



**Agilent Technologies E1438  
VXI 100 MSa/s ADC  
with filters and memory  
Installation and Service Guide**



**Agilent Technologies**

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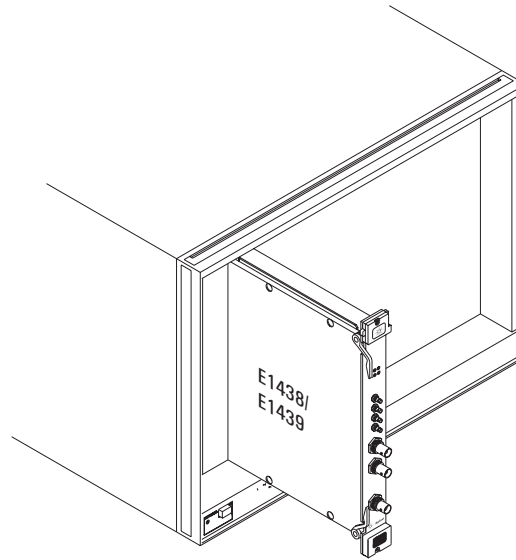
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## The Agilent Technologies E1438 at a Glance

The Agilent Technologies E1438 100 MSa/s Digitizer with DSP and Memory provides high precision digitizing for time and frequency domain applications along with signal conditioning, filtering, and memory. The module plugs into a single C-size slot in a VXI mainframe.



|                                    |                                                        |
|------------------------------------|--------------------------------------------------------|
| <b>Number of Channels</b>          | <b>1</b>                                               |
| <b>Type of Input</b>               | <b>50 ohm</b>                                          |
| <b>Input Bandwidth</b>             | <b>150 MHz, 40 MHz alias protected</b>                 |
| <b>Sample Rate</b>                 | <b>100/102.4 Msample/sec</b>                           |
| <b>Input Range</b>                 | <b>-21 to +30 dBm</b>                                  |
| <b>Raw ADC resolution</b>          | <b>12 bits</b>                                         |
| <b>VXI Bus Support</b>             | <b>VME and Local Bus</b>                               |
| <b>VXI Device Type</b>             | <b>Register based</b>                                  |
| <b>I/O Data Port (E1438B only)</b> | <b>Fiber optic serial FPDP (front panel data port)</b> |
| <b>Size</b>                        | <b>C-sized, single slot</b>                            |

# What You Get With the Agilent Technologies E1438

The following items are included with your Agilent Technologies E1438

## Hardware:

- Agilent Technologies E1438 ADC, C-size VXI module
- CD-ROM for Windows and HP-UX setup

## Software

- CD-ROM for installation

A Windows setup program which installs:

- The Agilent Technologies E1438 *VXIplug&play* libraries and drivers
- The Agilent Technologies E1438 HP-VEE header files and WinHelp
- Soft Front Panel program for the Agilent Technologies E1438 with source files and online help, for Windows only
- Web-based help for the Agilent Technologies E1438
- AGDSP function library and online help
- Example programs and source files
- Microsoft Visual C++ C-library and source files
- Microsoft Visual Basic header files

A depot file for HP-UX installation:

- Libraries and drivers
- Web-based help for the Agilent Technologies E1438
- AGDSP function library and online help
- Example programs and source files

## Documentation

- Agilent Technologies E1438 Installation and Service Guide (this book)
- Online documentation available after software installation:
  - Agilent Technologies E1438 User's Guide in PDF format
  - Web-based help files providing operational information and programmer's reference
  - WinHelp files for the Agilent Technologies E1438 Soft Front Panel
  - WinHelp for VEE

## In This Book

This book documents the Agilent Technologies E1438 module. It provides information on:

- hardware installation
- software installation
- getting started information
- replaceable parts

## Other Documentation

After running the setup program the following documentation is available:

- Complete documentation (*Agilent Technologies E1438 User's Guide*) is provided as a PDF document.
- Web-based help files are available from the Start menu.
- WinHelp for the Soft Front Panel is available from the application.



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## Contents

### Installing the Agilent E1438

|                                       |    |
|---------------------------------------|----|
| To inspect the Agilent E1438 .....    | 10 |
| To install the Agilent E1438 .....    | 11 |
| To clean fiber optic connectors ..... | 14 |
| To store the module .....             | 15 |
| To transport the module .....         | 15 |

### Getting Started with the Agilent E1438

|                                                                 |    |
|-----------------------------------------------------------------|----|
| Getting Started and Introduction .....                          | 18 |
| System Requirements .....                                       | 19 |
| To install the Windows <i>VXIplug&amp;play</i> drivers .....    | 20 |
| To install the HP-UX C-language drivers .....                   | 21 |
| To use the Resource Manager .....                               | 22 |
| To use the program group (Windows) .....                        | 23 |
| To use the <i>VXIplug&amp;play</i> Soft Front Panel (SPF) ..... | 24 |
| To use the HP-UX libraries .....                                | 25 |
| To use the example programs .....                               | 26 |

### Replacing Assemblies

|                         |    |
|-------------------------|----|
| Replaceable parts ..... | 30 |
|-------------------------|----|

### Index

### Need Assistance?

### About this edition





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## **To inspect the Agilent E1438**

The Agilent E1438 single channel VXI ADC Module was carefully inspected both mechanically and electrically before shipment. It should be free of marks or scratches and it should meet its published specifications upon receipt.

If the module was damaged in transit, do the following:

- Save all packing materials.
- File a claim with the carrier.
- Call your Agilent Technologies sales and service office.

## **To install the Agilent E1438**

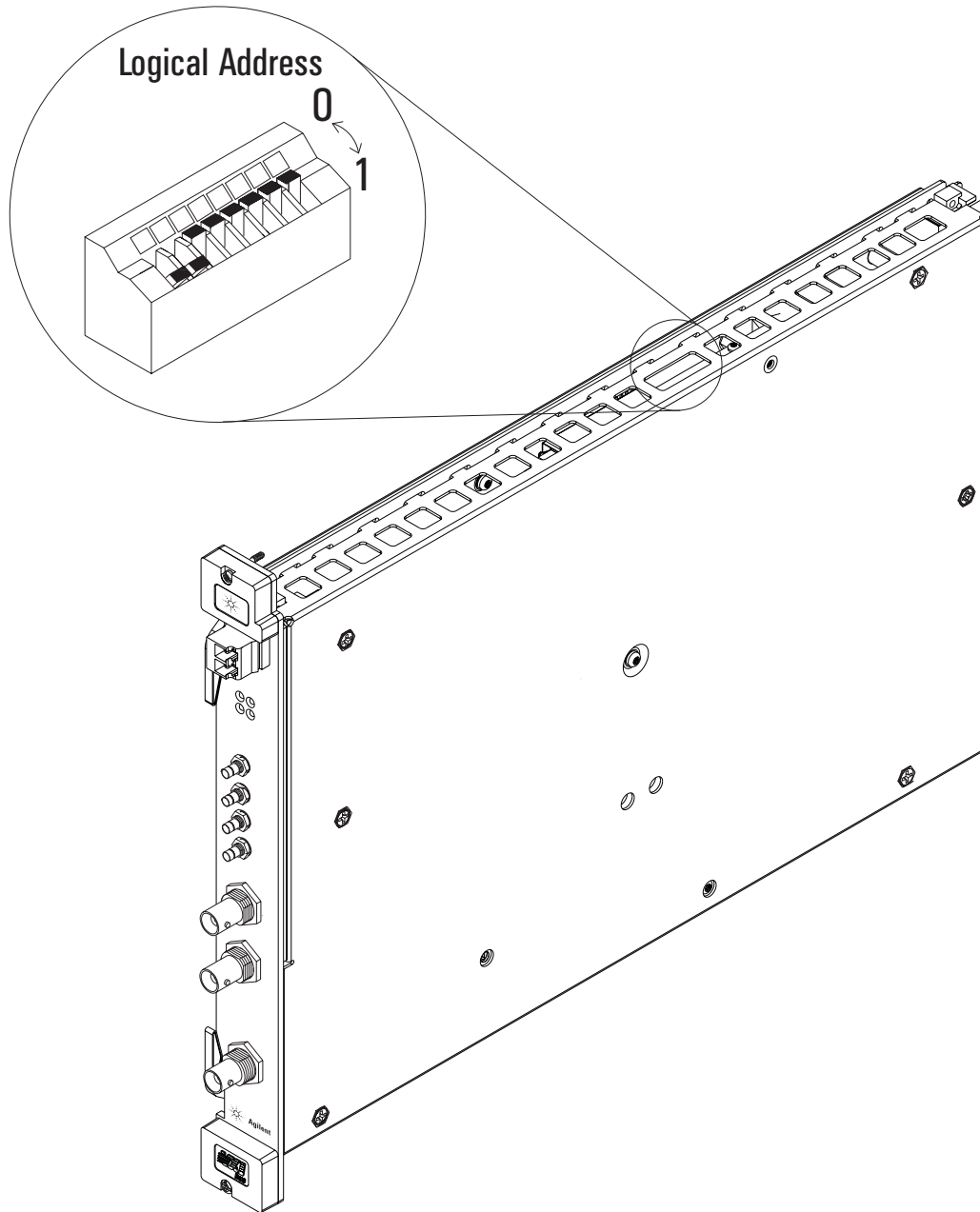
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**Caution**

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**To protect circuits from static discharge, observe anti-static techniques whenever handling the Agilent E1438 VXI ADC Module.**

1. Set up your VXI mainframe. See the installation guide for your mainframe.
2. Select a slot in the VXI mainframe for the E1438 module.  
The Agilent E1438 module's local bus receives ECL-level data from the module immediately to its left and outputs ECL-level data to the module immediately to its right. Every module using the local bus is keyed to prevent two modules from fitting next to each other unless they are compatible. If you will be using the local bus, select adjacent slots immediately to the left of the data-receiving module. If the VXI bus is used, maximum data rates will be reduced but the module can be placed in any available slot.
3. Using a small screwdriver or similar tool, set the logical address configuration switch on the E1438. (See the illustration on the next page.) Each module in the system must have a unique logical address. The factory default setting is 1100 0000 (192).



4. Set the mainframe's power switch to off (0).

---

**Caution**

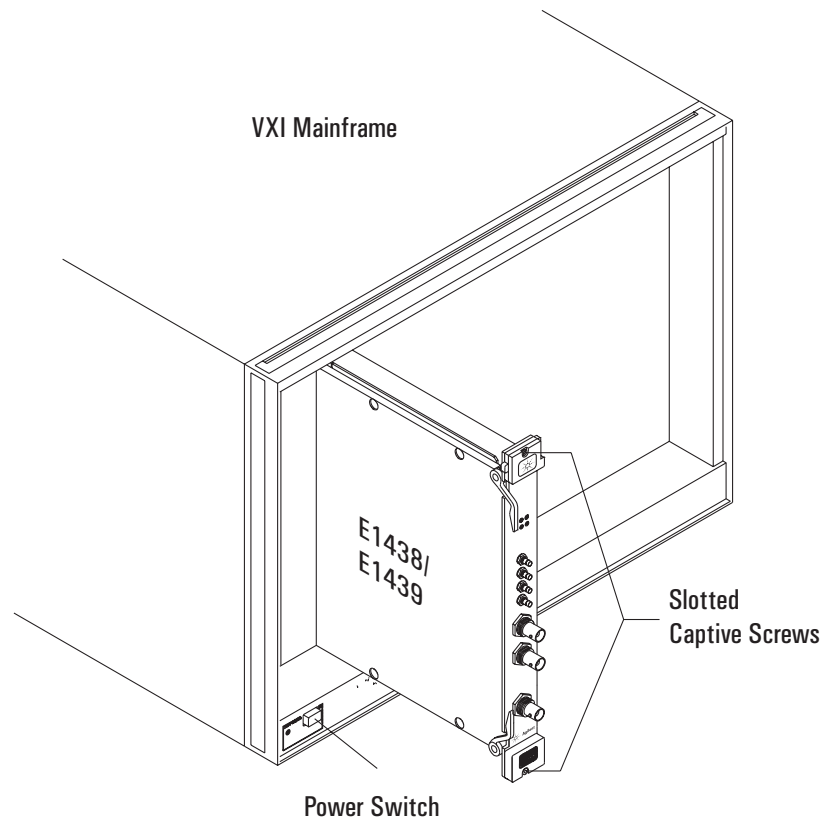
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**Installing or removing the module with power on may damage components in the module.**

5. Place the module's card edges (top and bottom) into the module guides in the slot.
6. Slide the module into the mainframe until the module connects firmly with the backplane connectors. Make sure the module slides in straight and that the insertion/extraction levers are pressed parallel to the front panel.

**To install the Agilent E1438**

7. Attach the module's front panel to the mainframe chassis using the module's captive mounting screws.



## To clean fiber optic connectors

The Agilent E1438B has a fiber optic serial FPD (front panel data port). Since the data transmits via light, the fiber optic connections must be clean. The following procedure describes how to clean fiber optic connectors.

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**Caution**

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**Do not use any type of foam swab to clean optical fiber ends. Foam swabs can leave filmy deposits on fiber ends.**

**1. Apply pure isopropyl alcohol to a clean lint-free cotton swab or lens paper.**

Cotton swabs can be used as long as no cotton fibers remain on the fiber end after cleaning.

**2. Clean the connector while avoiding the ends of the fiber.**

**3. Apply isopropyl alcohol to a new clean lint-free cotton swab or lens paper.**

**4. Clean the fiber end with the swab or lens paper.**

Do not scrub during this initial cleaning because grit can be caught in the swab and become a gouging element.

**5. Immediately dry the fiber end with a clean, dry, lint-free cotton swab or lens paper.**

**6. Blow across the connector end face from a distance of 6 to 8 inches using filtered, dry, compressed air. Aim the compressed air at a shallow angle to the fiber end face.**

Nitrogen gas or compressed dust remover can also be used.

---

**Caution**

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**Do not shake, tip, or invert compressed air canisters because this releases particles in the can into the air. Refer to instructions provided on the compressed air canister.**

**7. As soon as the connector is dry, connect or cover it for later use.**

---

**Note**

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To order multimode LC fiber optic cables, call Stratos Lightwave at (708) 867-9600 (<http://www.stratoslightwave.com>) or call Fiber Instrument at (800) 500-0347 (<http://www.fisfiber.com>).

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## To store the module

Store the module in a clean, dry, and static free environment.

For other requirements, see storage and transport restriction in “Technical Specifications”.

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## To transport the module

- Package the module using the original factory packaging or packaging identical to the factory packaging.
- If returning the module to Agilent Technologies for service, attach a tag describing the following:
  - Type of service required
  - Return address
  - Model number
  - Full serial number

In any correspondence, refer to the module by model number and full serial number.

- Mark the container FRAGILE to ensure careful handling.
- If necessary to package the module in a container other than original packaging, observe the following (use of other packaging is not recommended):
  - Wrap the module in heavy paper or anti-static plastic.
  - Protect the front panel with cardboard.
  - Use a double-wall carton made of at least 200-pound test (32 ECT) material.
  - Cushion the module to prevent damage. For example, several layers of plastic bubble wrap is usually sufficient.

---

### Caution

**Do not use styrene pellets in any shape as packing material for the module. The pellets do not adequately cushion the module and do not prevent the module from shifting in the carton. In addition, the pellets create static electricity that can damage electronic components.**

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Installing the Agilent E1438

**To transport the module**



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## Getting Started and Introduction

This section helps you get your Agilent E1438 running and making simple measurements without programming. It shows you how to install the software libraries and how to run the Soft Front Panel program. It also introduces you to the example programs. Two versions of the Host Interface Library are available. One is the Windows Library that communicates with the hardware using VISA (Virtual Instrument Software Architecture). VISA is the input-output standard upon which all the *VXIplug&play* software components are based. The second version is the HP-UX 10.2 C-language Host Interface Library that also uses VISA.

This section assumes you have already installed the module in the VXI mainframe as shown in the previous chapter . It also assumes that you have installed a VXI interface according to the manufacturer's instructions.

---

**Note**

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Be sure to read the `readme` file for important up-to-date software installation information.

## **System Requirements**

### **System Requirements (Microsoft Windows)**

- A Pentium-class personal computer:
- Microsoft Windows 95/98, 2000, or NT.
- One of the following interfaces:
  - HP/Agilent FireWire – E8491B IEEE-1394 PC Link to VXI
  - National Instruments PCI MXI-2
  - Other VISA compliant VXI interface
- VISA (Virtual Instrument Software Architecture) library
- The computer must have a CD ROM drive for the installation media
- One of the following Web browsers:
  - Microsoft Internet Explorer 4.0 or greater
  - Netscape Navigator 4.08 or greater

### **System Requirements (HP-UX)**

- One of the following workstation:
  - An E1498A (V743/100) VXI-embedded workstation
  - A stand-alone HP-UX workstation with a MXI interface
- The workstation must have a CD ROM drive for installation media
- VISA (Virtual Instrument Software Architecture) library
- HP-UX (version 10.2 or later)
- One of the following Web browsers:
  - Microsoft Internet Explorer 4.0 or greater
  - Netscape Navigator 4.08 or greater

## To install the Windows VXiplug&play drivers

This procedure assumes that you have already installed a VISA (Virtual Instrument Software Architecture) library.

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**Note**

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If you attempt to install the Windows VXiplug&play drivers without having installed a VISA library you will receive a fatal error.

1. Insert the CD labeled: "Agilent E1438 VXI 100 MSa/s ADC with filters and memory"
2. Run the program: *drive*:\windows\setup.exe  
Where *drive* represents the drive containing the setup CD.
3. The setup program asks you to confirm or change the directory path. The default directory path is recommended.
4. A dialog box asks if you want to install startup shortcuts  
This creates a program group called "AGE1438" within the *Vxipnp* directory that includes:
  - A shortcut to run the Agilent E1438 Soft Front Panel
  - A shortcut for the Agilent E1438 web-based online help file
  - A shortcut for the PDF version of the *Agilent E1438 User's Guide*
  - A shortcut for the AGDSP web-based online help file
  - Several shortcuts for example programs
  - A shortcut for a readme file
5. A readme file may be displayed. If so, be sure to read it and follow the instructions.

### Updating firmware

Future updates will be distributed on the Web. To check your current revision run the Info Utility or check Help/About in the Soft Front Panel program.

To check for new revisions access the Agilent Technologies Web page  
<http://www.agilent.com/> and search for "E1438".

Install the updated firmware using the firmware installation program—FirmwareInstall. This program's default location is *drive*: \vxipnp\win[95|NT]\age1438\firmware. Start the program, then use the "Select File" button to locate the firmware image you want to install. Enter the VXI address of the instrument to be updated and click the "Update" button. The installation will take one or two minutes. This program requires VISA to be installed on the host computer.

## To install the HP-UX C-language drivers

Be sure to read the README file, which contains important information on installation, viewing online help, and compiling example programs.

All files are installed in subdirectories under `/opt/vxipnp`.

### Installation using the interactive menu

The `e1438.depot` file is in SD-UX format. To install the filesets:

1. Log in as root.
2. Insert the CD labeled: "Agilent E1438 VXI 100 MSa/s ADC with filters and memory" into the CD drive.
3. Execute the `swinstall (/usr/sbin/swinstall)` utility as:  
`% swinstall`
4. Use the interactive menus to install the file:  
`drive/hpux/e1438.depot`  
where *drive* represents the drive containing the setup CD.

### Installation using the command line

If you prefer to install using a command line replace steps 3 and 4 above with:

```
%swinstall -s /cd/hpux/e1438.depot E1438_VISA
```

---

#### Note

If you are upgrading from an earlier revision of the driver, you may first have to remove the existing driver by typing:

```
%swremove E1438_VISA
```

---

### Upgrading firmware

Future upgrades will be distributed on the Web. To check your current revision run the Info Utility.

To check for new revisions access the Agilent Technologies Web page <http://www.agilent.com> and search for "e1438".

Use the **Fwinstall** program to update the firmware. To use this program, place the executable file "fwinstall" in the directory of your choice. Type "fwinstall -u" to see all program options.

As an example, to install a firmware image file named "E1438\_A\_00\_00.all" to a module at address 192, type the following command:

```
fwinstall -a 192 -f E1438_A_00_00.all
```

Installation will typically take 1-2 minutes.

---

## To use the Resource Manager

The Resource Manager is a program from your hardware interface manufacturer. It looks at the VXI mainframe to determine what modules are installed. You need to run it every time you power up. If you get the message: "VISUCCESS\_DEVICE\_NPRESENT" then run the Resource Manager.

Before running the Agilent E1438 software make sure that your hardware is configured correctly and that the Resource Manager runs successfully. Before using your measurement system, you must set up all of its devices, including setting their addresses and local bus locations. No two devices can have the same address. Usually addresses 0 and 1 are taken by the Resource Manager and are not available.

For more information about the Resource Manager, see the documentation with your hardware interface.

---

### Note

Most Resource Managers will recognize the manufacturer and model number of the Agilent E1438 but if your interface requires that you enter this information manually, use the following:

Manufacturer number: 4095 (Hex FFF)

Model number: 622 (Hex 26E)

---

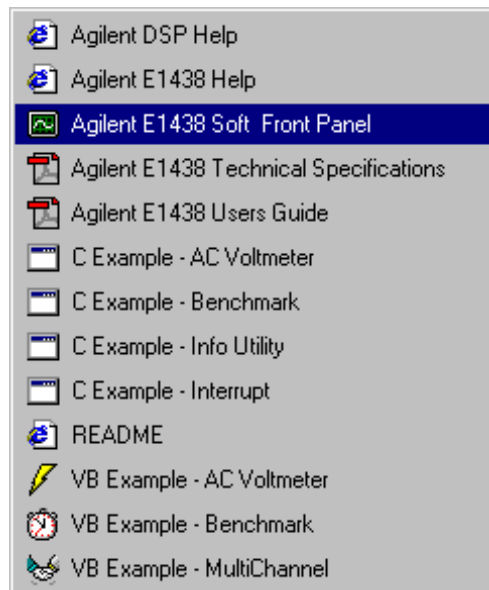
## To use the program group (Windows)

If you installed the program group using the default method during the installation procedure, you have a shortcut for a program group similar the one below. Access it through the Start button:

Programs \ Vxipnp \ age1438

This program group contains shortcuts that access the Soft Front Panel program, the User's Guide, online help, and example programs. The following pages provide an overview of these items.

If you did not install the program group, executable files for each of the items represented by group shortcuts are available in the *drive:\vxipnp* directory and its subdirectories.



---

## To use the *VXIplug&play* Soft Front Panel (SPF)

In a Windows environment, the Soft Front Panel is the best place to start to explore the capabilities of the Agilent E1438. The Soft Front Panel is useful for checking your system to make sure that it is installed correctly and that all of its parts are working. You can also use it to make actual measurements, since it accesses most of the Agilent E1438's functionality.

Select the  **E1438 Front Panel** shortcut in your program group to start the program. This assumes you have already installed all required hardware and drivers (including VISA) and have run the configurator and Resource Manager required by your hardware interface.

If prompted for the resource descriptor, use the default "VXI::192" unless the logical address of the Agilent E1438 has been changed from its default setting of 192. If it has been changed, type the appropriate logical address instead of 192, then press OK.

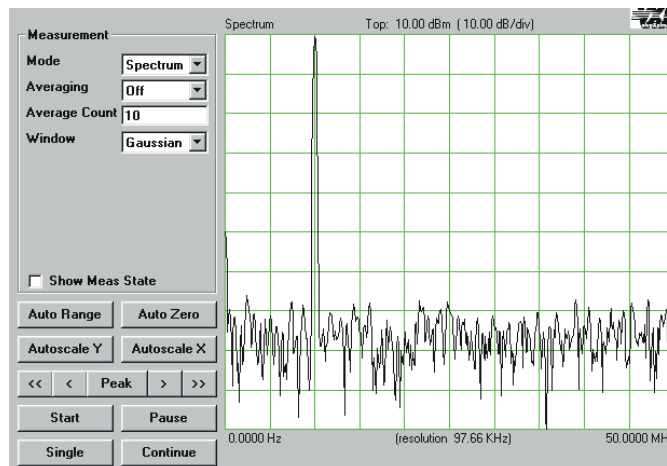
---

### Note

You can also run the Agilent E1438 Front Panel in a simulation mode without an Agilent E1438 module, a hardware interface, or VISA libraries by typing "sim" in place of the resource descriptor.

The Agilent E1438 Front Panel Help, available from the Soft Front Panel Help menu, describes the capability of the Soft Front Panel and has links to functions that control and define many of the parameters.

The source files for this program are provided for you to use as sample code.



## **To use the HP-UX libraries**

The README file is located at:

`/opt/vxipnp/hpux/age1438/README`

It contains the following information:

- overview of the directory structure
- how to access the online help
- how to run the example programs
- how to modify and compile the example programs.
- how to use the update program "fwinstall"

## To use the example programs

Several example programs are included that perform useful tasks and can serve as a basis for your own programs. When you installed your Agilent E1438 Windows or HP-UX libraries and drivers using the setup program or utility, you also installed executable and source code files for several useful example programs. The programs demonstrate programming the module with "C", Microsoft Visual Basic, and Agilent VEE.

The executables for these examples require an Agilent E1438 and, for Windows, *VXIplug&play* support; in other words, they will not run in simulation mode like the Agilent E1438 Soft Front Panel program.

Shortcuts for the executables appear in the age1438 Windows program group if you added it during setup.

In Windows environments, executable files and source code for the Microsoft Visual Basic examples are installed in the *drive:\vxipnp\win[95|NT]\age1438\vb* directory. The VEE examples are in the *...\age1438\vee* directory, and "C" examples are in the *...\age1438\msc\examples* directory.

In the HP-UX environment, executable files and source code for the C-language examples are installed in */opt/vxipnp/hpux/age1438*.

The group of programs described here may be supplemented with additional programs later, which will be described in the online help or readme file.

### **ACVolts\_32.exe**

This is the simplest practical complete program using the Agilent E1438, and it functions like an AC voltmeter. It is written in Visual Basic.

### **acvolts.exe**

This is a console version of acvolts\_32.exe, written in Microsoft Visual C++.

### **Benchmark\_32.exe**

This performance benchmark program is really more of a utility than an example, although source code is provided. It allows users to measure data transfer rates and command processing times on their system without having to write new code. The utility is written in Visual Basic.

### **bench.exe**

This is a console version of Benchmark\_32.exe, written in Microsoft Visual C++.

**multchan\_32.exe**

This example shows how to synchronize two modules to achieve simultaneous sampling, filter decimation, and matched local oscillator phase. It is written in Visual Basic.

**info.exe**

This example shows how to retrieve option and revision information from an Agilent E1438, and it doubles as a handy utility. It is written as a console program in Microsoft Visual C++.

**interrupt.exe**

This example shows how to set up and trap a VXI interrupt to indicate an error condition in the Agilent E1438. It is written as a console program in Microsoft Visual C++.

**scope.vee**

This is a simple one-channel example written in VEE. In order to view or execute it, the VEE programming environment must be installed on the system.



---

## **Replacing Assemblies**

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## **Replaceable parts**

The E1438 must be returned to Agilent Technologies for service or calibration. Exchange modules are shipped with no memory so you must move the memory from the original module to the replacement module. This section shows you how to add or replace memory modules.

For information on upgrading your module or replacing parts, contact your local Agilent Technologies sales and service office. See the Technical Specifications or the Agilent Technologies web site (<http://www.agilent.com>) for a list of office locations and addresses.

### **Ordering Information**

To order parts in the U.S., call Agilent Technologies Parts Direct Ordering at (877) 447-PART or go to <https://www.parts.agilent.com/>. Outside the U.S., please contact your local Agilent Technologies parts center.

**Code Numbers**

The following table provides the name and location for the manufacturers' code numbers (Mfr. Code) listed in the replaceable parts table.

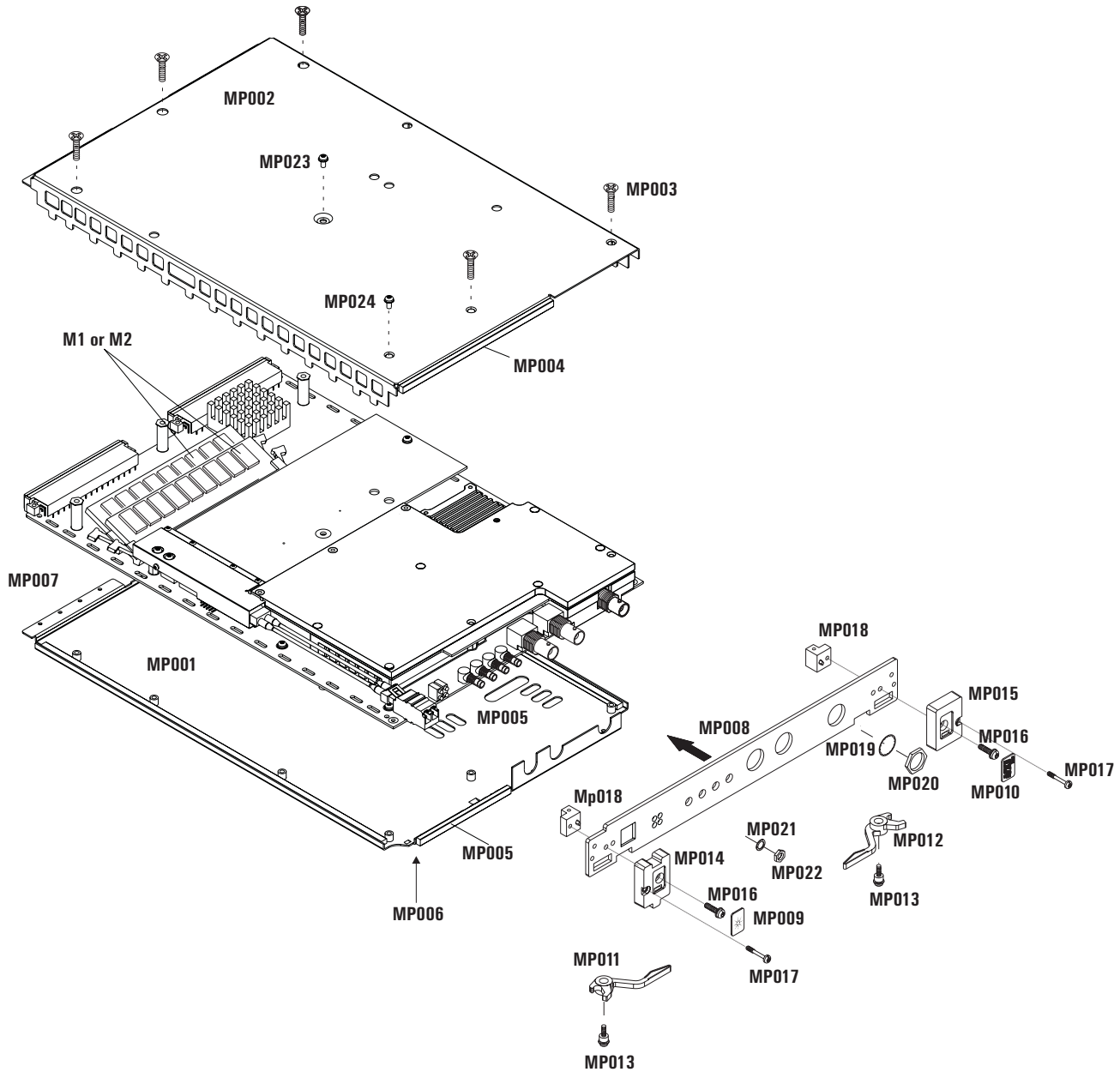
| <b>Mfr. No.</b> | <b>Mfr. Name</b>                | <b>Location</b>               |
|-----------------|---------------------------------|-------------------------------|
| 28480           | Agilent Technologies, Inc.      | Palo Alto, CA U.S.A.          |
| 03647           | Instrument Specialties Co. Inc. | Delaware Water Gap, PA U.S.A. |
| 04637           | Phelps Dodge Corp.              | New York, NY U.S.A.           |
| 16044           | Kingston Technology Corp.       | Fountain Valley, CA U.S.A.    |
| 07606           | ITW Inc. / Medalist             | Glenview, IL U.S.A.           |
| 04605           | Fischer Special Mfg. Co         | Cincinnati, OH U.S.A.         |
| 05610           | Textron, Inc.                   | Providence, RI U.S.A.         |
| 06363           | Oudensha America Inc.           | Elk Grove Village, IL U.S.A.  |

## Replaceable parts

### Assemblies

#### Caution

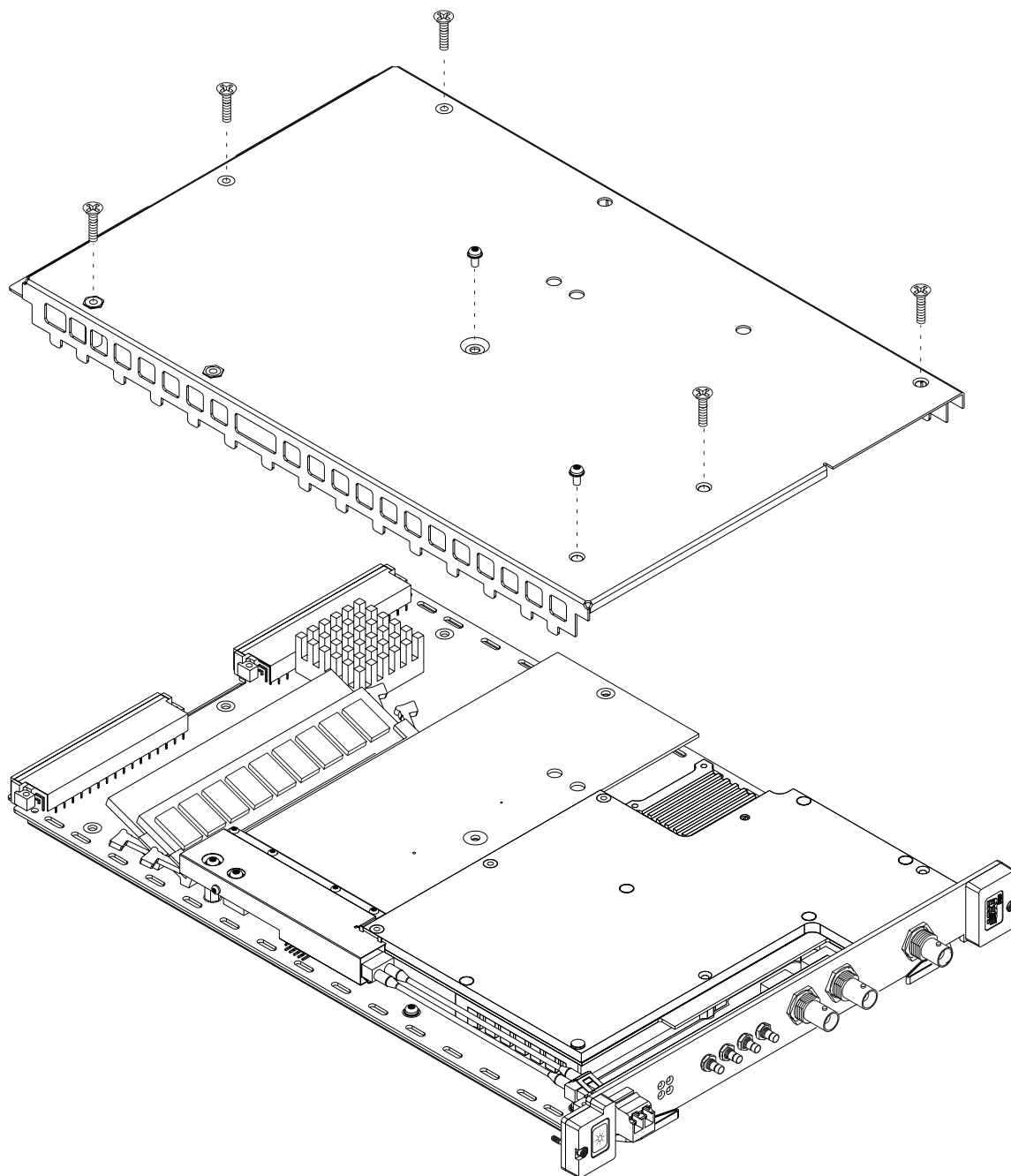
The module is static sensitive. Use the appropriate precautions when removing, handling, and installing to avoid damage.



| Ref Des | Agilent Part Number | Qty | Description                                 | MfrCode | Part Number     |
|---------|---------------------|-----|---------------------------------------------|---------|-----------------|
|         | E1438-69201         | 1   | E1438A EXCHANGE MODULE                      | 28480   | E1438-69201     |
|         | E1438-69211         | 1   | E1438B EXCHANGE MODULE                      | 28480   | E1438-69211     |
| M1      | 1818-7889           | 1   | SYNC DIMM 16MB 2X72 66MHZ - 16 M mem        | 16044   | KTM66X72/16     |
| M2      | 1818-7901           | 2   | SYNC-DIMM 16MX72 PC100 168-DIMM - 128 M mem | 16044   | KGM100X72C3/128 |
| M2      | 1818-8606           | 2   | SYNC-DIMM 16MX72 PC100 168-DIMM - 512 M mem | 16044   | KVR100X72C3/512 |
| MP001   | E1438-00203         | 1   | SHTF-BOTTOM COVER                           | 28480   | E1438-00203     |
| MP002   | E1438-00242         | 1   | SHTF-TOP COVER                              | 28480   | E1438-00242     |
| MP003   | 0515-1135           | 5   | SCREW-MACH M3 x 0.5 25MM-LG                 | 05610   | 0515-1135       |
| MP004   | E1438-40601         | 1   | GSKT-RFI-FRT PNL                            | 28480   | E1438-40601     |
| MP005   | E1485-40601         | 2   | GSKT-RFI-BTTM CVR                           | 28480   | E1485-40601     |
| MP006   | 8160-0686           | 2   | RFI STRIP-FINGERS                           | 03647   | 00786-185       |
| MP007   | 8160-0634           | 0.4 | RFI STRIP-FINGERS                           | 03647   | 0097-0611       |
| MP008   | E1438-00234         | 1   | FRONT PANEL 'E1438A'                        | 28480   | E1438-00234     |
| MP008   | E1438-00244         | 1   | FRONT PANEL 'E1438B'                        | 28480   | E1438-00244     |
| MP009   | 7121-7893           | 1   | PLT-NAME 'SPARK'                            | 06363   | 7121-7893       |
| MP010   | 7121-7965           | 1   | PLT-NAME VXI 'PLUG&PLAY'                    | 06363   | 7121-7965       |
| MP011   | E1400-45101         | 1   | MOLD-TOP                                    | 28480   | E140045101      |
| MP012   | E1400-45102         | 1   | MOLD-BOTTOM                                 | 28480   | E140045102      |
| MP013   | E1400-00610         | 2   | SCR-ASM SHLDR                               | 28480   | E1400-00610     |
| MP014   | E1400-45011         | 1   | MOLD TOP-'SPARK'                            | 28480   | E1400-45011     |
| MP015   | E1400-45008         | 1   | MOLD BTM-'VXI'                              | 28480   | E1400-45008     |
| MP016   | 0515-0664           | 2   | SCREW MACHINE ASSEMBLY M3 X 0.5 12MM-LG     | 07606   | 0515-0064       |
| MP017   | 0515-2733           | 2   | SCREW SPCL M2.5 X 0.45 17MM-LG PAN-HD       | 07606   | 0515-2733       |
| MP018   | E1400-40104         | 2   | CAST                                        | 28480   | E1400-40104     |
| MP019   | 2190-0068           | 3   | WASHER-LK INTL T 1/2 IN .505-IN-ID          | 07606   | 1924-02NP       |
| MP020   | 2950-0154           | 3   | NUTHEX-DBL-CHAM 1/2-28-THD .078-IN-THK      | 04605   | 2950-0154       |
| MP021   | 2190-0124           | 4   | WASHER-LK INTL T NO. 10 .195-IN-ID          | 04637   | 500222          |
| MP022   | 2950-0078           | 4   | NUTHEX-DBL-CHAN 10-32-THD .067-IN-THK       | 04637   | 500220          |
| MP023   | 0515-0430           | 1   | SCREW-MACHINE M3 X 0.5 6MM-LG               | 05610   | 0515-0430       |
| MP024   | 0515-1103           | 1   | SCREW-MACHINE M3 X 0.5 10MM-LG              | 05610   | 0515-1103       |

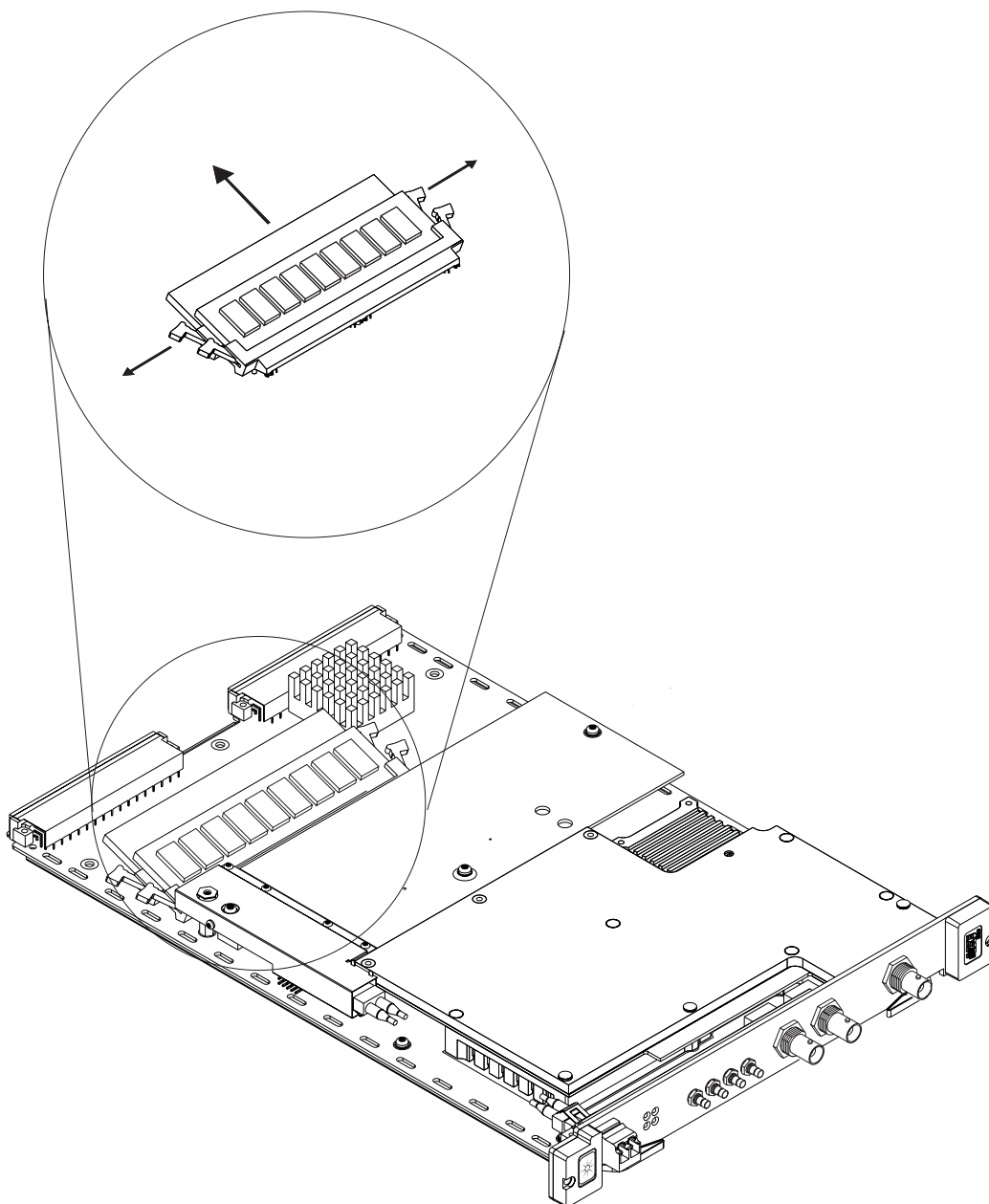
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**To remove the top cover**



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**To remove the M1, M2 assemblies**



**Replaceable parts**

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# Index

## A

address, module  
    See logical address  
Agilent VEE  
    example program 27

## C

cables  
    fiber optic 14  
cleaning  
    fiber optic connectors 14  
configuring a VXI system 22

## D

DEVICE\_NPRESENT 22  
drivers  
    installing HP-UX 21  
    installing Windows 20  
    upgrading 20 , 21

## E

example programs  
    Agilent VEE 27  
    C 26  
    using 26  
    Visual Basic 26  
    Windows 24

## F

fiber optic  
    cables 14  
    cleaning connectors 14  
firmware  
    upgrading 20 , 21  
front panel  
    software 24

## H

hardware interface 22  
HP-UX  
    installing libraries 21  
    online help 21  
    using libraries 25

## I

installing  
    hardware 11  
    libraries, HP-UX 21  
    memory 35  
    module 11  
    software 20

Windows libraries 20  
interface, hardware 22

## L

logical address  
    default 11  
    selecting 11

## M

memory  
    installing 35

## O

online help  
    HP-UX 21  
    Windows 23

## P

packaging the module 15  
parts, ordering or replacing 30

## R

resource manager, using 22  
revisions, driver 20 , 21

## S

shipping the module 15  
storing the module 15  
system requirements 19

## T

transporting the module 15

## U

upgrades 20 , 21

## V

VEE  
    see Agilent VEE 27  
verifying operation 24  
Visual Basic  
    example program 26  
VXI  
    interface, configuring 22

## W

Windows  
    example program 24  
    installing libraries 20

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## ***Need Assistance?***

If you need assistance, contact your nearest Agilent Technologies Service Office. You can find a list of local service representatives on the Web at: <http://www.agilent.com/>. If you do not have access to the internet, one of the centers listed below can direct you to your nearest representative.

If you are contacting Agilent Technologies about a problem with your Agilent E1438 module, please provide the following information:

Model number:

Software version:

Serial number:

Options:

Date the problem was first encountered:

Circumstances in which the problem was encountered:

Can you reproduce the problem?

What effect does this problem have on you?

|               |                                            |
|---------------|--------------------------------------------|
| United States | 1 800 452 4844                             |
| Canada        | 1 877 894 4414<br>(905) 206 4120 (FAX)     |
| Europe        | (31 20) 547 2323<br>(31 20) 547 2390 (FAX) |
| Japan         | (81) 426 56 7832<br>(81) 426 56 7840 (FAX) |
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| Australia     | 1 800 629 485<br>(613) 9272 0749 (FAX)     |
| New Zealand   | 0800 738 378<br>64 4 495 8950 (FAX)        |
| Asia-Pacific  | (852) 3197 7777<br>(852) 2506 9284 (FAX)   |

## ***About this edition***

April 2001: This edition documents the new fiber optic interface on the Agilent E1438B. In addition, this edition documents the new external TTL trigger on all Agilent E1438B modules and on Agilent E1438A modules with a serial number greater than US41140000.

May 2000: This edition documents a new software upgrade utility, FirmwareInstall, and a new function, age1438\_frequency\_center\_raw\_compute. In addition, the descriptions changed for the following functions:

- age1438\_clock\_setup
- age1438\_trigger\_setup
- age1438\_combo\_setup

November 1999: In this edition, all references to the product changed to support rebranding the product from Hewlett-Packard to Agilent Technologies.

September 1999: First Edition