If the MARS Holter Analysis System will not be used in conjunction with a SEER Light Connect device, skip this task.

1. Insert the SEER Light Hookup software CD in the workstation's CD-ROM drive.

   The *SEER Light Hookup InstallShield Wizard* opens.

2. Select the appropriate language and click *Next*.



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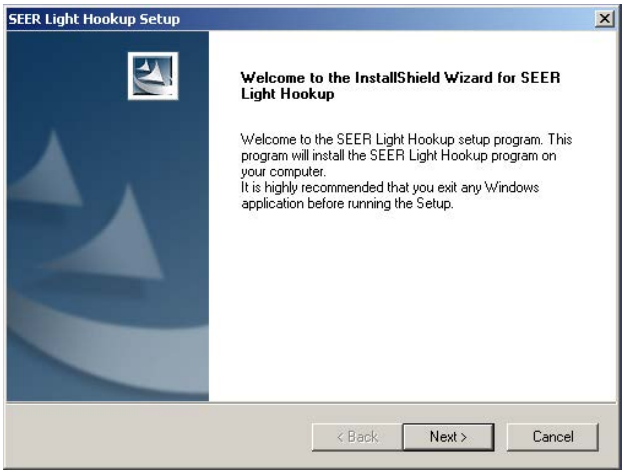
   The *SEER Light Hookup Setup* welcome window opens.

3. Click *Next*.



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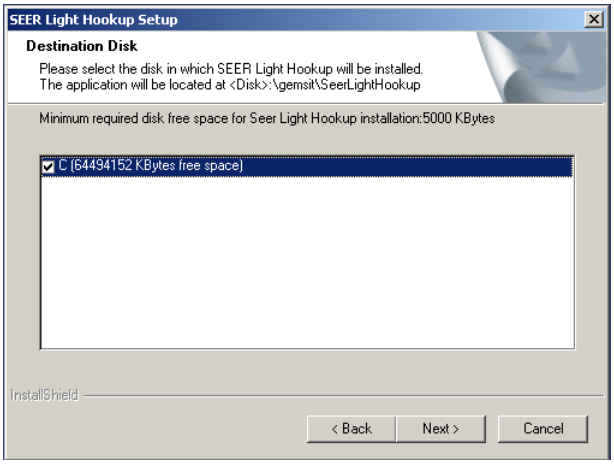
The *License Agreement* window opens.

4. Review the license agreement and click *Yes*.

   The *Destination Disk* window opens.

5. Highlight the disk in which the SEER Light Hookup application will be installed and click *Next*.



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The software begins installing. When it is finished, a message appears asking if you would like to view the installation report.

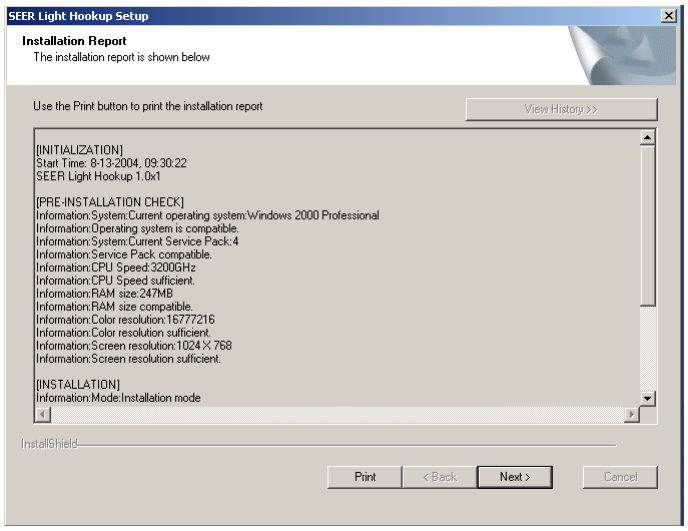
6. Do one of the following.

   - To continue without reviewing the installation report, click No.

     The *InstallSheild Wizard Complete* window opens. Skip to step 8.

   - To review the installation report, click *Yes.*

     The *Installation Report* opens. Continue to step 7.



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7. Review the report as necessary.and do any of the following

   - To print the report, select the *Print* button.
   - To view previous installation reports, select the *View History* button. This button will be grayed out if no prior installations were done on your computer.
   - To close the Installation Report, click *Next*.

     The *InstallSheild Wizard Complete* window opens.

8. Select *Yes, I want to restart my computer now* and click *Finish*.

   The computer reboots.

9. Log in as Administrator.

10. Plug one end of a USB cable into a USB port of your computer and the other end to the SEER Light Connect device.

    One of two things happens depending on the operating system.

    - If you are on a Windows 2000 operating system, the *Insert Disk* window opens. Proceed to step 11.
    - If you are on a Windows XP operating system, the *Found New Hardware Wizard* window opens. Skip to step 14.

11. Select *OK*.

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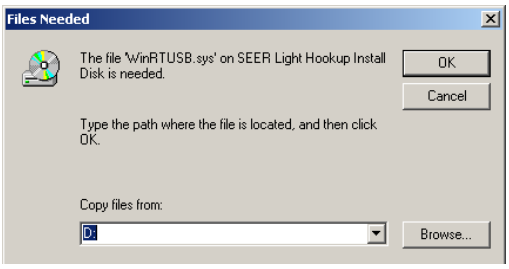
Two additional files (*WinRTUSB.dll* and *WinRTUSB.sys*) need to be loaded. The *Files Needed* window opens.

12. In the dropdown box, type in **D:\drivers** (or the letter assigned to the CD drive if it is not D) and click *OK*.



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The *Files Needed* window opens again.

13. In the dropdown box, type in **D:\drivers** (or the letter assigned to the CD drive if it is not D) and click *OK*.

    The SEER Light Hookup installation for Windows 2000 systems is now complete.

14. On the *Found New Hardware Wizard* window, select *Install the software automatically* and click *Next*.

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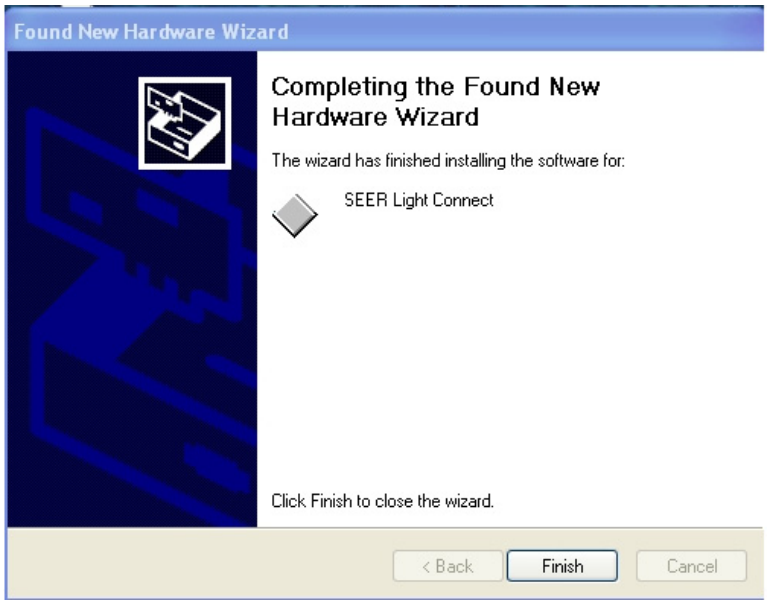
The *Found New Hardware Wizard* window opens again.

15. Click *Finish*.



083a

The SEER Light Hookup installation for Windows XP systems is now complete.

7 System Checkout

For your notes

Checkout Procedure

Verify the MARS™ Holter Analysis System operates correctly by following the system checkout procedure. Have the MARS Holter Analysis workstation and OEM manuals available for reference.

Not all checkout tasks apply to each MARS Holter Analysis configuration. For example, not all systems will have a tape acquisition unit, and standalone systems will not have a MARS Holter Analysis server. Perform only the tasks appropriate for your configuration, but perform the tasks in the order in which they appear.

NOTE

For MARS Holter Analysis systems running Windows NT, use the checkout procedure located in the service manual that shipped with the unit. Afterward, use the "Testing Network Connectivity" on page 7-8 of this manual to verify the network connections.

Shutting Down the System

To prevent loss of data or damage to the workstation during the checkout, follow the "Safe Shutdown Procedure" on page 4-5 before proceeding with the checkout.

Logging on to the Workstation

1. Turn on the workstation.
2. Turn on the monitor.
3. Watch for error messages.

   If you receive any error messages, stop the checkout procedure and contact MARS™ Holter Analysis System technical support.
4. Turn on any local parallel printer connected to the workstation.
5. Press **Crtl** + **Alt** + **Delete** to open the logon window.
6. Enter your *User Name* and *Password*.

   Contact the MARS Holter Analysis Workstation Technical Support Line if you do not know the *User Name* and *Password*.
7. Click *OK*.
8. Watch for error messages.

   If you receive any error messages, stop the checkout procedure and contact MARS™ Holter Analysis System technical support.

Backing Up Configuration and Activator Codes

1. Follow the procedure in "Backing Up Configuration and Activator Codes" on page 6-4 to back up the configuration and activation codes to a floppy disk.
2. From the MARS application, select *Help* > *About* to view the serial number of the MARS™ Holter Analysis System.
3. Write the serial number on the floppy disk and store it in a safe location.

Acquiring Patient Data

Verify that patient data can be acquired. Refer to the *MARS Holter Analysis Workstation Operators Manual* for information on acquiring patient data.

Printing a Patient Report

1. Select *Patient Select.*
2. Choose a patient.
3. Select *Report Review*.
4. Select *Print Page*.

   If the report does not print, stop the checkout procedure and contact the MARS™ Holter Analysis System technical support line.

   Refer to the *MARS™ Holter Analysis System Operator's Manual* for more information on printing patient reports.

Archiving Patient Data

If you have a CD-RW or DVD-RW drive, verify that you can archive patient data to a CD or DVD. Refer to the *MARS™ Holter Analysis System Operators Manual* for information on archiving patient data.

Testing the Tape Acquisition Unit

Tape acquisition units are not available on NT, dc7600, or dc5750 systems.

1. Confirm that the SCSI ID switch on the back of the unit is set to 5.

   NOTE
   If the SCSI ID is set incorrectly, adjust the setting and reboot the workstation.

2. Verify the unit can read, display, and print information from a Holter tape. Refer to the *MARS Holter Analysis Workstation Operators Manual* for more information on using a tape acquisition unit.

Testing Remote System Support

1. Verify the modem did not issue any error messages.
2. Identify the phone number of the analog telephone line attached to the modem.
3. Call MARS™ Holter Analysis System Technical Support with the telephone number and request a RSS link to verify remote access.

Testing the Backup Power Source

A backup power source is provided with each MARS™ Holter Analysis System. It may be an uninterruptible power supply (UPS) or an isolation transformer (IT), depending on the workstation's hardware model. The procedure for testing the backup power source depends on which unit is provided.

Identify the manufacturer from the front of the unit and refer to the following table for instructions on where to turn for testing instructions.

If the manufacturer is...	turn to...
ONEAC	"Testing an ONEAC IT" on page 7-5
Powerware	"Testing a Powerware UPS" on page 7-6
APC	"Testing an APC UPS" on page 7-6

Testing an ONEAC IT

1. Perform the tasks in the following table and verify the results.

Task	Verify
Detach the serial cable from the unit	You receive a message that a power failure occurred and the computer will shut down in one minute.
Re-attach the serial cable to the unit	You receive a message that the power failure has been resolved and the shutdown has been canceled.
Unplug the workstation from the wall outlet	■ You receive a warning beep and a message that the computer is on battery power and will be shutdown in 10 minutes. ■ The warning beep sounds every minute. ■ The time in the shutdown message updates accordingly each minute. ■ The system shuts down after 10 minutes.

2. Do one of the following, depending on whether the workstation is connected to the network:
   - If it is, go to "Testing Network Connectivity" on page 7-8.
   - If it is not, the checkout is complete.

Testing a Powerware UPS

1. Perform the tasks in the following table and verify the results.

Task	Verify
Detach the serial cable from the UPS	You receive a message indicating a communication failure with the UPS.
Re-attach the serial cable to the UPS	You receive a message indicating that communication has been established with the UPS.
Press and hold the **test button** on the front of the UPS	You receive the following messages: ■ *Utility power failure... MARS Holter Analysis is on battery...shutdown in 5 minutes.* ■ *Message from MARS Holter Analysis to WORKGROUP on...MARSPC is on battery...shutdown in 5 minutes.*
Release the **test button**	You receive the following messages: ■ *Utility power failure resolved... MARS Holter Analysis shutdown has been cancelled.* ■ *Message from MARSPC to WORKGROUP on...MARSPC shutdown has been cancelled*
Unplug the workstation from the wall outlet	You receive the following messages: ■ *Utility power failure... MARS Holter Analysis is on battery...shutdown in 5 minutes.* ■ *Message from MARS Holter Analysis to WORKGROUP on...MARSPC is on battery...shutdown in 5 minutes.* The system shuts down after 5 minutes.

2. Do one of the following, depending on whether the workstation is connected to the network:
   - If it is, go to "Testing Network Connectivity" on page 7-8.
   - If it is not, the checkout is complete.

Testing an APC UPS

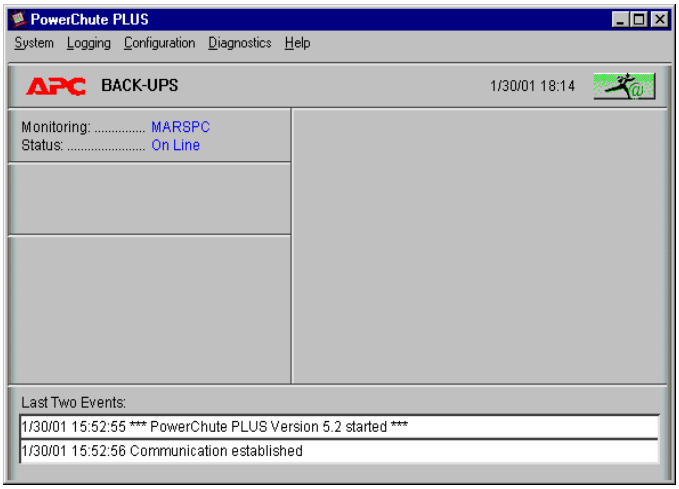
The MARS™ Holter Analysis System is provided with one of two APC UPS models. The procedure for testing an APC UPS unit depends on the unit's model.

Locate the model number on the back of the unit and refer to the following table for the appropriate test instructions.

If the model is...	refer to...
BK500MC	"Testing Model BK500MC" on page 7-7.
BK500MI	"Testing Model BK500MI" on page 7-8

Testing Model BK500MC

1. On the workstation desktop, select *Start* > *Programs* > *Parachute plus* > *Parachute plus*.
2. On the *Monitor Server* window, select *Attach.*
3. When the following window appears, verify the unit is monitoring the correct system name and that its status is *On Line*.



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4. On the UPS unit, press the test button, hold it for approximately 3 seconds, and verify the following:
   - A warning beep sounds.
   - The status changes to *On Battery*.
   - The following message displays: *<Computer name> is running on battery power. <Computer name> will shut down in xxx minutes and xxx seconds.*
5. Release the test button and verify the following:
   - The status changes to *On Line*.
   - The following message displays: Normal utility power at *<computer name> has been restored.*
6. Close all windows and do one of the following, depending on whether the workstation is connected to the network:
   - If it is, go to “Testing Network Connectivity” on page 7-8.
   - If it is not, the checkout is complete.

Testing Model BK500MI

1. Disconnect the UPS AC power inlet cord and verify the following.
   - A warning beep sounds every 5 seconds.
   - The power light is lit on the front of the Compaq system.
2. Reconnect the UPS AC power inlet cord. and do one of the following, depending on whether the workstation is connected to the network:
   - If it is, go to "Testing Network Connectivity" on page 7-8.
   - If it is not, the checkout is complete.

Testing Network Connectivity

This procedure cannot be performed for standalone workstations with no network connections. Some steps may not apply in all configurations.

NOTE
Before starting, know the server's computer name and IP address. If necessary, select *System* > *System Setup* > *Network* to view the server's **computer name**. See "Network Setup for Clients" on page 3-5 for more information.

1. On a workstation, open a *DOS Command* window.
2. Type **ping** [space] **<computer name>** (where <computer name> is the name of the server) and press **Enter**.
3. Verify the following:
   - The workstation can connect to the server.
   - The connection does not time out.
   - The correct IP address is returned.
4. Within the MARS Holter Analysis application, click the *Patient Select* icon.

   NOTE
   If you can ping the MARS Holter Analysis server but can't access the *Patient Select* option, confirm that the network drive share permissions are correct.
5. Within the application, verify you can perform the following:
   - Print a patient strip review from the workstation and server.
   - View the server patient list from the workstation.
   - Select and edit a patient file from the MARS Holter Analysis server.
   - Store a patient report from the workstation or server to MUSE. (Applicable only if the MARS to MUSE option is enabled.)

     NOTE
     If you delete a report at the MARS Holter Analysis workstation, the report will be removed from the list.

   The network checkout is complete when the tests are done.

8 Parts List

For your notes

Introduction

Ordering Parts

The parts list in this chapter lists all the FRU items that may need to be ordered. If you need any additional information or troubleshooting assistance please contact the Jupiter Remote On-Line Center at 1-800-558-7044. If you need technical support and you are not in the US, see “How to Reach Us...” at the front of this manual to determine who to contact for technical support.

To order parts please contact the Service Parts department at the address or telephone number listed on the “How to Reach Us” page provided at the beginning of this manual

Table 1. Systems and Images		
GE Part Number	Description	Qty
2070506–002	DVD MARS rp5800 Windows XP Image	1
2008849-003	Compaq EVO D510 mini-tower system	1
2020338-001	HP EVO D530 CMT (convertible mini-tower)	1
2025413-001	HP dc7100 CMT (convertible mini-tower)	1
2025658-003	HP dc7100 Win2k Server image CDs	2
2025659-003	HP dc7100 Win2k Pro image CDs	2
2030407-001	HP dc7600 CMT (convertible mini-tower)	1
2025658-006	Kit MARS dc7600 Win 2003 server image CDs	1
2025659-006	Kit MARS dc7600 XP Pro image CDs	1
2037288-001	MARS DC5750 Server 2003 Image DVD	1
2037286-001	MARS DC5750 XP Image DVD	1
2044118-001	HP rp5700 Computer	1
2044120-001	DVD MARS RP5700 XP IMAGE	1
2044119-001	DVD MARS RP5700 SERVER IMAGE	1

Table 2. Compaq EVO D510 Mini Tower Internal System (GE Part Number 2008849-003)			
Compaq Part Number	GE Part Number	Description	Qty
250185-001	2008849-004	100/7200 ATA hard drive - 80Gb	1
286711-001	2008849-005	40/12/40X CD-RW drive	1
289983-001	2008849-006	Mother board	1

Table 2. Compaq EVO D510 Mini Tower Internal System (GE Part Number 2008849-003) (Continued)			
Compaq Part Number	GE Part Number	Description	Qty
305579-001	2008849-007	2.8GHZ CPU (533MHz front side bus, 512KB L2 cache, 478-pin socket)	1
285649-001	2008849-008	DDR DRAM 256 MB	1
302652-001	2008849-009	Serial ribbon cable	1
278644-001	2008849-010	Floppy diskette drive 3.5	1
153099-001	2008849-011	Battery	1
289575-001	2008849-012	Chassis fan assembly	1
283984-001	2008849-013	Internal serial port	1
299172-001	2008849-014	Front cover plastic panel	1
277979-001	2008849-015	Power supply dual voltage	1
257047-001	2008849-016	IDE ribbon cable	1

Table 3. HP EVO D530 CMT Internal System (GE Part Number 2020338-001)			
HP Part Number	GE Part Number	Description	Qty
250185-001	2020338-003	100/7200 ATA hard drive - 80Gb	1
325308-001	2020338-004	48X/24X/48X CD-RW drive	1
323091-001	2020338-005	Mother board (does not include processor)	1
335813-001	2020338-006	2.8GHz CPU (533MHz front side bus, 512KB L2 cache, 478-pin socket)	1
335698-001	2020338-007	DDR SDRAM DIMM memory 256 MB	1
333505-001	2020338-008	Floppy diskette drive 3.5	1
153099-001	2020338-009	Battery	1
330457-001	2020338-010	Chassis fan	1
341899-001	2020338-011	Internal serial port	1
336443-001	2020338-012	Front cover plastic panel	1
308615-001	2020338-013	Power supply	1
336448-001	2020338-014	IDE cable-Ultra ATA dual device	1

Table 4. HP dc7100 CMT Internal System (GE Part Number 2025413-001)			
HP Part Number	GE Part Number	Description	Qty
345713-005	2025413-003	100/7200 ATA hard drive - 80Gb	1
358688-001	2025413-004	8x DVD+R/+RW drive	1
365865-001	2025413-005	Mother board (does not include processor)	1
367594-001	2025413-006	2.8GHz CPU (800MHz front side bus, 1MB L2 cache, 478-pin socket)	1
335698-005	2025413-007	DDR SDRAM DIMM memory 256 MB	2
333505-005	2025413-008	Floppy diskette drive 3.5	1
153099-001	2025413-009	Battery	1
366641-001	2025413-010	Chassis fan	1
283984-005	2025413-011	Internal serial port	1
371116-001	2025413-012	Front cover plastic panel	1
344987-001	2025413-013	Power supply	1
366640-001	2025413-014	IDE cable-Ultra ATA dual device	1

Table 5. HP dc7600 CMT Internal System (GE Part Number 2030407-001)			
HP Part Number	GE Part Number	Description	Qty
392405-001	2030505-002	Computer access panel dc7600 CMT	1
381023-001	2030505-003	Power supply PFC DC7600 CMT	1
391945-001	2030505-004	80 GB\7200 RPM SATA hard drive dC7600	1
390882-001	2030505-005	16X DVD+/-RW with lightscribe (DL/DF) DC7600	1
392286-001	2030505-006	IDE cable odd 17.25" two device dc7600	1
391738-001	2030505-007	SATA hard drive cable 13" DC7600	1
392285-001	2030505-008	Power switch/led cable without switch holder	1
392412-001	2030505-009	Chassis fan dc7600	1
392413-001	2030505-010	Speaker dc7600	1
382023-001	2030505-011	Heatsink with thermal grease and alcohol pad	1
336445-005	2030505-012	Rubber foot (4 ea.) dc7600	1
392414-001	2030505-014	Second serial port (full height) dc7600	1
380356-001	2030505-015	Sys board with alcohol pad and thermal grease	1

Table 5. HP dc7600 CMT Internal System (GE Part Number 2030407-001) (Continued)			
HP Part Number	GE Part Number	Description	Qty
396520-001	2030505-016	512 MB/667 MHz FSB dc7600	1
392273-001	2030505-017	3.0 GHz\800 MHzFSB 2MB cache 630 dc7600	1

Table 6. HP dc5750 CMT Internal System (GE Part Number 2016184-006)			
HP Part Number	GE Part Number	Description	Qty
432864-001	2036936-001	Front bezel assembly with 3.5-in. bezel blank and 5.25 in. bezel blank	1
433124-001	2036936-002	Access panel	1
404795-001	2036936-003	Power supply, 300W	1
432392-001	2036936-004	80-GB\7200 RPM SATA hard drive, 8MB cache	1
432394-001	2036936-005	250-GB\7200 RPM SATA hard drive, 8MB cache	1
419498-001	2036936-006	16X SATA DVDRW L drive with LightScribe	1
439216-001	2036936-007	Diskette drive cable	1
391739-001	2036936-008	SATA HDD cable, 19.5-in. lg (2 straight ends)	1
393958-001	2036936-009	SATA HDD cable, 18-in. lg (1 straight, 1 angle end)	1
432862-001	2036936-010	Front I/O with USB, audio cables, power/LED cable, switch and switch holder	1
432863-001	2036936-011	Chassis fan	1
430129-001	2036936-012	Internal speaker	1
335937-005	2036936-013	5.25-in bezel blank	1
432865-001	2036936-014	Heatsink with alcohol pad, factory-applied thermal grease, and heatsink shroud	1
390937-001	2036936-015	Mouse, PS2, scroll type	1
153099-001	2036800-016	Battery, real-time clock	1
392414-001	2036936-017	Second serial port, FH	1
435529-001	2036936-018	Rear I/O panel	1
433123-001	2036936-019	Fan duct	1
432861-001	2036936-020	System Board with thermal grease, alcohol pad, and CPU socket cover- Standard board	1
396520-001	2036936-021	512 MB, PC2-5300, CL5	1

Table 6. HP dc5750 CMT Internal System (GE Part Number 2016184-006) (Continued)			
HP Part Number	GE Part Number	Description	Qty
398038-001	2036936-022	1 GB, PC2-5300, CL5	1
435912-001	2036936-023	AMD Athlon64 processor with 1.0 GHz HyperTransport, 3800+, 2.4 GHz, 512 KB cache, 2.0 GHz FSB	1

Table 7. FRUs, HP rp5700 Computer (GE Part Number 2044118-001)			
GE Part Number	HP Part Number	Description	Qty
2044118-001	FZ429UP#ABA	COMPUTER RP5700 MARS	1
2040746-001	445766-001	FRU RP5700 HOOD ASSY W FRT BEZEL	1
2040746-002	445771-001	FRU RP5700 POWER SUPPLY	1
2040746-003	445759-001	FRU RP5700 POWER SWITCH W LED AND CABLE	1
2040746-004	445768-001	FRU RP5700 SERIAL PORT W CABLE	1
2040746-005	440499-001	FRU RP5700 HD DRIVE 160GB 7200 RPM SATA	1
2040746-006	445757-001	FRU RP5700 SYSTEM BOARD	1
2040746-007	450470-001	FRU RP5700 CPU 2GB E6400 2.13GHZ	1
2036936-022	398038-001	FRU DC5750 1 GB, PC2-5300, CL5	1
2040746-008	445758-001	FRU RP5700 MEMORY RISER CARD	1
2040746-009	445775-001	FRU RP5700 USB EXPANSION CARD W CBL	1
2040746-010	445761-001	FRU RP5700 FAN	1
2040746-011	445774-001	FRU RP5700 HEATSINK	1
2040746-012	417966-001	FRU RP5700 MOUSE PS2 OPTICAL	1
2036800-016	153099-001	FRU HP ML370 3.3-V LITHIUM BATTERY	1
2040746-013	445766-001	FRU RP5700 FRONT BEZEL	1
2040746-014	445762-001	FRU RP5700 SPEAKER INTERNAL	1
2040746-015	445767-001	FRU RP5700 FAN DUCT	1
2040746-016	445770-001	FRU RP5700 TOWER STAND	1
2040746-017	RV629AV	SATA 16X SUPERMULTI LIGHTSCRIBE ALL	1

Table 8. HP rp5800 Computer			
GE Part Number	HP Part Number	Description	Qty
2066875-002	653026-001	Access panel	1
2066875-003	653025-001	Front Bezel	1
2066875-004	628930-001	System Board, Trusted Platform Module (TPM)	1
2066875-005	655580-001	System Board, non-TPM	1
2066875-006	659246-001	Power Supply	1
2066875-007	635803-001	RAM, 2–GB, HP	1
2066875-021	638629-001	Intel Core i3 2120 (3.3-GHz, 3-MB L3 cache, 65W)	1
2066875-008	655579-001	Front USB and power switch assembly	1
2066875-009	653023-001	Powered serial cable	1
2066875-013	638813-001	SATA cable, 19.5 inch, 2 straight ends	1
2066875-016	638814-001	SATA cable, 25.2 inch, 1 straight end, 1 angled end	1
2066875-017	603250-001	Adapter, Display Port to VGA	1
2066875-020	484156-001	Adapter, Display Port to DVI	1
2066875-030	617450-001	Adapter, Display Port to HDMI	1
2066875-031	487562-001	Display Port cable	1
2066875-032	653028-001	Cable cover	1
2066875-033	645326-001	Heat sink and replacement thermal material	1
2066875-034	653024-001	Chassis fan	1
2066875-035	636925-001	Speaker	1
2066875-036	638817-001	Printer port, PCI card	1
2066875-037	636921-001	Fan duct	1
2066875-038	638946-001	Serial port (COMB) card	1
2066875-039	490689-001	Modem, LSI, v.92	1
2066875-012	645558-001	eSATA port assembly, PCI card	1
2066875-040	537745-001	PS/2, basic for use in the United States	1
2066875-041	609250-001	PS/2, basic	1
2066875-018	636927-001	Internal Hard Drive, 250-GB, 7200-rpm	1

Table 8. HP rp5800 Computer			
GE Part Number	HP Part Number	Description	Qty
2066875-022	419496-001	16X SATA DVD-ROM drive	1
2066875-042	638947-001	2-port powered serial card	1
2066875-011	638944-001	PCIe to PCIe riser – 24V	1
2066875-043	638945-001	Powered USB card – 12V	1
2066875-010	637591-001	HP FireWire / IEEE 1394a PCIe x1 card	1
2066875-014	635523-001	Intel PRO/1000CT NIC, includes bracket	1

Table 9. Printers		
GE Part Number	Description	Qty
2008159-001	HP 1200 LaserJet printer	1
2014596-005	HP 4200N LaserJet printer	1
2025143-001	HP 4250N LaserJet printer	1
2037296-001	Ricoh SP 4100N Laser printer	1
2044121-001	PRINTER HP LASERJET P4015N	1

Table 10. Security Keys (Dongles)		
GE Part Number	Description	Qty
2019278-001	Parallel port security key (dongle)	1
2019278-002	USB security key (dongle)	1

Table 11. Keyboards		
GE Part Number	Description	Qty
2016193-001	English keyboard	1
2016193-003	Danish keyboard	1
2016193-006	French keyboard	1
2016193-007	German keyboard	1
2016193-008	Italian keyboard	1
2016193-009	Norwegian keyboard	1
2016193-011	Spanish keyboard	1

Table 11. Keyboards (Continued)		
2016193-012	Swedish/Finnish Keyboard	1
2016193-029	Dutch keyboard	1
2016193-032	Chinese (simplified) keyboard	1
2016193-033	Japanese keyboard	1
2016193-036	Russian keyboard	1

Table 12. Compaq EVO D510 and HP EVO D530 OEM Hardware		
GE Part Number	Description	Qty
2008751-001	Adapter MARS compact flash to PC card	1
70124944	Internal PCMCIA card reader	1
2017036-001	Black bezel 3.5 to 5.25 (for card reader)	1
2016200-001	I/O serial board	1
2016199-001	I/O parallel board	1
2015936-001	SCSI board (optional)	1
2016502-001	Cable internal	1

Table 13. HP dc7100 OEM Hardware		
GE Part Number	Description	Qty
2015936-001	SCSI board (optional)	1
2025508-001	External OMNI USB linear flash card reader	1
2025507-001	Single external USB-serial RS232 connector cable	2

Table 14. Monitors		
GE Part Number	Description	Qty
2000594-016	Compaq 17-inch monitor	1
2001732-002	Sony 21-inch Monitor CPD-G520P	1
2013547-001	NEC 1880SX flat panel display 18 inch	1
2030979-001	NEC 1990SXi flat panel display 19-inch	1
2040982-001	DSPL 19 IN LCD HP L1910	1
2040982-001	DSPL 19 IN LCD HP LE1911	1

Table 15. SCSI Board for Tape Acquisition (Domestic) Kit PN 2026559-001 (not compatible with HP dc7600 CMT systems)		
GE Part Number	Item Description	Qty
2015936-001	PCI ULTRA320 SCSI card	1
2010165-249	MARS SCSI board installation instructions	1
2005410-001	Interface cable SCSI 3M TO SCSI 2	1
413636-001	Terminator SCSI-2 MINI-50 SUN	1
900791-101	Kit MARS tape acquisition (with 110v internal power supply)	1

Table 16. SCSI Board for Tape Acquisition (International) Kit PN 2026559-002 (not compatible with HP dc7600 CMT systems)		
GE Part Number	Description	Qty
2015936-001	PCI ULTRA320 SCSI card	1
2010165-249	MARS SCSI board installation instructions	1
2005410-001	Interface cable SCSI 3M TO SCSI 2	1
413636-001	Terminator SCSI-2 MINI-50 SUN	1
900791-102	Kit MARS tape acquisition (with 220v internal power supply)	1

Table 17. Peripherals		
GE Part Number	Description	Qty
2003771-002	Powerware PW5115, 500, 110V	1
2003772-003	Powerware PW5115, 500i, 230V	1
2030414-001	ONEAC PCm750J–C4CB VA Medical Grade Power Conditioner	1
	Powervar ABC600-11MED Medical Grade Power Conditioner	
2030414-002	ONEAC PCm750I–C4CB VA Medical Grade Power Conditioner	1
	Powervar ABC750-22MED Medical Grade Power Conditioner	
2046544-001	MultiTech Modem MT9234ZBA Replacement Kit	1
900466-101	Tape acquisition drive (US only)	1
900466-102	Tape acquisition drive (international)	1
2005410-001	SCSI cable	1

Table 17. Peripherals (Continued)		
2030414-001	Medical grade isolation transformer (120V)	1
2030414-002	Medical grade isolation transformer (220V)	1
2008595-009	SEER Light Connect Device (optional)	1
2027495-004	SD Card Reader Memory Card 18 in 1	1
2008099-002	Adapter CF to PC Card Type II	1
422187-001	OmniDrive Card Reader	1

Table 18. Miscellaneous		
GE Part Number	Description	Qty
3613-902	Tape Cleaning and demagnetizer kit (used ontape acquisition unit)	1

For your notes

Appendix A – Technical Descriptions

For your notes

Table 1. Compaq EVO D510 Mini-Tower Workstation Specifications

Manufacturer/Model	Compaq EVO D510 Mini tower
Processor	Intel Pentium 4 (1.8G/P4 CPU)
Standard L2 Cache	256 KB
System memory	2 GB (maximum)
Hard drive capacity	20 GB
Chipset	Intel 845G
Front side bus	400 MHz
Number of serial ports	4
CD-ROM drive	16X CD-ROM Drive
Dimensions (H x W x D)	17.65 x 6.6 x 16.8 inches (44.8 x 16.8 x 42.7 cm)
Weight	26 lbs. (11.8 kgms)
Rated Input Voltage	100 to 127 VAC or 200-240 VAC
Rated Input Current	6A @ 100VAC/3A@ 220VAC
Maximum Rated Power	220W
BTU/hr	1061 BTU/hr Maximum (338W input)

Table 2. HP EVO D530 CMT (Convertible Mini-Tower) Workstation Specifications

Manufacturer/Model	HP EVO D530 CMT (Convertible Mini tower)
Processor	Intel Pentium 4 (3.2G/P4 CPU)
Standard L2 Cache	512 KB
System memory	2 GB (maximum)
Hard drive capacity	80 GB
Chipset	Intel 865G
Front side bus	533 MHz
Number of serial ports	4
CD-ROM drive	48X/24X/48X CD-RW Drive
Dimensions (H x W x D)	17.65 x 6.6 x 17.8 inches (44.8 x 16.7 x 45.2 cm)
Weight	32.5 lbs. (14.74 kgms)
Rated Input Voltage	100 to 127 VAC or 200-240 VAC
Rated Input Current	6A @ 100VAC/3A@ 220VAC
Maximum Rated Power	240W
BTU/hr	1260 BTU/hr Maximum

Table 3. HP dc7100 CMT (Convertible Mini-Tower) Workstation Specifications

Manufacturer/Model	HP dc7100 CMT (Convertible Mini tower)
Processor	Intel Pentium 4 (3.2G/P4 CPU) with Hyperthread
Standard L2 Cache	1MB
System memory	4 GB (maximum)
Hard drive capacity	80 GB
Chipset	Intel 915G Express
Front side bus	800 MHz
Number of serial ports	2
DVD+R/+RW Drive	8X 4.7 GB DVD+R/+RW Drive
Dimensions (H x W x D)	17.65 x 6.6 x 17.8 inches (44.8 x 16.7 x 45.2 cm)
Weight	32.5 lbs. (14.74 kgms)
Rated Input Voltage	100 to 120 VAC or 200-240 VAC
Rated Input Current	6A @ 100VAC/3A@ 220VAC
Maximum Rated Power	340W
BTU/hr	1575 BTU/hr Maximum

Table 4. HP dc7600 CMT (Convertible Mini-Tower) Workstation Specifications

Manufacturer/Model	HP dc7600 CMT (Convertible Mini tower)
Processor	Intel Pentium 4 (3.0G/P4 CPU) with Hyperthread
Standard L2 Cache	2MB
System memory	4 GB (maximum)
Hard drive capacity	80 GB
Chipset	Intel 915G Express
Front side bus	800 MHz
Number of serial ports	1
DVD+R/+RW Drive	16X 4.7 GB DVD+R/+RW Drive
Dimensions (H x W x D)	17.65 x 6.6 x 17.8 inches (44.8 x 16.7 x 45.2 cm)
Weight	32.5 lbs. (14.74 kgms)
Rated Input Voltage	100 to 120 VAC or 200-240 VAC
Rated Input Current	6A @ 100VAC/3A@ 220VAC
Maximum Rated Power	340W
BTU/hr	1575 BTU/hr Maximum

Table 5. HP dc5750 MT (Mini-Tower) Workstation Specifications

Manufacturer/Model	HP dc5750 MT (Mini tower)
Processor	AMD Athlon 64 3800+ (2.4 GHz)
Standard L2 Cache	512k
System memory	512 MB installed
Hard drive capacity	80 GB
Chipset	ATI Express 1150
Front side bus	2 GHz
Number of serial ports	2
DVD+R/+RW Drive	16X 4.7 GB DVD+/-RW Drive
Dimensions (H x W x D)	14.85 in. x 6.95 in. x 16.85 in. (377mm x 177mm 428mm)
Weight	30.3 lbs. (13.74 kg)
Rated Input Voltage	100 to 127 VAC or 200-240 VAC
Rated Input Current	8A @ 100 VAC, 4A @ 220VAC
Maximum Rated Power	300W
BTU/hr	1575 BTU/hr Maximum

Table 6. HP rp5800 Sall Form Factor

Component	Description
Processor Type	Intel® Core i3-2120, 2 cores/4 threads
Processor Speed	3.30 GHz
Cache	3 MB
RAM	2 GB
Serial Ports	2 RS-232 Serial Ports
USB Ports	Two (2) USB 2.0 ports, front, Five (5) USB 2.0 ports, rear Three (3) Powered USB ports, 12V, rear
Keyboard Type	PS/2
Mouse Type	PS/2
Video Resolution	1280 x 1024 @ 16-bit color depth
Ethernet Connection	10/100/1000 Mbps Ethernet, RJ-45 connector
Expansion Slots	PCI – Two (2) 4.2 inch height, 6.6 inch length, 25W PCI Express x1 — One (1) 2.5 inch low profile, 6.6 inch length, 10W PCI Express x16 — One (1) 2.5 inch low profile, 6.6 inch length, 25W

Table 6. HP rp5800 Sall Form Factor (Continued)

Optical Drive	DVD-R/DVD-RW capable
Hard Drive	One (1) 250 GB SATA 3.0, 3.5 inch, internal
Voltage	120 VAC 220 VAC
Rated Line Frequency	50/60 Hz
Rated Power Consumption	110 VAC: 38.55 W (Operating), 2.65 W (Sleep), 0.93 W (Off) 220 VAC: 38.62 W (Operating), 2.90 W (Sleep), 1.12 W (Off)
Heat Dissipation	110 VAC: 132 BTU/hr (Operating), 9 BTU/hr (Sleep), 3 BTU/hr (Off) 220 VAC: 132 BTU/hr (Operating), 10 BTU/hr (Sleep), 4 BTU/hr (Off)
Dimensions (HxWxD)	3.95 in. x 13.30 in. x 14.90 in. 10.03 cm x 33.78 cm x 37.84 cm
Weight	15.06 lbs 6.84 kg
Operating Temperature	32° to 104° F 0° to 40° C
Operating Humidity	10% to 90%, non-condensing
Operating Atmospheric Pressure	10,000 feet 3,048 meters
Storage Temperature	-22° to 149° F -30° to 65° C
Storage Humidity	0% to 95%, non-condensing
Storage Atmospheric Pressure	30,000 feet 9,144 meters

Table 7. HP rp5700 Small Form Factor

Processor	
Type	1 Intel® Core 2 Duo (E6400e)
Speed	2.13 GHz 2MB L2 cache
Front Side Bus (FSB)	1066-MHz front side bus
Memory	1GB PC2-5300 (DDR2-667) Expandable to 4GB
Integrated I/O	
Integrated Serial	(2) RS-232C
Integrated USB	(2) front USB 2.0 ports (4) rear USB 2.0 ports
Integrated Keyboard	PS/2 standard keyboard supported

Table 7. HP rp5700 Small Form Factor (Continued)

Integrated Mouse	PS/2 2-button optical scroll mouse
Video	1280x1024 @ 75 Hz 16 or 32 bit color
Integrated Ethernet	10/100/1000 NIC RJ45 connector
Expansion Slots (PCI/ Cards)	3
Drive Bays	
Optical Drive	SATA 16X/48X DVD-ROM
Hard Drive	160GB SATA 3Gb/s
Power	
Voltage	90 - 264 VAC, autoselecting
Rated Line Frequency	50/60 Hz
AC input connector	IEC60-320 male connector.
Power consumption, rated	Maximum Rated Power: 240 W
Heat dissipation (BTU/hr)	100 VAC: 215.297 BTU/hr 115 VAC: 214.614 BTU/hr 230 VAC: 210.861 BTU/hr
Environmental	
Operating Temperature	+50° to +104° F +10° to +40°C
Operating Humidity	20% to 85%, non-condensing at ambient
Operating Altitude	10,000 feet 3,048 meters
Storage Temperature	-22° to +140°F -30° to 60° C
Storage Humidity	5% to 90%, non-condensing at ambient
Storage Altitude	30,000 feet 9,144 meters
Physical	
Size (HxWxD)	3.94 x 13.4 x 15 inches 10 x 34 x 38 cm
Weight	19.4 lbs 8.8 kg
Weight supported	77 lbs 35 kg

Table 7. HP rp5700 Small Form Factor (Continued)

Operating Systems	
Operating Systems supported	Microsoft Windows XP Professional US

Table 8. 21-inch Sony Color Monitor CPD G520P

CRT (cathode ray tube)	21 inches, FDTrinitron 90 -degree deflection
Viewable Image Size:	19.8" measured diagonally
Aperture Grille Pitch:	0.24mm
Maximum Resolution:	2048 x 1536 @ 85Hz
Signal Inputs:	Analog RGB: 0.7Vp-p, 75 ohm termination Sync Signal: Separate or composite sync: TTL 2k ohms, polarity free Sync on Green: 0.3Vp-p, negative
AC input voltage/current	100-240V AC; 50-60Hz; 2.0-1.0 A
Power Consumption	135 W (approximate)
Dimensions (W x H x D):	19.75 x 19.5 x 19.2 inches
Weight:	66.2 lbs

Table 9. NEC MultiSync LCD 1850X

LCD Module	18 inches,matrix, thin film transistor (TFT), liquid crystal display (LCD),0.28 mm dot pitch, XtraView+ technology, RGB vertical stripe color filter arrangement, 240 cd/m2 white luminance typical, 300:1 contrast ratio - typical
Active Display Area:	Horizontal: 14.1 inches / 359 mm Vertical: 11.3 inches / 287 mm (Dependent upon signal timing used)
Current Rating	0.8A @ 100 - 120V / 0.4A @ 220 - 240V
AC input voltage/current	Universal 100 (110-240V) 50-60Hz Internal
Power Consumption	65 W (Power Save Mode: 3W)
Viewing Angle	Left/Right: 85° Up: 85° Down: 85°
Operating Temperature	+41° F to +95° F / +5° C to +35° C
Operating Humidity Range	30% to 80%

Table 9. NEC MultiSync LCD 1850X (Continued)

Dimensions (W x H x D):	Net (with stand): 15.7 in (W) x 17.5 in (H) x 8.6 in (D) 398 mm (W) x 452 mm (H) x 218 mm (D) Net (without stand): 15.7 in (W) x 13.7 in (H) x 2.9 in (D) 398 mm (W) x 349 mm (H) x 74.4 mm (D) Gross: 21.1 in. (W) x 21.6 in. (H) x 12.3 in. (D) 535 mm (W) x 548 mm (H) x 312 mm (D)
Weight:	Net (with stand): 18.7 lbs. / 8.5 kg

Table 10. NEC MultiSync LCD 1980SX	
LCD Module	19-inch (19.0" viewable image size), active matrix, thin film transistor (TFT), liquid crystal display (LCD),0.294 mm dot pitch, XtraView+ technology, RGB vertical stripe color filter arrangement, 250 cd/m2 white luminance typical, 600:1 contrast ratio - typical, 25ms response time - typical
Active Display Area	Horizontal: 15.0 inches / 380 mm Vertical: 11.8 inches / 300 mm (Dependent upon signal timing used)
Current Rating	0.7A @ 100 - 120V / 0.35A @ 220 - 240V (without Option soundbar) 0.8A @ 100 - 120V / 0.45A @ 220 - 240V (with Option soundbar)
AC input voltage/current	Universal 100 (110-240V) 50-60Hz Internal
Power Consumption	36 W (Power Save Mode: <1W)
Viewing Angle	Left/Right: 85° Up: 85° Down: 85°
Operating Temperature	+41° F to +95° F / +5° C to +35° C
Operating Humidity Range	30% to 80%
Dimensions (W x H x D)	Net (with stand): 16.2 x 14.4-19.5 x 7.9 inches 412.2 x 364.8-494.8mm x 200mm millimeters Net (without stand): 16.2 x 13.3 x 3.1 inches 412.2 x 337 x 80 millimeters
Weight	Net (with stand): 20.5 lbs. / 9.3kg

Table 11. NEC MultiSync LCD 1990SXi

Display	
Viewable Size Image	19"
Pixel Pitch	0.294mm
Pixels Per Inch	86 @ native resolution
Brightness (typical)	270 cd/m2
Contrast Ratio (typical)	600:1
Viewing Angle (typical)	178° Vert., 178° Hor. (89U/89D/89L/89R)@ CR>10
Response Time (typical)	Rapid Response (18ms)
Display Colors	16.7 million out of 68.5 billion
Synchronization Range	
Horizontal	31.5-81.1 KHz (Analog/Digital)
Vertical	50-85 Hz
Input Signal	
Video	ANALOG RGB 0.7 Vp-p / 75 Ohms
Sync	Separate sync: TTL Level (Positive/Negative) Composite sync: TTL Level (Positive/Negative) Composite sync on green: (0.3Vp-p negative 0.7Vp-p positive)
Input	DVI-D, DVI-I & VGA 15 pin D-sub
Resolutions Supported	ANALOG/DIGITAL 640 x 400 @ 70-85 Hz 720 x 400 @ 70-85 Hz 640 x 480 @ 60-85 Hz 800 x 600 @ 56-85 Hz 832 x 624 @ 75 Hz 1024 x 768 @ 60-85 Hz 1152 x 864 @ 70-85 Hz 1152 x 870 @ 75 Hz 1280 x 960 @ 60 Hz 1280 x 1024 @ 60-75 Hz
Native Resolution	1280 x 1024 @ 60 Hz
Additional Features	Ultra-thin-frame (bezel), No Touch Auto Adjust, NaViSet software, tilt, VESA mount, sRGB, cable management, touch-enabled, swivel, vacation switch, height-adjustable stand, 12-bit gamma, AmbiBright, pivot, ColorComp, overdrive, eco-mode, real-time clock, quick release stand, Ambix

Table 11. NEC MultiSync LCD 1990SXi (Continued)

Touch-Capable	Designed for integration
Voltage Rating	AC 100-120V / AC 220-240V
Power Consumption (typical)	
On	52W
Power Savings Mode	<1W
Dimensions (WxHxD)	
Net (with stand)	15.8 x 14.4-19.5 x 9.7 in./402.3 x 410.7-560.7 x 247.3mm
Net (without stand)	15.8 x 13 x 3.1 in./402.3 x 330.3 x 80mm
Net Weight	
(with stand)	19.8 lbs./9 kg
(without stand)	13.8 lbs./6.3 kg
VESA Hole Configuration Specifications	100 x 100mm
Environmental Conditions	
Operating Temperature	5-35° C/41-95° F
Operating Humidity	30-80%
Operating Altitude	3048m/10,000 ft.
Storage Temperature	-10-60° C/14-140° F
Storage Humidity	10-85%
Storage Altitude	12,192m/40,000 ft.

Table 12. Compaq 17-inch Color Monitor (V720)

CRT size:	17-inch High-contrast Flat Faceplate
Viewable Image Size:	16" viewable
Horizontal Dot Pitch	.20 -.25 mm
Digital Dot Pitch	.25 -.28 mm
Max Resolution	1600 Dots x 1200 Lines
Text Mode	720 x 400/ 70 Hz
Horizontal Frequency	30 - 86 KHz
Vertical Frequency	50 - 160 KHz
Maximum Power Rating	100 W
Synch Input	TTL separate synch
Signal Cable	Captive 15-pin D-sub video cable

Table 12. Compaq 17-inch Color Monitor (V720) (Continued)

Dimensions (W x D x H)	15.66 x 16.22 x 15.74 inch (398 x 412 x 400 mm)
Weight	35.7 lb. (16.2 kg)
Power Consumption	100 W maximum
Power Saver State	< 3 W
Operating Temperature	32°F-104°F (0°C - 40°C)
Operating Humidity	20%-80% (Non-Condensing)

Table 13. HP 19-inch LCD Monitors

Specification	HP LE1911 19_inch LCD Monitor	HP L1910 19-inch LCD Monitor
LCD Module	19-inch active matrix TFT (thin film transistor)	19-inch active matrix TFT (thin film transistor)
Viewable Image Area	19 inches (48.26 cm) diagonal	19 inches (48.26 cm) diagonal
Active Display Area	Horizontal: 14.8 inches / 37.8 cm Vertical: 11.9 inches / 30.3 cm	Horizontal: 14.8 inches / 37.8 cm Vertical: 11.9 inches / 30.3 cm
Viewing Angle	160° horizontal 160° vertical 10:1 minimum contrast ratio	160° horizontal 160° vertical 10:1 minimum contrast ratio
Brightness	250 nits ($cd.m^2$)	300 nits ($cd.m^2$)
Contrast Ratio	1000:1	800:1
Response Rate	5 ms (rise and fall	5 ms (rise and fall)
Pixel Pitch	0.294 mm	0.294 mm
Backlight Lamp Life	50 K hours	50 K hours
Horizontal Frequency	24 to 83 kHz	24 to 83 kHz
Vertical Frequency	50 to 70 Hz	50 to 70 Hz
Native Resolution	1280 x 1024 @ 60 Hz	1280 x 1024 @ 60 Hz
Current	< 0.50 Ampere	< 0.50 Ampere
AC input voltage/current	Universal 100 (110-240V) 50-60Hz Internal	Universal 100 (110-240V) 50-60Hz Internal
Power Consumption	Maximum: < 28 watts Typical: 24watts Power Save Mode: <2 watts	Maximum: < 38 watts Typical: 31 watts Power Save Mode: <2 watts
Operating Temperature	+41° to +95° F (+5° to +35° C), non-condensing	+41° to +95° F (+5° to +35° C), non-condensing
Operating Humidity Range	20% to 80%, non-condensing	20% to 80%, non-condensing

Table 13. HP 19-inch LCD Monitors (Continued)

Dimensions (W x H x D)	With stand: 16.4 x 16.3 x 8.1 in / 41.6 x 41.4 x 20.6 cm Head only: 13.7 x 16.3 x 2.3 in / 34.7 x 41.4 x 5.8 cm	With stand: 16.4 x 16.3 x 7.6 in / 41.6 x 41.4 x 19.2 cm Head only: 13.7 x 16.3 x 2.3 in / 34.7 x 41.4 x 5.8 cm
Weight	Head only: 9.0 lbs. / 4.1 kg	Head only: 8.6 lbs. / 3.9 kg

Table 14. Card Reader Unit (internal)

Type	Omni Drive Professional
Pc Card Slots	1 Type lll slot, front side
Interface	Centronics interface (printer port) SPP, EPP automatic configuration
Data Transfer Speed	up to 1 mbyte/sec
Types of PC Card	SRAM Linear flash ATA/flash hard disk type ll, lll
Weight	1.32 lbs. or 600 g
Operating temperature	0 C to +70 C
Storage Temperature	-20 C to +85 C
Humidity	max. 90%, non-condensing
Power Supply	5 V DC from PC via keyboard adapter

Table 15. Card Reader Unit (external)

Type	Omni Drive USB
PC Card Slots	1x Type ll front slot
Interface	USB 1.1 (12 MBit/s)
Data Transfer Speed	up to 1 MByte/sec
Types of PC Card	SRAM; ATA Flash, ATA Hard Disk; CompactFlash, SmartMedia, MultiMedia, Secure Digital cards, a.o. with adapter
Dimensions	109 mm x 35 mm x 135 mm
Weight	approx. 300 g
Operating temperature	0 C to +70 C
Storage Temperature	-20 C to +85 C
Humidity	max. 90%, non-condensing
Power Supply	DC 5 V from PC via USB bus optional additional power supply via AC adapter

Table 16. SEER Tape Acquisition

Type	GE Medical Systems *Information Technologies* Tape Acquisition Unit
Nominal Voltage Range	100-120 VAC or 200-240 VAC (auto sensing)
Nominal Frequencies	50 Hz or 60 Hz (auto sensing)
Maximum Power Consumption	55 Watts
Processor	DSP56002 microprocessor
Processor Clock Speed	66 MHz
Tape Drive	Braemer CD350 Holter playpack tape drive
Media	
Cassette Tape	C-60 or C-120 cassette tapes
Interface Ports	One SCSI
Channels	1 or 2 (user selectable) and clock track
Resolution	12 bits
Sampling Frequency	128 samples/sec (real time)
Playback Speed	
Cassette	1000 times real time
Frequency Response	0.66 to 50 Hz overall (recorder to system)
Phase Response	Linear, less than 6 degrees phase shift at 0.5 Hz
Tape Playback Options	The tape is played back at approximately 1000 times real time. Analog amplifiers with gain and phase equalization optimized for Holter tape processing are provided for all channels. Tape speed variations are compensated by a time warp filter circuit synchronized to the clock track on the tape.
Effective Sampling Rates	
8500	Cassette, 1 mm/sec; phase-locked, 128 samples/sec
Physical Specifications	
Height	2.8 in (7.1 cm)
Width	9.6 in (24.4 cm)
Depth	10.4 in (26.4 cm)
Weight	5.1 lb (2.3 kg)

Table 17. Hewlett Packard 1200 LaserJet Printer

Speed	15 ppm
Resolution	1200 dpi
Duty Cycle	10,000 single sided pages per month

Table 17. Hewlett Packard 1200 LaserJet Printer (Continued)

Power Consumption	
Printing	285 watts average
Standby Mode and Power Save	7 watts
Power Requirements	■ 110-120 v (+/-10%), 50-60 Hz (+/-2); 127V, 60 Hz or ■ 220v (+/-10%), 50-60 Hz (+/-2) ■ 220-240v (+/-10%), 50 Hz (+/-2)
Dimensions (h x w x d)	10.0 x 16.3 x 19.1 in. (25.3 x 41.5 x 48.6 cm)
Weight	16.1 lbs. (7.3 kg)

Table 18. Hewlett Packard 4200N LaserJet Printer

Speed	35 ppm letter size
Resolution	1200 dpi
Memory, Standard	48 MB
Memory, Maximum	416 MB
First page out	<9 sec.
Power requirements	110-127 v (50-60 Hz) /220-240 v (50-60 Hz)
Operating Temperature	50-90 ° F (10-32 ° C)
Dimensions (h x w x d)	16.2 x 41.1 x 21.5 in. (412 mm x 1045 mm x 547 mm)
Weight	45.0 lbs. (20.0 kg)

Table 19. Hewlett Packard 4250N LaserJet Printer

Speed	45 ppm letter size
Resolution	1200 dpi
Memory, Standard	48 MB
Memory, Maximum	512 MB
First page out	<8 sec.
Power requirements	110-127 v (50-60 Hz) /220-240 v (50-60 Hz)
Operating Temperature	50-90 ° F (10-32 ° C)
Dimensions (h x w x d)	16.5 x 17.8 x 14.8 in. (418 mm x 451mm x 498 mm)
Weight	45.0 lbs. (20.0 kg)

Table 20. Powerware PW5115 500 UPS, 120 volt

Dimensions (W x H x D)	15.0 x19.3 x 27.0 cm (5.9 x 7.6 x 10.6 inches)
Weight	7.8 kg (17.2 lbs)
Electrical Input	
Nominal Voltage	110v, 120v selectable
Voltage Range	+/-20% for nominal voltage at full load
Nominal Frequency	45-65 Hz, 50/60 Hz auto-sensing
Efficiency (normal mode)	95%
Overcurrent Protection	Resettable input overcurrent protector
Electrical Output	
Power Levels	500 VA, 320W
Power Factor	500 VA, 0.64
Regulation(Battery Mode), Nominal voltage +/-5%	110v, 120v
Regulation (Normal Mode)	-10% to 6% of nominal voltage
Voltage waveform	Sine Wave
Overcurrent Protection	Inverter saturation current limited
Battery	
Voltage	500VA: 12Vdc
Type	Sealed, maintenance-free, valve-regulated, lead-acid

Table 21. ONEAC PCm750J—C4CB VA Medical Grade Power Conditioner

Dimensions (WxHxD)	6.4 x 5.4 x 10.9 inches 16.4 x 13.7 x 27.7 centimeters
Weight	12 pounds 26.5 kilograms
Load	750 VA
Frequency	50/60 Hz
Input/Output Connectors	IEC320 / (4) IEC320
Nominal Input/Output Rating	100 — 200 V
Output Current	6.2 amps

Table 22. ONEAC PCm750l—C4CB VA Medical Grade Power Conditioner

Dimensions (WxHxD)	6.4 x 5.4 x 10.9 inches 16.4 x 13.7 x 27.7 centimeters
Weight	14.5 pounds 32 kilograms
Load	750 VA
Frequency	50/60 Hz
Input/Output Connectors	IEC320 / (4) IEC320
Nominal Input/Output Rating	200 — 240 V
Output Current	3.1 amps

Table 23. Powervar ABC600-11MED Medical Grade Power Conditioner

Dimensions (WxHxD)	8.10 x 4.29 x 11.80 inches 20.57 x 10.90 x 29.97 centimeters
Weight	23.00 pounds 10.43 kilograms
Load	720 VA
Frequency	60 Hz
Input/Output Connectors	IEC320 / (6) IEC320
Nominal Input/Output Rating	120 VAC
Output Current	6 amps

Table 24. Powervar ABC750-22MED Medical Grade Power Conditioner

Dimensions (WxHxD)	8.11 x 4.29 x 11.81 inches 20.6 x 10.90 x 30 centimeters
Weight	28.66 pounds 13.00 kilograms
Load	750 VA
Frequency	50/60 Hz
Input/Output Connectors	IEC320 / (6) IEC320
Nominal Input/Output Rating	200 — 264 VAC
Output Current	N/A. The output power is rated in VA.

Table 25. Ricoh SP4100N

PPM BW (LT)	31
First Print Speed BS	6.9 sec
Warm-up Time	19 sec
CPU	400MHz
Memory (Std./Max.)	128MB/384MB
Resolution (Max.)	1200 x 600 dpi 600 x 600 dpi
Printer Languages	RPCS, PCL5C, PCL-6, PS3/PDF
Duplex	Option
Interface (Std.)	10.100 Base-TX, USB 2.0, IEEE1284
Input Capacity (Std./Max.)	600/1600
Output Capacity (Std.)	250
Paper Weight from Std. Tray	16–34lb
W x D x H	15.3 x 17.8 x 13.6 (inches)

Table 26. HP LaserJet P4015 Printer

Speed	52 ppm
Resolution	1200 x 1200 dpi
Memory, Standard	128 MB
Memory, Maximum	640 MB
First page out	<9 sec.
Power requirements	100-127 V (50-60 Hz) 220-240 V (50-60 Hz)
Power Consumption	840 watts active 18 watts ready 12 watts sleep mode 0 watts off
Operating Temperature	50° - 90° F 10° - 32° C
Storage Temperature	32° - 95° F 0° - 35° C

Table 26. HP LaserJet P4015 Printer

Dimensions (h x w x d)	16.5 x 17.7 x 15.5 in. 41.91 x 44.95 x 39.37 cm
Weight	59.92 lbs. 27.2 kg

Table 27. Powerware PW5115 500i UPS, 230 volt

Dimensions (W x H x D)	15.0 x19.3 x 27.0 cm (5.9 x 7.6 x 10.6 inches)
Weight	7.8 kg (17.2 lbs)
Electrical Input	
Nominal Voltage	220v, 230v, 240v selectable
Voltage Range	+/-20% for nominal voltage at full load
Nominal Frequency	45-65 Hz, 50/60 Hz auto-sensing
Efficiency (normal mode)	95%
Overcurrent Protection	Resettable input overcurrent protector

Electrical Output	
Power Levels	500 VA, 320W
Power Factor	500 VA, 0.64
Regulation(Battery Mode), Nominal voltage +/-5%	220v, 230v, 240v
Regulation (Normal Mode)	-10% to 6% of nominal voltage
Voltage waveform	Sine Wave
Overcurrent Protection	Inverter saturation current limited
Battery	
Voltage	500VA: 12Vdc
Type	Sealed, maintenance-free, valve-regulated, lead-acid

Table 28. Oneac PCmSeries 500 – 1000 VA Medical Grade Isolation Transformer

Dimensions (W x H x D)	16.4 x 13.7 x 27.7 cm (6.4 x 5.4 x 10.9 inches)
Weight ■ PCM750J-C4CB ■ PCM750I-C4CB	 13.6 kg (30 lbs) 11.3 kg (25 lbs)
Load	750 VA

Table 28. Oneac PCmSeries 500 – 1000 VA Medical Grade Isolation Transformer (Continued)

Nominal Input/Output Rating ■ PCM750J-C4CB ■ PCM750I-C4CB	 100 – 120 V 200 – 240 V
Output Current ■ PCM750J-C4CB ■ PCM750I-C4CB	 6.2 Amps 3.1 Amps
Frequency	50/60 Hz
Input/Output Connectors	IEC320/ (4) IEC 320

Table 29. SEER Light Connect Device

Dimensions	Height: 13 mm (.51 in) Width: 90 mm (3.54 in) Depth: 51 mm (2.01 in) Cable length: 260 mm (10.24 in)
Weight	87 g (.19 lbs)
Operating temperature	10 to 35°C (50 to 95°F)
Operating humidity	10 to 95% relative humidity (no condensation allowed)
Storage temperature	–20 to 65°C (-4 to 149°F)
Storage humidity	5 to 90% relative humidity (no condensation allowed)
Power supply	DC 5V
Recorders	SEER Light Recorder SEER Light Extend Recorder

Table 30. Environmental, System-Wide

Power	15 amps
Operating Conditions	
Temperature	10 to 35º C (50 to 90º F)
Relative Humidity	20% to 80%
Maximum Altitude	2,500 meters (8,200 feet)
Storage/Transport Conditions	
Temperature	-20 to 43 degrees C (-40 to 110 degrees F)
Relative Humidity	8% to 80%
Maximum Altitude	10,350 meters (34,000 feet)

Table 31. Safety

Certification	UL listed CSA certified TUV certified EN 60950 (UL 1950) CE marking for Council Directive 93/42/EEC
Type of Protection Against Electrical Shock	Class 1
Degree of Protection Against Ingress of Liquids	Ordinary
Handling of Disposable Supplies and Other Consumables	■ Use only parts and accessories manufactured or recommended by GE Healthcare. ■ Follow manufacturer's instructions for use for disposable/consumable product. ■ Follow local environmental guidelines concerning the disposal of hazardous materials (e.g. lead acid batteries).
Patient Mode of Operation	Continuous
Patient Leakage Current	Not applicable
Degree of Protection Against Electrical Shock	Not applicable
Maintenance Frequency	■ Recommended user daily visual inspection and cleaning. ■ Recommended six-month routine maintenance checks and test procedures performed by qualified technical personnel.
Repair Guidelines	Calibration instructions, equipment descriptions, and all other service information to repair those parts of the equipment designated as field repairable by qualified technical personnel is available in the service manual.

Table 27. Multi-Tech MT9234ZBA Modem

Manufacturer/Model	Multi-Tech MT9234ZBA
Server-to-Client Data Rates	56K speeds when accessing a V.90 or V.92 server (actual speed depends on server capabilities and line conditions)
Client-to-Server Data Rates	Up to 48Kbps when accessing a V.92 server (actual speed depends on server capabilities and line conditions); otherwise the same as client-to-client data rates (see next listing).
Client-to-Client Data Rates	33600, 31200, 28800, 26400, 24000, 21600, 19200, 16800 bps, 14400, 12000, 9600, 7200, 4800, 2400, 1200, 0-300 bps
Fax Data Rates	33600, 31200, 28800, 26400, 24000, 21600, 19200, 16800
Voice Compatibility	TIA/EIA IS-101 (Voice Option only)
Data Format	Serial, binary, asynchronous
Modem Compatibility	ITU-T V.92, V.90, V.34 enhanced, V.34, V.32bis, V.32, V.22bis, V.22; Bell 212A and 103/113; ITU-T V.21 & V.23; V.42, V.42bis, V.44.
Fax Compatibility	ITU-T "Super" Group 3; Class 1.0, 2.0, 2.1; T.4; T.30; V.21; V.27ter; V.29; V.34; V.17; and TIA/EIA Class 1, 2; TR29.2

Table 27. Multi-Tech MT9234ZBA Modem (Continued)

Video Compatibility	ITU-T V.80 for H.324 video conferencing
Error Correction	ITU-T V.42
Data Compression	ITU-T V.44 (6:1 throughput)
Speed Conversion	Serial port data rates adjustable to 300, 1200, 2400, 4800, 9600, 19,200, 38,400, 57,600, 115,200, and 230,400 bps
Mode of Operation	Fax online modes; full duplex over dial-up lines;
Flow Control	XON/XOFF (software), RTS/CTS (hardware)
Intelligent Features	Plug and play; fully AT command compatible; dialing options, autoanswer; adaptive answer; EIA extended automode; adaptive line probing; automatic symbol and carrier frequency during start-up, retrain, and rate renegotiation; DTMF detection; call status display, auto-parity and data rate selections; keyboard-controlled modem options; non-volatile memory; remote configuration; DTR dialing; callback security; A-law support in 56K modes; 11-bit support; realtime fax compression conversion; U.S. Caller ID reporting; quick-connect startup(V.92).
Command Buffer	40 characters
Transmit Level	-12 dBm (Eruo/NAM) – varies by country/region setting
Frequency Stability	±0.01%
Receiver Sensitivity	-43 dBm under worst-case conditions
AGC Dynamic Range	43 dB
Interface	TIA/EIA RS-232C/ITU-T V.24/V.28
Connectors	DB25F RS-232C connector; 2 RJ-11 telephone jacks; power jack
Cables	Country-specific telephone; power cables; serial cable Note: Any cables connected to the computer should be shielded to reduce interference.
Diagnostics	Power-on self test, local analog loop, local digital loop, remote digital loop.
Indicators	LEDs for Transmit Data, Receive Data, Carrier Detect, 56K bps, 33.6K bps, 14.4K bps, Off Hook, Terminal Ready, Error Correction, Fax.
Speaker	Internal speaker for call progress monitoring.
Manual Control	Power switch
Operating Temperature	-40°– 60°C (-40°–140°F) ambient under closed conditions; humidity range 20–90% (non-condensing)
Power Requirements	Global modems: 100–240 VAC, 50/60 Hz universal power supply Non-global modems: 115 VAC, 60 Hz or 230 VAC, 50 Hz power supply
Power Consumption	9 VDC, 300 mA maximum
Dimensions	10.8 cm wide × 14.8 cm long × 2.9 cm high (4.25 in× 5.8 in× 1.15 in)
Weight	224 g (8 oz)
Limited Warranty	10 years

B Appendix B – Configuring Patient Slots

For your notes

Slot Installation/Time Consumption Report

As shown in the following tables, increasing the number of patient slots can result in increased installation time and decreased system performance. Be aware of this when configuring your system.

The following results are based on a Compaq EVO D510 platform, which has a 2.8 GHz processor, 256 MB RAM, and the Windows 2000 Professional operating system. Performance may vary greatly depending on hardware type, network speed, operating system, and other factors.

By default, each SEER slot file takes 57 MB and each tape slot file takes 83 MB. These sizes may increase if you use the Slot File tool.

Standalone System Slot Install Time Duration and Performance Considerations

Slot Installation				Performance Impact		
Hardware	Number of SEER Slots Installed	Number of Tape Slots Installed	Installation Time	Start MARS Application	Start Patient Select	Start Function (Strip Review)
D510 with Win2k Pro	50	0	7 min 45 sec	<1 sec	<1 sec	<1 sec
D510 with Win2k Pro	100	50	14 min 35 sec	1 sec	1 sec	<1 sec
D510 with Win2k Pro	500	100	35 min	1.5 sec	8 sec	1 sec
D510 with Win2k Pro	900	100	51 min	2 sec	17 sec	1 sec

Client-Server Slot Install Time Duration and Performance Considerations

	Slot Installation			Performance Impact			
Hardware	Number of SEER Slots Installed	Number of Tape Slots Installed	Installation Time	Network Speed	Start MARS Application from Client	Start Patient Select from Client	Start Function (Strip Review) from Client
D510 with Win2k Server	100	50	27 min	100 Mb per sec	1 sec	2 sec	1 sec
D510 with Win2k Server	100	50	27 min	10 MB per sec	1 sec	2 sec	1 sec
D510 with Win2k Server	500	100	71 min	100 MB per sec	1 sec	9 sec	1 sec
D510 with Win2k Server	500	100	71 min	10 MB per sec	1 sec	10 sec	1 sec

For your notes

C Appendix C – Electromagnetic Compatibility

For your notes

Electromagnetic Compatibility (EMC)

Changes or modifications to this system not expressly approved by General Electric can cause EMC issues with this or other equipment. This system is designed and tested to comply with applicable regulation regarding EMC and must be installed and put into service according to the EMC information stated in this appendix.

WARNING
Use of portable phones or other radio frequency (RF) emitting equipment near the system may cause unexpected or adverse operation.

WARNING
The equipment or system should not be used adjacent to, or stacked with, other equipment. If adjacent or stacked use is necessary, the equipment or system should be tested to verify normal operation in the configuration in which it is being used.

Electromagnetic Emissions

Guidance and manufacturer's declaration – electromagnetic emissions		
The *MARS HOLTER ANALYSYS WORKSTATION SYSTEM* is intended for use in the electromagnetic environment specified below. The customer or user of the *MARS HOLTER ANALYSYS WORKSTATION SYSTEM* should assure that it is used in such an environment.		
Emissions Test	Compliance	Electromagnetic Environment – guidance
RF emissions (Radiated) 30 MHz to 1,000 MHz IEC 60601-1-2:2004 CISPR22:1997 / A1:2000 / A2:2002 EN 55022:1998 / A1:2000 / A2:2003 30 MHz to 5 GHz FCC 47CFR Part 15.33 FCC 47CFR Part 15.109	Group 1 Class B	The MARS HOLTER ANALYSYS WORKSTATION SYSTEM uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment. The MARS HOLTER ANALYSYS WORKSTATION SYSTEM is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
RF emissions (Conducted) 150 KHz to 30 MHz IEC 60601-1-2:2004 CISPR22:1997 / A1:2000 / A2:2002 EN 55022:1998 / A1:2000 / A2:2003 150 KHz to 30 MHz FCC 47CFR Part 15.107	Group 1 Class B	
Harmonic Emissions 2^{nd} – 40^{th} Harmonic IEC 60601-1-2:2004 EN 61000-3-2:2000 / A1:2001	Class D	The MARS HOLTER ANALYSYS WORKSTATION SYSTEM is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Voltage fluctuations/ Flicker emissions IEC 60601-1-2:2004 EN 61000-3-3:1995 / A1:2002	Complies Pass	

Electromagnetic Immunity

Guidance and manufacturer's declaration – electromagnetic immunity			
The *MARS HOLTER ANALYSYS WORKSTATION SYSTEM* is intended for use in the electromagnetic environment specified below. The customer or user of the *MARS HOLTER ANALYSYS WORKSTATION SYSTEM* should assure that it is used in such an environment.			
Immunity Test	Compliance **Test level**	Compliance level	Electromagnetic environment – guidance
Electrostatic discharge (ESD) IEC 60601-1-2:2004 EN 55024:1998 / A1:2001 / A2:2003 EN 61000-4-2:1995 / A1:1998 / A2:2001	± 2/4 kV indirect ± 2/4 kV direct ± 2/4/8 kV air	± 4 kV indirect ± 4 kV direct ± 8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst (EFT) IEC 60601-1-2:2004 EN 55024:1998 / A1:2001 / A2:2003 EN 61000-4-4:1995 / A1:2001	± 1 kV for power supply lines ±500V for input/ output lines	± 1 kV for power supply lines ±500V for input/ output lines	Mains power should be that of a typical commercial or hospital environment.
Fast Transient Surge (FTS) IEC 60601-1-2:2004 EN 55024:1998 / A1:2001 / A2:2003 EN 61000-4-5:1995 / A1:2001	± 500V/1 kV differential mode ± 2 kV common mode	± 1 kV differential mode ± 2 kV common mode	Mains power should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 60601-1-2:2004 EN 55024:1998 / A1:2001 / A2:2003 EN 61000-4-11:1994 / A1:2001	<5% U_t (>95% dip in U_t) for 0.5 cycles <40% U_t (>60% dip in Ut) for 5 cycles <70% U_t (>30% dip in Ut) for 25 cycles <5% U_t (>95% dip in Ut) for 5 s	<5% U_t (>95% dip in U_t) for 0.5 cycles <40% U_t (>60% dip in Ut) for 5 cycles <70% U_t (>30% dip in Ut) for 25 cycles <5% U_t (>95% dip in Ut) for 5 s	Mains power should be that of a typical commercial or hospital environment. If the user requires continued operation during power mains interruptions, it is recommended that power be supplied from an applicably rated uninterruptible power supply or a battery.

Power frequency (50/60 Hz) magnetic field IEC 60601-1-2:2004 EN 55024:1998 / A1:2001 / A2:2003 EN 61000-4-8:1993 / A1:2001	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristics of a typical location in a typical commercial or hospital environment.
NOTE: U_t is the a.c. mains voltage prior to application of the test level.			

Electromagnetic Immunity

Guidance and manufacturer's declaration – electromagnetic immunity			
The *MARS HOLTER ANALYSYS WORKSTATION SYSTEM* is intended for use in the electromagnetic environment specified below. The customer or user of the *MARS HOLTER ANALYSYS WORKSTATION SYSTEM* should assure that it is used in such an environment.			
Immunity Test	Compliance Test level	Compliance level	Electromagnetic environment – guidance
Conducted RF IEC 60601-1-2:2004 EN 55024:1998 / A1:2001 / A2:2003 EN 61000-4-6:1996 / A1:2001	3 Vrms 150 KHz to 80 MHz @ 1 KHz mod.	3 V rms	Portable and mobile RF communications equipment should be used on closer to any part of the MARS PC SYSTEM, including cables, than the recommended separation distance calculated fro the equation applicable to the frequency of the transmitter. Recommended separation distance $d = 1.17\sqrt{P}$
Radiated RF IEC 60601-1-2:2004 EN 55024:1998 / A1:2001 / A2:2003 EN 61000-4-3:2002 / A1:2002	3 V/m 80 MHz to 1,000 MHz @ 1 KHz mod.	3 V/m	$d = 1.17\sqrt{P}$ 80 MHz to 800 MHz $d = 2.33\sqrt{P}$ 800 MHz to 1.0 GHz where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and *d* is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey [a], should be less than the compliance level in each frequency range. [b] Interference may occur in the vicinity of equipment marked with the following symbol: 
NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies. NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by reflection from structures, objects, and people.			

a	Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, and electromagnetic site survey should be considered. If the measured field strength in the location in which the *MARS PC SYSTEM* is used exceeds the applicable RF compliance level above, the *MARS PC SYSTEM* should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the *MARS PC SYSTEM*
b	Over the frequency range 150 KHz to 80 MHz, field strengths should be less than *3* V/m.

Separation Distance

Recommended separation distances between portable and mobile RF communications equipment and the *MARS HOLTER ANALYSYS SYSTEM*			
The *MARS HOLTER ANALYSYS WORKSTATION SYSTEM* is intended for use in the electromagnetic environment on which radiated RF disturbances are controlled. The customer or the user of the *MARS HOLTER ANALYSYS WORKSTATION SYSTEM* can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the *MARS HOLTER ANALYSYS WORKSTATION SYSTEM* as recommended below, according to the maximum output power of the communications equipment.			
Rated maximum output power of transmitter W	Separation distance (meters) according to frequency of transmitter		
	150 kHz to 80 MHz $d = 1.17\sqrt{P}$	80 MHz to 800 MHz $d = 1.17\sqrt{P}$	800 MHz to 1.0 GHz $d = 2.33\sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.37	0.37	0.74
1	1.17	1.17	2.33
10	3.70	3.70	7.37
100	11.7	11.7	23.3
For transmitters rated at a maximum output power not listed above, the recommended separation distance *d* in meters (m) can estimated using the equitation applicable to the frequency of the transmitter, where *P* is the maximum output power rating of the transmitter in watts (w) according to the transmitter manufacturer.			
NOTE 1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.			
NOTE 2 These guidelines may not apply in all instances. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			

EMC Exceptions(s) Disclosure

EMC Exception(s) Disclosure		
Type	Exception	Electromagnetic Environment Guidance
Electrostatic discharge (ESD)	No exceptions	NA
Electrical fast transient/burst (EFT)	No exceptions	NA
Fast Transient Surge (FTS)	No exceptions	NA
Voltage dips, short interruptions and voltage variations on power supply input lines	No exceptions	NA
Power frequency (50/60 Hz) magnetic field	No exceptions	NA
Conducted RF	No exceptions	NA
Radiated RF	No exceptions	NA

Compliant Cables and Accessories

WARNING
The use of accessories, transducers and cables other than those specified may result in increased emissions or decreased immunity performance of the equipment or system.

The table below lists cables, transducers, and other applicable accessories with which GE Healthcare claims EMC compliance.

NOTE
Any supplied accessories that do not affect EMC compliance are not included.

Part No	Description	Maximum Cable / Cord Lengths
2030979-001	19" LCD monitor, NEC MultiSync model 1990Sxi (includes DVI-A to 15-pin VGA cable)	1.8 m / 6 ft
2040982-001	19" LCD monitor, HP LE1911 or HP L1910 (includes VGA cable)	1.8 m / 6 ft
2025143-001	Network printer, HP LaserJet 4250n	N/A
2044121-001	Network printer, HP LaserJet 4015n	N/A
2018217-001	RJ45 Crossover CAT5 Cable for HP Laser Jet 4250n and P4015n printers	7.6 m / 25 ft
2016193-001	USB Keyboard	N/A
334684-002	Hewlett-Packard PS/2 mouse (2 button w/scroll)	N/A
2025508-001	Omni Drive USB Professional Linear Flash Unit; includes USB cable	1.9 m / 6.5 ft
900466-003	Tape Acquisition Unit	N/A
2030414–001	ONEAC Medical Grade Isolation Transformer 120 VAC	N/A
	Powervar Medical Grade Power Conditioner 120 VAC	
2030141–002	ONEAC Medical Grade Isolation Transformer 220 VAC	N/A
	Powervar Medical Grade Power Conditioner 200–264 VAC	
2005410-001	Tape Acquisition Unit SCSI-1 cable	1.5 m / 5 ft
2026470-002	Oneac Medical Grade Power Conditioned UPS 120 VAC	N/A
2026470-003	Oneac Medical Grade Power Conditioned UPS 230 VAC	N/A
N/A	IEC320 male to female cord supplied with Oneac Medical Grade Power Conditioned UPS	1.8 m / 6 ft
N/A	Serial Cable supplied with Oneac Medical Grade Power Conditioned UPS	3.0 m / 10 ft
405535-002	Hospital Grade AC Power Cord	3.6 m / 12 ft
2003927-001	IEC320 male to female Cord	2.4 m / 8 ft

Part No	Description	Maximum Cable / Cord Lengths
2008595-009	SEER Light Connect with USB interface, includes USB cable supplied with SEER Light Connect	1.8 m / 6 ft
2008595-007	SEER Light Compact Digital Holter Recorder, 48 hour, 64MB	N/A

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