

Startup
Guide

Keysight M9537A AXIe Embedded Controller



Notices

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Safety Information

The following general safety precautions must be observed during all phases of operation of this instrument. Failure to comply with these precautions or with specific warnings or operating instructions in the product manuals violates safety standards of design, manufacture, and intended use of the instrument. Keysight Technologies assumes no liability for the customer's failure to comply with these requirements.

General

Do not use this product in any manner not specified by the manufacturer. The protective features of this product must not be impaired if it is used in a manner specified in the operation instructions.

Before Applying Power

Verify that all safety precautions are taken. Make all connections to the unit before applying power. Note the external markings described under "Safety Symbols".

Ground the Instrument

Keysight chassis' are provided with a grounding-type power plug. The instrument chassis and cover must be connected to an electrical ground to minimize shock hazard. The ground pin must be firmly connected to an electrical ground (safety ground) terminal at the power outlet. Any interruption of the protective (grounding) conductor or disconnection of the protective earth terminal will cause a potential shock hazard that could result in personal injury.

Do Not Operate in an Explosive Atmosphere

Do not operate the module/chassis in the presence of flammable gases or fumes.

Do Not Operate Near Flammable Liquids

Do not operate the module/chassis in the presence of flammable liquids or near containers of such liquids.

Cleaning

Clean the outside of the Keysight module/chassis with a soft, lint-free, slightly dampened cloth. Do not use detergent or chemical solvents.

Do Not Remove Instrument Cover

Only qualified, service-trained personnel who are aware of the hazards involved should remove instrument covers. Always disconnect the power cable and any external circuits before removing the instrument cover.

Keep away from live circuits

Operating personnel must not remove equipment covers or shields. Procedures involving the removal of covers and shields are for use by service-trained personnel only. Under certain conditions, dangerous voltages may exist even with the equipment switched off. To avoid dangerous electrical shock, DO NOT perform procedures involving cover or shield removal unless you are qualified to do so.

DO NOT operate damaged equipment

Whenever it is possible that the safety protection features built into this product have been impaired, either through physical damage, excessive moisture, or any other reason, REMOVE POWER and do not use the product until safe operation can be verified by service-trained personnel. If necessary, return the product to an Keysight Technologies Sales and Service Office for service and repair to ensure the safety features are maintained.

DO NOT block the primary disconnect

The primary disconnect device is the appliance connector/power cord when a chassis used by itself, but when installed into a rack or system the disconnect may be impaired and must be considered part of the installation.

Do Not Modify the Instrument

Do not install substitute parts or perform any unauthorized modification to the product. Return the product to an Keysight Sales and Service Office to ensure that safety features are maintained.

In Case of Damage

Instruments that appear damaged or defective should be made inoperative and secured against unintended operation until they can be repaired by qualified service personnel

CAUTION

Do NOT block vents and fan exhaust: To ensure adequate cooling and ventilation, leave a gap of at least 50mm (2") around vent holes on both sides of the chassis.

Do NOT operate with empty slots: To ensure proper cooling and avoid damaging equipment, fill each empty slot with an AXle filler panel module.

Do NOT stack free-standing chassis: Stacked chassis should be rack-mounted.

All modules are grounded through the chassis: During installation, tighten each module's retaining screws to secure the module to the chassis and to make the ground connection.

WARNING

Operator is responsible to maintain safe operating conditions. To ensure safe operating conditions, modules should not be operated beyond the full temperature range specified in the Environmental and physical specification. Exceeding safe operating conditions can result in shorter lifespan, improper module performance and user safety issues. When the modules are in use and operation within the specified full temperature range is not maintained, module surface temperatures may exceed safe handling conditions which can cause discomfort or burns if touched. In the event of a module exceeding the full temperature range, always allow the module to cool before touching or removing modules from the chassis.

Safety and Regulatory Symbols








CAUTION

A CAUTION denotes a hazard. It calls attention to an operating procedure or practice, that, if not correctly performed or adhered to could result in damage to the product or loss of important data. Do not proceed beyond a CAUTION notice until the indicated conditions are fully understood and met.

WARNING

A WARNING denotes a hazard. It calls attention to an operating procedure or practice, that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

Products display the following symbols:

-  Warning, risk of electric shock
-  Refer to manual for additional safety information.
-  Earth Ground.
-  Chassis Ground.
-  Alternating Current (AC).
-  Standby Power. Unit is not completely disconnected from AC mains when switch is in standby.
-  Antistatic precautions should be taken.
- CAT I IEC Measurement Category I, II, III, or IV
- CAT II
- CAT III
- CAT IV

For localized Safety Warnings, Refer to Keysight Safety document (p/n 9320-6792).



The CSA mark is a registered trademark of the Canadian Standards Association and indicates compliance to the standards laid out by them. Refer to the product Declaration of Conformity for details.



Notice for European Community: This product complies with the relevant European legal Directives: EMC Directive and Low Voltage Directive .



The Regulatory Compliance Mark (RCM) mark is a registered trademark. This signifies compliance with the Australia EMC Framework regulations under the terms of the Radio Communication Act of 1992.

ICES/NMB-001

ICES/NMB-001 indicates that this ISM device complies with the Canadian ICES-001.

Cet appareil ISM est conforme a la norme NMB-001 du Canada.



This symbol represents the time period during which no hazardous or toxic substance elements are expected to leak or deteriorate during normal use. Forty years is the expected useful life of this product.



M9537A
MSIP-REM-Kst-xxxxx

South Korean Class A EMC Declaration. this equipment is Class A suitable for professional use and is for use in electromagnetic environments outside of the home.

A 급 기기 (업무용 방송통신기자재) 이 기기는 업무용 (A 급) 전자파적합기 기로서 판매자 또는 사용자는 이 점을 주의하시기 바라 며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.



Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC

This product complies with the WEEE Directive (2002/96/EC) marking requirement. The affixed product label (see below) indicates that you must not discard this electrical/electronic product in domestic household waste.

Product Category: With reference to the equipment types in the WEEE directive Annex 1, this product is classified as a "Monitoring and Control instrumentation" product.

Do not dispose in domestic household waste.

To return unwanted products, contact your local Keysight office for more information.



Contents

| | |
|---|-----------|
| Introduction | 1 |
| M9537A at a Glance | 1 |
| Front Panel LED Definitions | 2 |
| Module Handling Procedures | 4 |
| Related Documentation | 4 |
| Step 1: Unpack and Inspect the Module | 5 |
| Inspect for Damage | 5 |
| If you need to return the module for service | 5 |
| Step 2: Verify Shipment Contents | 7 |
| Step 3: Install the M9537A Embedded Controller | 8 |
| Removing the M9537A from the chassis | 9 |
| Power-on sequence | 10 |
| Power-off sequence | 10 |
| Windows OS Versions | 10 |
| Power down modes | 10 |
| Using the LAN ports | 12 |
| LAN port recommendations | 13 |
| Embedded system module LAN connection | 14 |
| Step 4: Windows Configuration Review | 15 |
| Microsoft Windows OS is Activated | 15 |
| Windows Security | 15 |
| Windows Update | 15 |
| Auto Login | 17 |
| Default Administrator Password: Keysight4u! | 17 |
| Change Administrator Password | 17 |
| Remote Desktop Connection | 17 |
| User Data Backup | 18 |
| System Backup and Recovery | 18 |
| Step 5: Run Keysight IO Libraries Suite | 20 |
| Step 6: Verify Operation | 21 |
| Step 7: Install User Application Modules in the AXIe Chassis | 22 |
| Install Application Module Drivers (if necessary) | 23 |
| Chassis Shutdown | 23 |
| Controller BIOS | 24 |
| Environmental Operating Conditions | 25 |
| Accessories | 26 |
| Related Products | 26 |

Introduction

The Keysight Technologies M9537A is a second-generation AXIe embedded controller. It is a powerful, one-slot module that can be used to build compact AXIe systems. It also easily integrates into hybrid test systems using the GPIB, USB, and LAN front panel interfaces.

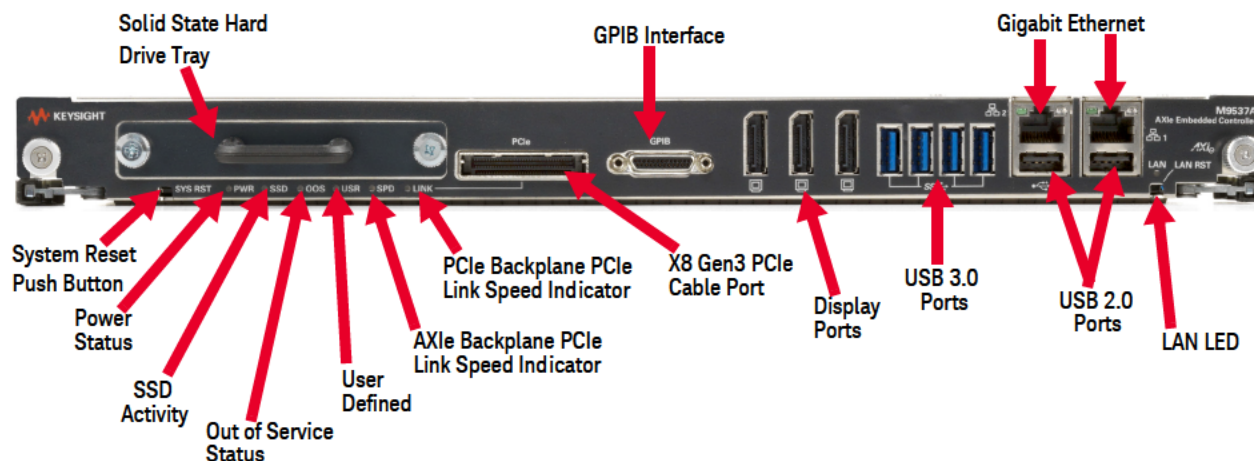
The embedded controller is built upon a high-performance Intel Core i7 quad-core processor with Hyper-Threading Technology. This makes it perfect for high-performance applications and multi-tasking environments.

The Keysight M9537A has the following key features:

- Intel i7-6820EQ 2.8 GHz quad core processor
- Single-slot AXIe controller module
- Front removable 240 GB solid state drive
- 8 GB DDR4 RAM Memory with option for 16 GB and a maximum of 32 GB
- Optional NVMe disk cache for higher-speed data storage
- Gen3 x16 PCIe link to the AXIe backplane providing up to 16 GB/s max data bandwidth from CPU to AXIe backplane (actual data bandwidth depends on chassis capability)
- Front panel connections: four USB 3.0, two USB 2.0, two LAN (10 /100/1000), three 4K-capable DisplayPort 1.2, and GPIB
- x8 Gen3 PCIe IPASS connector on the front for controlling a second AXIe chassis, connection to RAID storage, or multiple PCIe chassis
- Windows Embedded Standard 7 (WES 7) 64-bit or Windows 10 Enterprise 2016 LTSB (Win 10) 64-bit

M9537A at a Glance

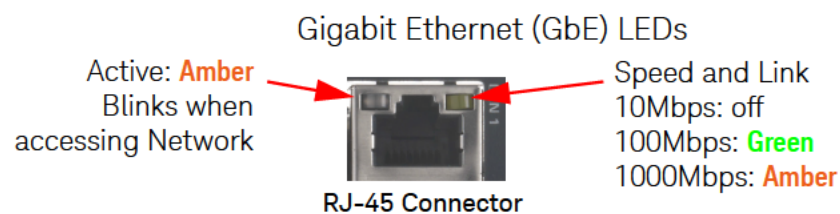
The following image shows the front panel for the M9537A.



Front Panel LED Definitions

The following tables list the front panel LEDs and a brief description of their use and what they indicate.

| LED Indicator | Color | Description |
|-----------------------|-------------------------------|--|
| PWR | Green | If the LED is on, the power supply to the controller is good and the system should boot. |
| SSD | Green | When the Solid State Drive (SSD) is active, the LED will flash. Off means no SSD activity. |
| OOS (Out of Service:) | Off Red or Blinking red | Off indicates the BIOS POST is okay and the OS is operating normally. Solid red indicates the OS is shut down. Blinking red indicates BIOS POST during boot. |
| USR | N/A | The USR LED is reserved for Keysight use. The LED should never turn on or flash. |
| SPD | Off White Blue Green | AXIe Backplane PCIe Link Speed Indicator. No Link Gen 1 speed Gen 2 speed Gen 3 speed |
| Link | Off White Blue Green | PCIe Cable Link Speed Indicator. No Link Gen 1 speed Gen 2 speed Gen 3 speed |
| LAN | N/A | Reserved for future use. |



Both LEDs off indicates network link is not established or system is powered off.

LAN RST Switch

The LAN RST switch is reserved for Keysight use only. Depressing the LAN RST switch has no effect.

CAUTION

IMPORTANT: Keysight M9502A or M9505A AXIe chassis must have firmware revision 1.3.42 or later for the M9537A to identify and communicate with other chassis module. Refer to the Keysight chassis web pages for information on updating the chassis firmware at www.keysight.com/find/M9502A or www.keysight.com/find/M9505A.

NOTE

The drivers and Keysight's IO Libraries Suite installed on the M9537A controller are the current versions available when the module shipped from the factory. You should regularly check Keysight's web sites and download the latest drivers and software:

- www.keysight.com/find/M9537A for the embedded controller
- www.keysight.com/find/iosuite for IO Libraries

Periodically check for the latest AXIe chassis firmware:

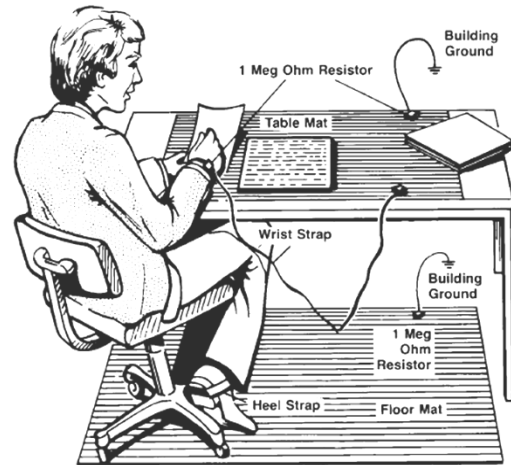
- www.keysight.com/find/M9502A for the 2-slot AXIe chassis
 - www.keysight.com/find/M9505A for the 5-slot AXIe chassis
 - www.keysight.com/find/M9514A for the 14-slot AXIe Chassis
-

Module Handling Procedures

Electrostatic discharge (ESD) can damage or destroy electronic components. All work on electronic assemblies should be performed at a static-safe work station. The following figure shows an example of a static-safe work station using two types of ESD protection. Purchase acceptable ESD accessories from your local supplier.

- Conductive table-mat and wrist-strap combination.
- Conductive floor-mat and heel-strap combination.

Both types, when used together, provide a significant level of ESD protection. Of the two, only the table-mat and wrist-strap combination provides adequate ESD protection when used alone. To ensure user safety, the static-safe accessories must provide at least 1 M Ω of isolation from ground.



Both methods, when used together, provide a significant level of ESD protection. Of the two, only the table-mat and wrist-strap combination provides adequate ESD protection when used alone. To ensure user safety, the static-safe accessories must provide at least 1 M of isolation from ground.

Related Documentation

No printed documentation other than this Startup Guide is supplied with the Controller Module.

Adobe Reader is required to view the documentation supplied on the M9537A product information CD. It is available free at: <http://www.adobe.com>. You should install this on your M9537A before attempting to open a PDF file.

For the latest M9537A documentation, go to www.keysight.com/find/M9537A and click the Document Library tab.

Step1: Unpack and Inspect the Module

CAUTION

Keysight's AXIe modules are shipped in materials that prevent static electricity damage. Remove the modules from the packaging in an anti-static area only.

Ensure that correct anti-static precautions are taken. Store all modules in anti-static envelopes when not in use.

Inspect for Damage

After unpacking the controller module, carefully inspect it for any shipping damage. Report any damage to the shipping agent immediately. Shipping damage is not covered by the warranty.

CAUTION

To avoid damage when handling a module; do not touch exposed connector pins.

NOTE

Information on preventing damage to your Keysight equipment is available at www.keysight.com/find/tips.

If you need to return the module for service

If it becomes necessary to return the module for repair or service:

- 1 Review the warranty information shipped with your product.
- 2 Contact Keysight to obtain a return authorization and return address. If you need assistance in finding Keysight contact information, go to www.keysight.com/find/assist (worldwide contact information for repair and service) or refer to the support information on the product web page at www.keysight.com/find/M9537A.
- 3 Write the following information on a tag and attach it to the controller.
 - Name and address of owner.
 - Product model number (for example, M9537A)
 - Product serial number (for example, TWxxxxxxx).
 - A description of failure or service required.

NOTE

A Post Office box is not acceptable as a return address.

- 4 Carefully pack the module in its original ESD bag and carton. If the original carton is not available, use bubble wrap or packing peanuts. Place the instrument in a sealed container and mark the container FRAGILE.
- 5 On the shipping label, write ATTENTION REPAIR DEPARTMENT and the service order number (if known).

NOTE

If you require any correspondence, refer to the product by model number and serial number.

Step 2: Verify Shipment Contents

Your shipment includes the following:

- The Keysight M9537A module that you ordered
- This document (Keysight M9537A AXIe Embedded Controller Startup Guide)
- M9537A Product Information CD. This CD contains the M9537A User Guide, which provides detailed information about the module, configuration, etc.
- Any other accessories that you ordered (cables, connectors, etc.)

Note that a keyboard, mouse, video monitor are not included with the M9537A. The operating system has been installed for you at the factory

NOTE

Keysight IO Libraries is pre-installed on the controller. It is required before installing and running application software. Ensure that you have the latest version. You can download the latest version from www.keysight.com/find/iosuite.

You do not require any other drivers to operate the controller module. However, your application modules may require drivers. If possible, you should connect the controller module to the Internet and download drivers from the original source. Alternatively, you can copy the drivers to a USB memory stick and install them accordingly.

Step 3: Install the M9537A Embedded Controller

The Keysight M9537A is designed for easy installation. However, the following standard precautions, installation procedures, and general information must be observed to ensure proper installation and to prevent damage to the board, other system components, or injury to personnel.

CAUTION

IMPORTANT: Keysight M9502A or M9505A AXIe chassis must have firmware revision 1.3.42 or later for the M9537A to identify and communicate with other chassis modules. Refer to the Keysight chassis web pages for information on updating the chassis firmware.

Follow these steps to install the M9537A Embedded Controller in the AXIe chassis.

- 1 Turn off the AXIe chassis.
- 2 Leave the chassis plugged into an AC power source. The AC power cord grounds the chassis and protects it from electrical damage while modules are installed.
- 3 Extend and pull out on the controller's ejector/injector handles.

NOTE

Embedded controllers, such as the M9537A, must be installed in Slot 1 of the M9502A/M9505A AXIe chassis.

- 4 Carefully align the M9537A board edges with the chassis guide rails and insert the controller into the chassis guide rails.
- 5 Check that the catch hooks and alignment pins at both ends of the module are correctly inserted into the proper chassis holes. Push inward on the handles until the module is firmly seated in the chassis.

Do not force the handles if there is resistance; this may damage the connectors and /or backplane.

- 6 Collapse the insertion/extraction handles against the module faceplate.
- 7 Tighten the captive retaining screws at both ends of the module.

Step 3: Install the M9537A Embedded Controller

- 8 Connect other peripherals (such as the Display Port monitor, USB keyboard and mouse, LAN cable for remote access, etc.) to the embedded controller front panel.



- 9 Power up the AXIe chassis. Verify that the chassis fans are operating and free of obstructions that may restrict air flow.

NOTE

Refer to the instructions provided with your AXIe Chassis for chassis power up / power down instructions.

CAUTION

The M9537A module is powered and connects to the AXIe System Module (ASM) or Embedded System Module (ESM) through the chassis backplane. With the M9537A installed, do not connect an external host PC to the ASM or ESM module PCIe connector.

Removing the M9537A from the chassis

To remove the M9537A controller, reverse the previous procedure.

- 1 Execute the Windows shut down process on the controller.
- 2 Power down the chassis.
- 3 Loosen the captive screws, extend and pull outwards on the extraction handles to release the module from the backplane.
- 4 Pull the module towards you until it is free of the chassis.

CAUTION

Carefully handle the board as it can get very hot. Do not place the board on any surface which might melt, such as a plastic storage container, until the board has cooled down to room temperature.

Power-on sequence

The controller boots with the operating system installed. Allow the controller to run through its startup screens and start the operating system.

Power-off sequence



As with any PC, you should not shut down Windows-based instruments by removing the power via an external power source or by pulling the power plug out from the rear panel. This abrupt loss of power could corrupt the operating system or cause your application to lose data. The proper shut down procedure is to execute the Windows shutdown process and then turn off the chassis via the chassis On/Off button.

CAUTION

With some AXIe Chassis, pressing the chassis power button abruptly drops power from the controller without notifying the controller OS to perform a shutdown. It has the same effect as pulling the power plug and should be avoided.

Windows OS Versions

The M9537A AXIe Embedded Controller ships with either Windows 10 or WES 7. You can identify the version of Windows you are running by looking at the start button

| Start Button ICON | Windows OS Version |
|---|------------------------------------|
|  | Windows 10 Enterprise 2016 LTSC |
|  | Windows Embedded Standard 7 |

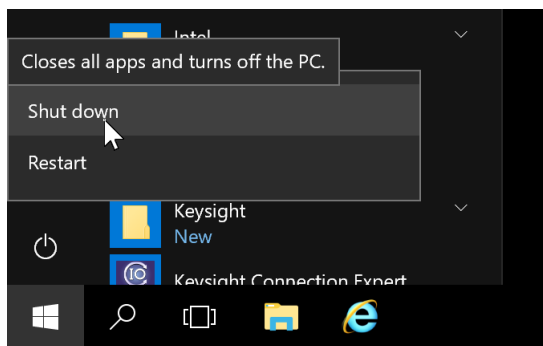
Power down modes

The Keysight M9537A defaults to the Windows High Performance Power Plan. This plan does not allow the use of Hibernate or Sleep mode.

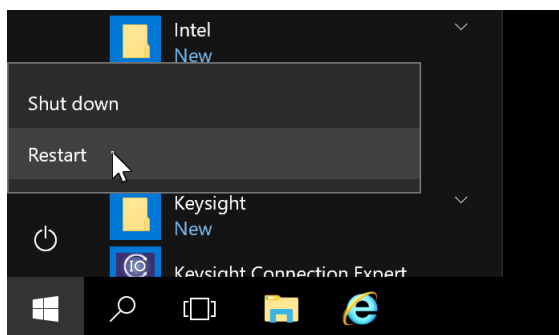
NOTE

- Do not enable the Microsoft Windows sleep mode. It is possible that the M9537A controller could go into sleep mode while it is running your application program. Also, the controller may not have proper chassis enumeration when it wakes up.
- If you have a USB keyboard with a Sleep button (sometimes this is a key with a moon logo), do not use it.

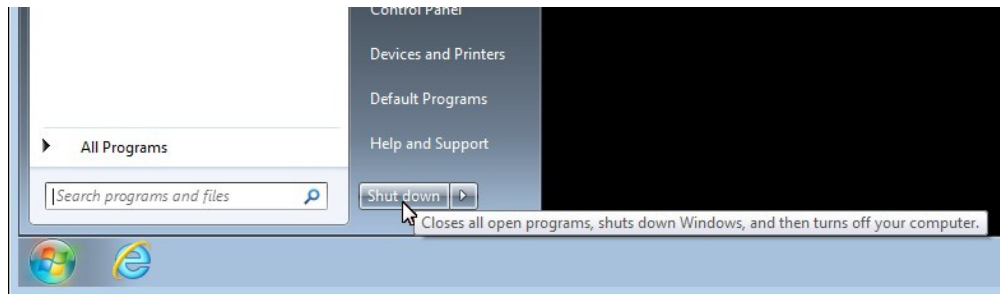
If you are using “Windows 10 Enterprise 2016 LTSP”; to shut down the controller click Windows Start, click the power ICON, then click the Shut down button.



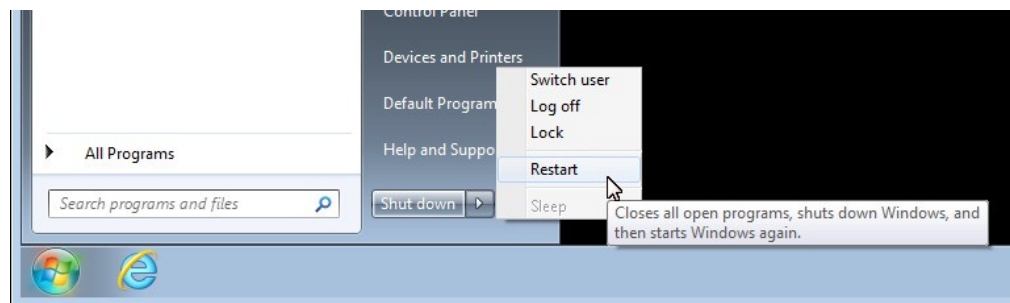
To restart the controller, click Windows Start, click the power ICON, then click Restart.



If you are using “Windows Embedded Standard 7”; to shut down the controller click Windows Start and, then click the Shut down button.



To restart the controller, click Windows Start and click Restart.



NOTE

The M9537A shutdown will not power down the M9502A or M9505A AXIe chassis.

Using the LAN ports

If you install the Keysight M9537A controller in a Keysight AXIe chassis, such as the M9502A or M9505A, there are a total of three LAN ports accessible on the front panels. Two LAN ports are on the M9537A controller and one on the Embedded System Module (ESM). Windows Device Manager shows four individual Network Interface Cards (NICs); one does not have an RJ45 connector and is not accessible by the user.

CAUTION

Keysight Connection Expert may lose track of LAN-enabled instruments if you change the LAN port connection or remove the LAN cable. Reboot the AXIe chassis to restore the complete list of LAN-enabled instruments. For details, see the Keysight M9537A AXIe Embedded Controller User Guide.

LAN port recommendations

As a general rule, connect a network LAN cable to the ESM's LAN port and connect LXI instruments to the M9537A's LAN ports. While other configurations are viable, this configuration provides the fastest and most consistent reporting in Keysight Connection Expert. Here are some pointers:

- The speed at which Keysight Connection Expert locates network instruments depends on where you have connected the network and instruments when the chassis and controller are first powered on. If necessary, shut down the controller and chassis, and reboot.
- If you move a LAN cable while chassis power is applied, Connection Expert may not find all of the instruments available on the network.

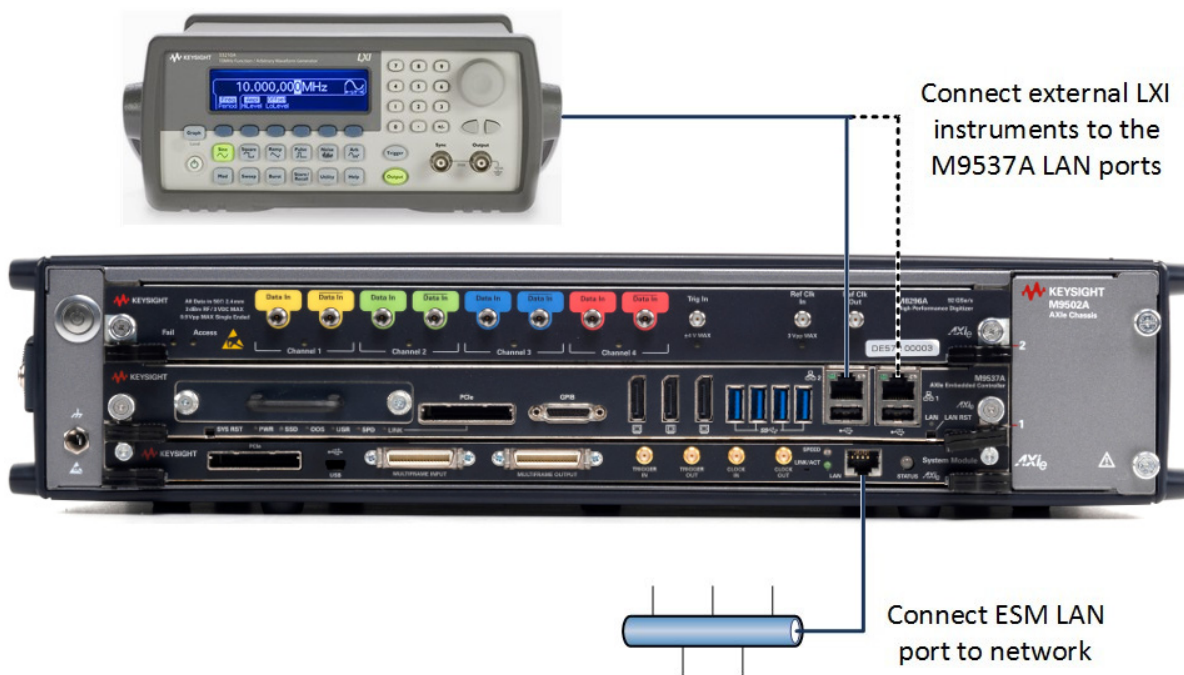
For example, if you connect the LAN cable to the ESM when power is first applied to the chassis and subsequently you move the cable to one of the two LAN ports on the controller (while the chassis is still powered on), Connection Expert may only find the M9537A controller and AXIe modules installed in the chassis. To recover, shut down the controller and the chassis, and reboot to restore Connection Expert's ability to locate other network instruments.

- Connect external LAN-enabled instruments (LXI instruments) to the M9537A controller LAN ports. This allows Keysight Connection Expert to automatically find the instruments. These instruments have a local LAN IP address or private network range.
- It is recommended that you add LXI instruments to the LAN that is connected to the M9537A LAN ports. If instead, you have LXI instruments on the ESM's LAN, Connection Expert may not automatically find them, however, you may take the recovery action of adding the instrument manually using Connection Expert's Add LAN Device feature.

Embedded system module LAN connection

Changes to the Embedded System Module (ESM) LAN connection are only detected when you power up the ESM. Therefore, whenever you change the ESM LAN connection, do the following:

- 1 Power down the M9537A using the Shut down selection on the Windows Start menu.
- 2 After shut down is complete, power down the chassis using the chassis power button.
- 3 Make the desired change to the LAN connection.
- 4 Use the chassis power button to power up the chassis and M9537A controller.
- 5 After Windows starts, verify that your LAN interface is operating correctly.



Step 4: Windows Configuration Review

You must review the Windows OS configuration to ensure that it meets your needs and that you have the appropriate configuration for your security requirements.

Microsoft Windows OS is Activated

Keysight ensures that your copy of Microsoft Windows operating system is activated at the time it ships from the factory. However, the first time you install and turn on the M9537A and Windows starts, you must accept the End User License Agreement (EULA). A copy of the Windows EULA is in the M9537A at: **C:/boot/SoftwareLicenseTerms.rtf**.

If you want to verify Windows Activation, do the following:

- 1 In “Windows Embedded Standard 7”, click on the Windows **Start** button. Click **Control Panel**, then **System**.
- 2 In “Windows 10 Enterprise 2016 LTSC”, right-click Windows **Start** button, then click **System**.
- 3 Scroll down to the bottom of the screen. Under **Windows Activation**, you can view the activation status.

Windows Security

If your system is connected to the Internet, you should take the following steps to ensure the operating system is protected:

- Use an Internet fire wall
- Get the latest Windows updates
- Install and use up-to-date anti-virus software.

Open the Windows Firewall to look the status of, or make changes to, the firewall settings. On “Windows 10 Enterprise 2016 LTSC”, right click **Start > Control Panel > System & Security > Windows Firewall**. On “Windows Embedded Standard 7”, click **Start > Control Panel > Windows Firewall**.

Windows Update

The factory default setting for Windows Automatic Updates is to check for updates and notify the user if updates are available. It is configured to not automatically install updates. The intent is that your M9537A is not modified, unless you accept an update. Please see the “CAUTION” at the bottom of the next page.

In “Windows Embedded Standard 7”, you can change the setting or manually update the Windows OS by accessing **Start > Control Panel > Windows update**.

In “Windows 10 Enterprise 2016 LTSC”, you can change the setting or manually updating the OS by right-clicking **Start**, click **Settings**, and then click on **Update & Security**.

CAUTION

Windows Automatic Update is turned off by default. You may choose to turn Windows Automatic Update on after starting the operating system. However, Keysight cannot be held responsible for changes to the system caused by the automatic update process. Enabling automatic Windows updates exposes the controller to periodic OS changes and possible new system behaviors.

NOTE

Downloading and installing Windows Updates can be network and CPU intensive (impacting system performance) and some Windows Updates automatically reboot the controller. Therefore, Windows updates should be performed when the system is not in normal use.

NOTE

There is no 3rd party anti-virus software included with your controller. Anti-virus application software is the customer's responsibility. Having anti-virus software installed may have a slight impact on system performance.

CAUTION

A Microsoft Windows update might happen without user acceptance. The factory image on your Embedded Controller has a default configuration set to notify you before downloading and installing any updates. However, Microsoft Windows will sometimes install updates without notifying the user, even if configured to not perform an update. If your application requires that Windows does not perform updates, please work with your IT department to determine the best solution. They may suggest isolating your network or setting up a firewall.

Auto Login

Your M9537A Windows default behavior is to automatically login to the Administrator account every time it boots. You do not need to type a password.

Default Administrator Password: **Keysight4u!**

The Keysight standard for the Administrator password is: **Keysight4u!**
Your M9537A Administrator account is most likely set with this password. If it is not set with this password, then there is no password.

Change Administrator Password

The default Administrator password is public knowledge. Keysight recommends that you change your password for improved security.

NOTE

Anyone who knows your current Administrator password can change the password. When you change your password you must enter the current password. Because Auto Login is enabled, you may not notice if someone changed the password.

How to change your password for “Windows 10 Enterprise 2016 LTSB”:

1. Click the **Start** button at the bottom left of your screen.
2. Click **Settings** from the list to the left.
3. Select **Accounts**.
4. Select **Sign-in options** from the menu.
5. Click on **Change** under Change your account password.

How to set or change your password for “Windows Embedded Standard 7”:

1. Press **Ctrl+Alt+Delete**, and then click Change a password.
2. Type your old password. Leave it blank if the password is not set.
3. Type your new password, and then type the new password again.
4. Press **Enter**.

Remote Desktop Connection

The standard Microsoft application “Remote Desktop Connection” allows you to remotely login to the M9537A across the LAN from another computer. It only works if the accounts have passwords.

If your M9537A has a password on the Administrator account, then Remote Desktop Connection is enabled by default.

NOTE

Anyone with network access to your M9537A can control your M9537A using the user name of local\Administrator and the publicly known default password of: **Keysight4u!**

For your environment, you must determine if this is a useful feature or a security problem. If it's a security problem, then change the password or disable Remote Desktop Connection.

User Data Backup

All user data should be regularly backed up to an external memory device. This can be done across a network or to a USB device. Your IT department may already have a backup strategy which is suitable for the system and data. Also, user data back up must be done just prior to sending the controller back to Keysight for service.

The operating system supplied with your M9537A is licensed for use on the Solid State Drive (SSD) installed in the controller. If the SSD is replaced, you may be responsible to purchase or relicense the operating system.

System Backup and Recovery

After activating the Windows OS, you should create a complete System Image of your SSD as a backup in case you ever need to reinstall the operating system. There are several third-party backup solutions available. By definition, a system image is an exact copy of the computer hard drive. A system image includes the Windows operating system files as well as your system settings, application programs, and data files. You should regularly create a system image so that all data, applications, etc. have backups. The system image may be stored on a USB memory stick, multiple CD/DVDs, an external (USB) hard drive, or to a separate LAN drive.

When you restore your hard drive from a system image, it's a complete restoration—you cannot choose individual items to restore, and all of your current programs, system settings, and files are replaced with the contents of the system image. Therefore, you should also keep a regular backup of your data and applications.

You can also create Windows Restore Points to return your system files and settings without affecting data or application files.

Microsoft Windows is the only operating system installed on your M9537A. There is a small system partition for the Keysight Recovery System on the SSD. During the OS boot process, you are given the choice to boot normally or boot from the recovery partition.



NOTE

Some third-party backup utilities may destroy Keysight's Recovery System partition. If this happens, the Keysight Recovery System will not work.

Step 5: Run Keysight IO Libraries Suite

NOTE

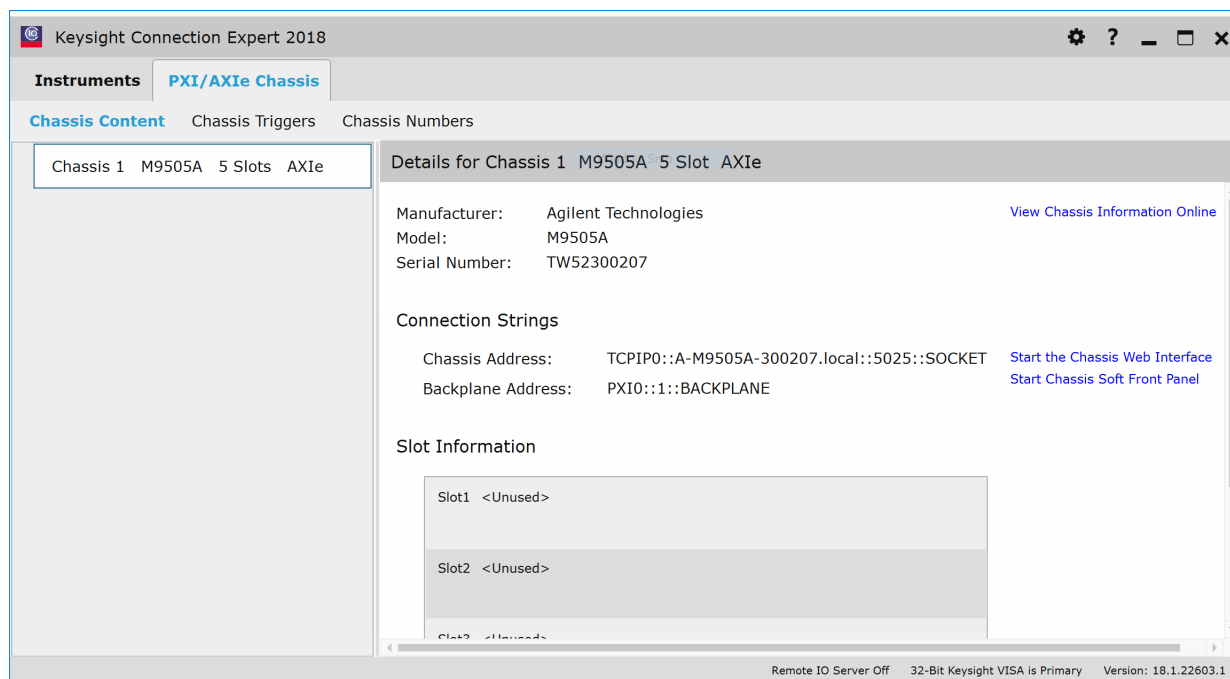
The Keysight IO Libraries is pre-installed on the controller. The Keysight IO Libraries must be present when installing and running application software. You should regularly check for the latest version. You can download the latest version from www.keysight.com/find/iosuite.

If Connection Expert is not already running, run it now to verify your I/O configuration. From the Windows Start button, click the IO Libraries icon () or from the Task bar, click the Keysight Connection Expert icon ().

Locate your AXIe in the Keysight Connection Expert Chassis tab as shown in the following picture.

NOTE

Keysight Connection Expert automatically identifies the AXIe chassis.



Step 6: Verify Operation

Your M9537A AXIe Embedded Controller will work out of the box, just by installing it in an AXIe Chassis and booting it up with a monitor, keyboard, mouse, and with a LAN cable plugged in. Plug the LAN connection into the ESM RJ45 port. If you want to verify that it is operating correctly follow these simple steps:

- 1** Boot up the M9537A and verify basic Windows operation by using the monitor, keyboard, and mouse.
- 2** Verify that you have network access by opening the browser to a web page or by opening a command prompt and ping another host.
- 3** Start Connection Expert, click the **Chassis** Tab, and verify that your AXIe Chassis is listed.
- 4** From Connection Expert, click **Start Chassis Web Interface**.
- 5** Click **Start Chassis Soft Front Panel**.

NOTE

From the Web Interface, the indicator on the M9537A Front Panel can be made to blink indicating communication with the chassis.

Step 7: Install User Application Modules in the AXIe Chassis

The AXIe chassis accepts modules conforming to the AXIe standard. These may include:

- AXIe instrument or instrument hub modules
- AXIe embedded controller module (must be installed in chassis slot 1 for M9502A/M9505A chassis or any chassis slot for M9514A chassis)
- AXIe filler panel modules

The insertion and removal procedures are the same for the 2-slot and 5-slot chassis, and for all module types except filler panels.

NOTE

Periodically check for the latest AXIe chassis firmware at:

- www.keysight.com/find/M9502A
- www.keysight.com/find/M9505A
- www.keysight.com/find/M9514A

CAUTION

Static Electricity – The components and connectors on modules are sensitive to static electricity. To minimize electrostatic damage, take the necessary anti-static precautions. Both chassis provide a grounding terminal, to which you can connect a wrist strap.

Empty Slots – Except for performing initial chassis verification or troubleshooting, do not operate the chassis with uncovered empty slots. Always insert a filler panel module or instrument module into empty slots. This is especially important for the slots on either side of an instrument module. This allows proper air flow and cooling, and provides EMI shielding for the chassis and installed components. Leaving empty slots uncovered can increase fan speed, raise ambient noise, overheat components, and shut down modules.

ESM – The Embedded System Manager (ESM) module is integral to the operation of the AXIe chassis. Except for troubleshooting purposes, do not remove the ESM.

Hot Swap – AXIe does not explicitly support hot swap for instrument modules. Keysight recommends that you fully power down and unplug the chassis before installing or removing modules.

AXle chassis are shipped with filler panel modules on all except Slot 1. You may need to remove filler panels from covered slots.

CAUTION

Certain modules require bus master and/or Rear I/O capability. If you are in doubt whether such features are required for the module you intend to install, check your specific module and/or system documentation to make sure that your system is provided with an appropriate free slot in which to insert the board.

Install Application Module Drivers (if necessary)

Each installed application module typically requires device drivers and control software. You need not install them to verify basic chassis operation. However, you would need to install them on the M9537A controller if required by your user application module. Consult the module provider for software requirements and instructions.

NOTE

You may need to connect the embedded controller to the internet. Locate and install the necessary drivers from the internet.

Chassis Shutdown

As with any PC, you should not shut down Windows-based instruments by either turning off the power via an external power source or by pulling the power plug out from the rear panel. This could corrupt the operating system. The only approved way to shut down the controller is to execute the Windows shutdown process and then turn off the chassis via the chassis On/Off button.

CAUTION

Pressing the chassis power button immediately removes power from the controller. This may cause loss of data or damage to the controller.

Controller BIOS

The M9537A ships with latest version of the BIOS. Keysight periodically updates the BIOS with new versions. You can check the availability of new versions at www.keysight.com/find/M9537A. If there is a new version of the BIOS posted, it includes installation instructions and release notes listing the new features and defects fixed.

To find out which version is currently installed in your M9537A you can either boot to the BIOS screen or you can run the msinfo32.exe reporting tool from within WES 7.

To look up the BIOS version via the BIOS screen:

- 1 Power on the chassis to boot the M9537A.
- 2 In the Keysight BIOS splash screen, press the **Delete** key. This opens the BIOS menu **Main** page displaying the currently installed version of BIOS.

To look up the BIOS version via msinfo32.exe:

- 1 Boot to Windows, click **Start**.
- 2 In the run field type msinfo32.exe and press **Enter**.
- 3 The *msinfo32.exe* reporting screen opens and you can read the BIOS version on the first page.

Environmental Operating Conditions

The Keysight M9537A AXIe Embedded Controller is designed to operate in a temperature range of 0° C to +55° C with non-condensing humidity. The maximum humidity is 95% at +40° C. The maximum operating altitude is 3000 m (9800 ft). The module should be operated in an indoor environment where temperature and humidity are controlled. Condensation can pose a potential shock hazard.

Condensation can occur when you move the module from a cold to a warm environment, or if the temperature and/or humidity of the environment change quickly.

Samples of this product have been type tested in accordance with the Keysight Environmental Test Manual and verified to be robust against the environmental stresses of storage, transportation and end-use. The stresses included are not limited to temperature, humidity, shock, vibration, altitude and power line conditions. For complete specifications, check the Keysight web site at: [www. keysight.com/find/M9537A](http://www.keysight.com/find/M9537A).

Accessories

| Accessory Number | Description |
|------------------|---|
| Y1206A | Keysight keyboard and optical mouse |
| Y1260A | GPIB Cable |
| Y1261A | Display Port to DVI Adapter |
| Y1262A | Display Port Cable |
| Y1266A | Spare SSD with Carrier, WES 764-bit OS installed, 240 GB* |
| Y1266B | Spare SSD with Carrier, Win 10 64-bit OS installed, 240 GB* |

* This is not compatible with the Keysight M9036A or M9037A PXIe Embedded Controller.

Related Products

| Product | Description |
|---------|--|
| M9502A | AXIe Chassis, 2-slot with Embedded System module |
| M9505A | AXIe Chassis, 5-slot with Embedded System module |
| M9514A | AXIe Chassis, 14-slot with AXIe System Module |



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