

Security Guide

M9010A, M9018B, M9019A

Keysight PXIe Chassis Family



Notices

© Keysight Technologies, Inc. 2016

No part of this manual may be reproduced in any form or by any means (including electronic storage and retrieval or translation into a foreign language) without prior agreement and written consent from Keysight Technologies, Inc. as governed by United States and international copyright laws.

Manual Part Number

M9019-90020

Edition

Second Edition, March 2017

Printed in

Malaysia

Published by

Keysight Technologies, Inc.
900 S. Taft Ave.
Loveland, CO 80537 USA

Trademarks

PICMG[®], Compact PCI[®] are registered trademarks of the PCI Industrial Computer Manufacturers Group.

PCI-SIG[®], PCI Express[®], and PCIe[®] are registered trademarks of PCI-SIG.

LabVIEW is a registered trademark of National Instruments

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

www.keysight.com/find/M9018B

www.keysight.com/find/M9019A

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

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

Declaration of Conformity

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.

Technology Licenses

The hardware and/or software described in this document are furnished under a license and may be used or copied only in accordance with the terms of such license.

Warranty

THE MATERIAL CONTAINED IN THIS DOCUMENT IS PROVIDED “AS IS,” AND IS SUBJECT TO BEING CHANGED, WITHOUT NOTICE, IN FUTURE EDITIONS. FURTHER, TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, KEYSIGHT DISCLAIMS ALL WARRANTIES, EITHER EXPRESS OR IMPLIED, WITH REGARD TO THIS MANUAL AND ANY INFORMATION CONTAINED HEREIN, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. KEYSIGHT SHALL NOT BE LIABLE FOR ERRORS OR FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH THE FURNISHING, USE, OR PERFORMANCE OF THIS DOCUMENT OR OF ANY INFORMATION CONTAINED HEREIN. SHOULD KEYSIGHT AND THE USER HAVE A SEPARATE WRITTEN AGREEMENT WITH WARRANTY TERMS COVERING THE MATERIAL IN THIS DOCUMENT THAT CONFLICT WITH THESE TERMS, THE WARRANTY TERMS IN THE SEPARATE AGREEMENT SHALL CONTROL.

Keysight Technologies does not warrant third-party system-level (combination of chassis, controllers, modules, etc.) performance, safety, or regulatory compliance unless specifically stated.

DFARS/Restricted Rights Notices

If software is for use in the performance of a U.S. Government prime contract or subcontract, Software is delivered and licensed as “Commercial computer software” as defined in DFAR 252.227-7014 (June 1995), or as a “commercial item” as defined in FAR 2.101(a) or as “Restricted computer software” as defined in FAR 52.227-19 (June 1987) or any equivalent agency regulation or contract clause. Use, duplication or disclosure of Software is subject to Keysight Technologies’ standard commercial license terms, and non-DOD Departments and Agencies of the U.S. Government will receive no greater than Restricted Rights as defined in FAR 52.227-19(c)(1-2) (June 1987). U.S. Government users will receive no greater than Limited Rights as defined in FAR 52.227-14 (June 1987) or DFAR 252.227-7015 (b)(2) (November 1995), as applicable in any technical data.

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).



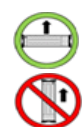
Direct Current (DC).



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-xxxxxx

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) 전자파적합기기로서 판 매자 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

Memory Declassification Procedure	1
Definitions:	1
Sales and Technical Support.....	2
Procedure for Declassifying an M9010A Chassis	3
Procedure for Declassifying an M9018B Chassis	5
Procedure for Declassifying an M9019A Chassis	7
M9021A PCIe Cable Interface	9
M9022A System Module Interface	9
Memory Clearing, Sanitization and/or Removal Procedures	9
References	10

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.

For general information, the Keysight Aerospace and Defense web page may be found here: 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

www.keysight.com/find/M9018B

www.keysight.com/find/M9019A

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

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.

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

Memory Type: Flash	Memory Size: 2MB
Memory Function: <ol style="list-style-type: none"> M9010A PCIe device firmware images can be changed using an Keysight firmware update utility. PCIe fabric boot attributes and custom PCIe fabric storage. Can be changed using Keysight PCIe Fabric Configurator utility. 	
User Modifiable (Y/N): Yes	Volatile (Y/N): No
Memory Erase Processes: None	

Memory Type: EEPROM (x2)	Memory Size: 8KB (x2)
Memory Function: Reconfigurable boot PCIe fabric image for internal PCIe switch devices. PCIe fabric can be reconfigured using Keysight PCIe Fabric Configurator utility.	
User Modifiable (Y/N): Yes	Volatile (Y/N): No
Memory Erase Processes: None	

Memory Type: EEPROM (x2)	Memory Size: 8KB (x2)
Memory Function: Static Factory Default PCIe fabric image for PCIe switch devices. These EEPROMs are shipped with Write-Protection enabled and can't be changed by users.	
User Modifiable (Y/N): No	Volatile (Y/N): No
Memory Erase Processes: None	

Memory Type: Flash	Memory Size: 128KB + 8MB
Memory Function: Chassis monitor processor operating firmware.	
User Modifiable (Y/N): Yes, requires Firmware Upgrade	Volatile (Y/N): No
Memory Erase Processes: None	

Memory Type: SRAM	Memory Size: 16KB
Memory Function: 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.	
User Modifiable (Y/N): Yes	Volatile (Y/N): Yes
Memory Erase Processes: Cycle chassis power.	

Memory Type: EEPROM (x4)	Memory Size: 2KB
Memory Function: Board manufacturing ID information	
User Modifiable (Y/N): No	Volatile (Y/N): No
Memory Erase Processes: 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.

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

Memory Type: Flash	Memory Size: 2MB
Memory Function: 1. M9018B PCIe device firmware images can be changed using an Keysight firmware update utility. 2. PCIe fabric boot attributes and custom PCIe fabric storage. Can be changed using Keysight PCIe Fabric Configurator utility.	
User Modifiable (Y/N): Yes	Volatile (Y/N): No
Memory Erase Processes: None	

Memory Type: EEPROM (x2)	Memory Size: 8KB (x2)
Memory Function: Reconfigurable boot PCIe fabric image for internal PCIe switch devices. PCIe fabric can be reconfigured using Keysight PCIe Fabric Configurator utility.	
User Modifiable (Y/N): Yes	Volatile (Y/N): No
Memory Erase Processes: None	

Memory Type: EEPROM (x2)	Memory Size: 8KB (x2)
Memory Function: Static Factory Default PCIe fabric image for PCIe switch devices. These EEPROMs are shipped with Write-Protection enabled and can't be changed by users.	
User Modifiable (Y/N): No	Volatile (Y/N): No
Memory Erase Processes: None	

Memory Type: Flash	Memory Size: 128KB + 8MB
Memory Function: Chassis monitor processor operating firmware.	
User Modifiable (Y/N): Yes, requires Firmware Upgrade	Volatile (Y/N): No
Memory Erase Processes: None	

Memory Type: SRAM	Memory Size: 16KB
Memory Function: 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.	
User Modifiable (Y/N): Yes	Volatile (Y/N): Yes
Memory Erase Processes: Cycle chassis power.	

Memory Type: EEPROM (x4)	Memory Size: 2KB
Memory Function: Board manufacturing ID information	
User Modifiable (Y/N): No	Volatile (Y/N): No
Memory Erase Processes: 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.

Memory Type: SRAM	Memory Size: 4KB
Memory Function: Volatile runtime M9019A driver state data. Stores only a small subset of runtime operating parameters related to state of the chassis.	
User Modifiable (Y/N): Yes	Volatile (Y/N): Yes
Memory Erase Processes: Cycle chassis power.	

Memory Type: Flash	Memory Size: 2MB
Memory Function: 1. M9019A PCIe device firmware images can be changed using an Keysight firmware update utility. 2. PCIe fabric boot attributes and custom PCIe fabric storage. Can be changed using Keysight PCIe Fabric Configurator utility.	
User Modifiable (Y/N): Yes	Volatile (Y/N): No
Memory Erase Processes: None	

Memory Type: EEPROM (x2)	Memory Size: 8KB (x2)
Memory Function: Reconfigurable boot PCIe fabric image for internal PCIe switch devices. PCIe fabric can be reconfigured using Keysight PCIe Fabric Configurator utility.	
User Modifiable (Y/N): Yes	Volatile (Y/N): No
Memory Erase Processes: None	

Memory Type: EEPROM (x2)	Memory Size: 8KB (x2)
Memory Function: Static Factory Default PCIe fabric image for PCIe switch devices. These EEPROMs are shipped with Write-Protection enabled and can't be changed by users.	
User Modifiable (Y/N): No	Volatile (Y/N): No
Memory Erase Processes: None	

Memory Type: Flash	Memory Size: 128KB + 8MB
Memory Function: Chassis monitor processor operating firmware.	
User Modifiable (Y/N): Yes, requires Firmware Upgrade	Volatile (Y/N): No
Memory Erase Processes: None	

Memory Type: SRAM	Memory Size: 16KB
Memory Function: 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.	
User Modifiable (Y/N): Yes	Volatile (Y/N): Yes
Memory Erase Processes: Cycle chassis power.	

Memory Type: EEPROM (x4)	Memory Size: 2KB
Memory Function: Board manufacturing ID information	
User Modifiable (Y/N): No	Volatile (Y/N): No
Memory Erase Processes: None	

M9021A PCIe Cable Interface

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

M9022A, M9023A, M9024A System Module Interfaces

Memory Type: EEPROM	Memory Size: 8KB
Memory Function: Factory configuration of PCIe driver device. Not user accessible.	
User Modifiable (Y/N): No	Volatile (Y/N): No
Memory Erase Processes: 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
- 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



This information is subject to change without notice.
© Keysight Technologies, 2016
Published in USA
Edition 2 March 2017



M9019-90020

www.keysight.com