

Security Guide

M9010A, M9018B, M9019A

# Keysight PXIe Chassis Family





# Notices

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## Sales and Technical Support

To contact Keysight for sales and technical support, refer to the support links on the following Keysight websites:

[www.keysight.com/find/M9010A](http://www.keysight.com/find/M9010A)

[www.keysight.com/find/M9018B](http://www.keysight.com/find/M9018B)

[www.keysight.com/find/M9019A](http://www.keysight.com/find/M9019A)

(product-specific information and support, software and documentation updates)

[www.keysight.com/find/assist](http://www.keysight.com/find/assist) (world-wide contact information for repair and service)

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Declarations of Conformity for this product and for other Keysight products may be downloaded from the Web. Go to <http://keysight.com/go/conformity> and click on “Declarations of Conformity.” You can then search by product number to find the latest Declaration of Conformity.

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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.

PXIe Chassis are for indoor use only.

Mains supply voltage fluctuations must not exceed  $\pm 10\%$  of the nominal supply voltage.

Transient overvoltages typically present on the Mains supply (installation CAT II)

### Do Not Operate in an Explosive Atmosphere

Do not operate 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 a 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 a 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 AXIe 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:



Refer to manual for additional safety information.



Earth Ground.



Chassis Ground.



Alternating Current (AC).



Direct Current (DC).



Standby Power. Unit is not completely disconnected from AC mains when power switch is in standby position



Indicates that antistatic precautions should be taken.



Operate the PXIe chassis in the horizontal orientation. Do NOT operate this chassis in the vertical orientation.



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.



MSIP-REM-Kst-xxxxxxx

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.

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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.





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## Memory Declassification Procedure

Some test equipment users have a need to “declassify” or “sanitize” their instruments for security purposes. This involves following a procedure to clear all user data from the instrument’s memory. The result is a sanitized instrument that can be removed from a secure area without any chance of classified data being recovered from it.

This document details the internal memory locations of the M9010A, M9018B, and M9019A PXIe chassis and System Interface Modules. It describes instrument security features and the steps necessary to declassify the products through memory sanitization or removal. For additional information on a particular product, the Keysight Instrument Security Database may be accessed here:

[www.keysight.com/find/security](http://www.keysight.com/find/security).

For general information, the Keysight Aerospace and Defense web page may be found here: [www.keysight.com/find/ad](http://www.keysight.com/find/ad).

### Definitions:

**Clearing** - Clearing is the process of eradicating the data on media before reusing the media so that the data can no longer be retrieved using the standard interfaces on the instrument. Clearing is typically used when the instrument is to remain in an environment with an acceptable level of protection.

**Sanitization** - Sanitization is the process of removing or eradicating stored data so that the data cannot be recovered using any known technology. Instrument sanitization is typically required when an instrument is moved from a secure to a non-secure environment such as when it is returned to the factory for calibration. Keysight memory sanitization procedures are designed for customers who need to meet the requirements specified by the US Defense Security Service (DSS). These requirements are outlined in the “Clearing and Sanitization Matrix” issued by the Cognizant Security Agency (CSA) and referenced in National Industrial Security Program Operating Manual (NISPOM) DoD 5220.22M ISL 01L-1 section 8-301.

**Security erase** - Security erase is a term that is used to refer to either the clearing or sanitization features of Keysight instruments.

**Instrument declassification** - A term that refers to procedures that must be undertaken before an instrument can be removed from a secure environment such as is the case when the instrument is returned for calibration. Declassification procedures will include memory sanitization and or memory removal. Keysight declassification procedures are designed to meet the requirements specified by the DSS NISPOM security document (DoD 5220.22M chapter 8).

## Sales and Technical Support

For product specific information and support, and to obtain the latest software and documentation, refer to the following Keysight web resources:

[www.keysight.com/find/M9010A](http://www.keysight.com/find/M9010A)

[www.keysight.com/find/M9018B](http://www.keysight.com/find/M9018B)

[www.keysight.com/find/M9019A](http://www.keysight.com/find/M9019A)

Worldwide contact information for repair and service can be found at:

[www.keysight.com/find/assist](http://www.keysight.com/find/assist)

For additional information, go to: <http://www.keysight.com/find/security> and enter the model number of your chassis (for example, M9018B).

## Procedure for Declassifying an M9010A Chassis

All volatile memory in the M9010A PXI chassis may be erased by removing power for 30 seconds. Refer to the table below.

<b>Memory Type:</b> SRAM	<b>Memory Size:</b> 4KB
<b>Memory Function:</b> Volatile runtime M9010A driver state data. Stores only a small subset of runtime operating parameters related to state of the chassis.	
<b>User Modifiable (Y/N):</b> Yes	<b>Volatile (Y/N):</b> Yes
<b>Memory Erase Processes:</b> Cycle chassis power.	

<b>Memory Type:</b> Flash	<b>Memory Size:</b> 2MB
<b>Memory Function:</b> Reconfigurable PCIe device firmware images.	
<b>User Modifiable (Y/N):</b> Yes, using an Keysight SFP firmware update utility.	<b>Volatile (Y/N):</b> No
<b>Memory Erase Processes:</b> None	

<b>Memory Type:</b> EEPROM (x2)	<b>Memory Size:</b> 8KB (x2)
<b>Memory Function:</b> Reconfigurable Gen3 PCIe fabric image for internal PCIe switch devices.	
<b>User Modifiable (Y/N):</b> Yes, using Keysight SFP firmware update utility.	<b>Volatile (Y/N):</b> No
<b>Memory Erase Processes:</b> None	

<b>Memory Type:</b> EEPROM (x2)	<b>Memory Size:</b> 8KB (x2)
<b>Memory Function:</b> Reconfigurable Gen1 PCIe fabric image for internal PCIe switch devices.	
<b>User Modifiable (Y/N):</b> Yes, using Keysight SFP firmware update utility.	<b>Volatile (Y/N):</b> No
<b>Memory Erase Processes:</b> None	

<b>Memory Type:</b> Flash	<b>Memory Size:</b> 528KB + 8MB
<b>Memory Function:</b> Chassis monitor processor operating firmware.	
<b>User Modifiable (Y/N):</b> Yes, using Keysight SFP firmware update utility.	<b>Volatile (Y/N):</b> No
<b>Memory Erase Processes:</b> None	

<b>Memory Type:</b> SRAM	<b>Memory Size:</b> 50KB
<b>Memory Function:</b> Chassis monitor processor operating RAM. Use of the chassis driver can change the operating Alarm limits, but all configuration changes are volatile and vanish when powered-down.	
<b>User Modifiable (Y/N):</b> Yes	<b>Volatile (Y/N):</b> Yes
<b>Memory Erase Processes:</b> Cycle chassis power.	

<b>Memory Type:</b> EEPROM (x4)	<b>Memory Size:</b> 256B
<b>Memory Function:</b> Board manufacturing ID information.	
<b>User Modifiable (Y/N):</b> No	<b>Volatile (Y/N):</b> No
<b>Memory Erase Processes:</b> None	

<b>Memory Type:</b> Complex Programmable Logic Device (CPLD)	<b>Memory Size:</b> 256 Macrocells
<b>Memory Function:</b> Right trigger bridge functionality.	
<b>User Modifiable (Y/N):</b> Yes, using Keysight SFP firmware update utility.	<b>Volatile (Y/N):</b> Yes
<b>Memory Erase Processes:</b> none	

<b>Memory Type:</b> EEPROM	<b>Memory Size:</b> 256B
<b>Memory Function:</b> PXIe chassis serial number and PXIe chassis identification constants.	
<b>User Modifiable (Y/N):</b> Yes, using Keysight serial number update utility.	<b>Volatile (Y/N):</b> No
<b>Memory Erase Processes:</b> none	

## Procedure for Declassifying an M9018B Chassis

All volatile memory in the M9018B PXI chassis may be erased by removing power for 30 seconds. Refer to the table below.

<b>Memory Type:</b> SRAM	<b>Memory Size:</b> 4KB
<b>Memory Function:</b> Volatile runtime M9018B driver state data. Stores only a small subset of runtime operating parameters related to state of the chassis.	
<b>User Modifiable (Y/N):</b> Yes	<b>Volatile (Y/N):</b> Yes
<b>Memory Erase Processes:</b> Cycle chassis power.	

  

<b>Memory Type:</b> Flash	<b>Memory Size:</b> 2MB
<b>Memory Function:</b> 1. Reconfigurable PCIe device firmware images. 2. PCIe fabric boot attributes and custom PCIe fabric storage.	
<b>User Modifiable (Y/N):</b> Yes, device firmware can be changed using an Keysight SFP firmware update utility, and PCIe fabric can be changed using Keysight PCIe Switch Fabric Configurator.	<b>Volatile (Y/N):</b> No
<b>Memory Erase Processes:</b> None	

  

<b>Memory Type:</b> EEPROM (x2)	<b>Memory Size:</b> 8KB (x2)
<b>Memory Function:</b> Reconfigurable Gen2 PCIe fabric image for internal PCIe switch devices.	
<b>User Modifiable (Y/N):</b> Yes, using Keysight PCIe Switch Fabric Configurator.	<b>Volatile (Y/N):</b> No
<b>Memory Erase Processes:</b> None	

  

<b>Memory Type:</b> EEPROM (x2)	<b>Memory Size:</b> 8KB (x2)
<b>Memory Function:</b> failsafe PCIe fabric image for internal PCIe switch devices.	
<b>User Modifiable (Y/N):</b> No.	<b>Volatile (Y/N):</b> No
<b>Memory Erase Processes:</b> None	

  

<b>Memory Type:</b> Flash	<b>Memory Size:</b> 528KB + 8MB
<b>Memory Function:</b> Chassis monitor processor operating firmware.	
<b>User Modifiable (Y/N):</b> Yes, requires Firmware Upgrade.	<b>Volatile (Y/N):</b> No
<b>Memory Erase Processes:</b> None	

  

<b>Memory Type:</b> SRAM	<b>Memory Size:</b> 50KB
<b>Memory Function:</b> Chassis monitor processor operating RAM. Use of the chassis driver can change the operating Alarm limits, but all configuration changes are volatile and vanish when powered-down.	
<b>User Modifiable (Y/N):</b> Yes, using Keysight SFP firmware update utility.	<b>Volatile (Y/N):</b> Yes
<b>Memory Erase Processes:</b> Cycle chassis power.	

<b>Memory Type:</b> EEPROM (x3)	<b>Memory Size:</b> 256B
<b>Memory Function:</b> Board manufacturing ID information.	
<b>User Modifiable (Y/N):</b> No	<b>Volatile (Y/N):</b> No
<b>Memory Erase Processes:</b> None	

<b>Memory Type:</b> Complex Programmable Logic Device (CPLD)	<b>Memory Size:</b> 64 Macrocells
<b>Memory Function:</b> Left trigger bridge functionality.	
<b>User Modifiable (Y/N):</b> Yes, using Keysight SFP firmware update utility.	<b>Volatile (Y/N):</b> Yes
<b>Memory Erase Processes:</b> none	

<b>Memory Type:</b> Complex Programmable Logic Device (CPLD)	<b>Memory Size:</b> 256 Macrocells
<b>Memory Function:</b> Right trigger bridge functionality.	
<b>User Modifiable (Y/N):</b> Yes, using Keysight SFP firmware update utility.	<b>Volatile (Y/N):</b> Yes
<b>Memory Erase Processes:</b> none	

## Procedure for Declassifying an M9019A Chassis

All volatile memory in the M9019A PXI chassis may be erased by removing power for 30 seconds. Refer to the table below.

<b>Memory Type:</b> SRAM	<b>Memory Size:</b> 4KB
<b>Memory Function:</b> Volatile runtime M9019A driver state data. Stores only a small subset of runtime operating parameters related to state of the chassis.	
<b>User Modifiable (Y/N):</b> Yes	<b>Volatile (Y/N):</b> Yes
<b>Memory Erase Processes:</b> Cycle chassis power.	
<b>Memory Type:</b> Flash	<b>Memory Size:</b> 2MB
<b>Memory Function:</b> Reconfigurable PCIe device firmware images.	
<b>User Modifiable (Y/N):</b> Yes, using an Keysight SFP firmware update utility.	<b>Volatile (Y/N):</b> No
<b>Memory Erase Processes:</b> None	
<b>Memory Type:</b> EEPROM (x2)	<b>Memory Size:</b> 8KB (x2)
<b>Memory Function:</b> Reconfigurable Gen3 PCIe fabric image for internal PCIe switch devices.	
<b>User Modifiable (Y/N):</b> Yes, using an Keysight SFP firmware update utility.	<b>Volatile (Y/N):</b> No
<b>Memory Erase Processes:</b> None	
<b>Memory Type:</b> EEPROM (x2)	<b>Memory Size:</b> 8KB (x2)
<b>Memory Function:</b> Reconfigurable Gen1 PCIe fabric image for internal PCIe switch devices.	
<b>User Modifiable (Y/N):</b> Yes, using an Keysight SFP firmware update utility.	<b>Volatile (Y/N):</b> No
<b>Memory Erase Processes:</b> None	
<b>Memory Type:</b> Flash	<b>Memory Size:</b> 528KB + 8MB
<b>Memory Function:</b> Chassis monitor processor operating firmware.	
<b>User Modifiable (Y/N):</b> Yes, using an Keysight SFP firmware update utility.	<b>Volatile (Y/N):</b> No
<b>Memory Erase Processes:</b> None	
<b>Memory Type:</b> SRAM	<b>Memory Size:</b> 50KB
<b>Memory Function:</b> Chassis monitor processor operating RAM. Use of the chassis driver can change the operating Alarm limits, but all configuration changes are volatile and vanish when powered-down.	
<b>User Modifiable (Y/N):</b> Yes	<b>Volatile (Y/N):</b> Yes
<b>Memory Erase Processes:</b> Cycle chassis power.	

<b>Memory Type:</b> EEPROM (x4)	<b>Memory Size:</b> 256B
<b>Memory Function:</b> Board manufacturing ID information.	
<b>User Modifiable (Y/N):</b> No	<b>Volatile (Y/N):</b> No
<b>Memory Erase Processes:</b> None	

<b>Memory Type:</b> Complex Programmable Logic Device (CPLD)	<b>Memory Size:</b> 64 Macrocells
<b>Memory Function:</b> Left trigger bridge functionality.	
<b>User Modifiable (Y/N):</b> Yes, using Keysight SFP firmware update utility.	<b>Volatile (Y/N):</b> Yes
<b>Memory Erase Processes:</b> none	

<b>Memory Type:</b> Complex Programmable Logic Device (CPLD)	<b>Memory Size:</b> 256 Macrocells
<b>Memory Function:</b> Right trigger bridge functionality.	
<b>User Modifiable (Y/N):</b> Yes, using Keysight SFP firmware update utility.	<b>Volatile (Y/N):</b> Yes
<b>Memory Erase Processes:</b> none	



## M9021A PCIe Cable Interface

<b>Memory Type:</b> EEPROM	<b>Memory Size:</b> 8KB
<b>Memory Function:</b> Factory configuration of PCIe driver device. Not user accessible.	
<b>User Modifiable (Y/N):</b> No	<b>Volatile (Y/N):</b> No
<b>Memory Erase Processes:</b> None	

## M9022A, M9023A, M9024A System Module Interfaces

<b>Memory Type:</b> EEPROM	<b>Memory Size:</b> 8KB
<b>Memory Function:</b> Factory configuration of PCIe driver device. Not user accessible.	
<b>User Modifiable (Y/N):</b> No	<b>Volatile (Y/N):</b> No
<b>Memory Erase Processes:</b> None	

## Memory Clearing, Sanitization and/or Removal Procedures

The following table explains how to clear, sanitize, and remove memory from your instrument for all memory that can be written to during normal operation and for which the clearing and sanitization procedure is more than trivial such as rebooting your instrument.

Procedure	Process
Memory clearing	Remove operating power from the chassis for 30 seconds minimum.
Memory removal	This memory cannot be removed without destroying the chassis

## References

For additional information, refer to:

- DOD 5220.22-M, “National Industrial Security Program Operating Manual (NISPOM)”, United States Department of Defense. May be downloaded from here: [www.dss.mil/isp/fac\\_clear/download\\_nispom.html](http://www.dss.mil/isp/fac_clear/download_nispom.html)
  
- ODAA Process Guide for C&A of Classified Systems under NISPOM, Defense Security Service. DSS-cleared industries may request a copy of this document by following the instructions at: [www.dss.mil/documents/odaa/ODAA%20Process%20Manual%20Version%203.2.pdf](http://www.dss.mil/documents/odaa/ODAA%20Process%20Manual%20Version%203.2.pdf)
  
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