Keysight Technologies M91xxA PXI

This document describes instrument memory types and security features. It provides a statement regarding the volatility of all memory types, and specifies the steps required to declassify an instrument through memory clearing, sanitization, or removal.

KEYSIGHT

SECURITY FEATURES AND DOCUMENT OF VOLATILITY

Notices

© Keysight Technologies, Inc. 2024

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.

Trademark Acknowledgments

Bluetooth and the Bluetooth logos are trademarks owned by Bluetooth SIG, Inc., U.S.A. and licensed to Keysight Technologies, Inc.

Manual Part Number

M9187-90005

Edition

Edition 1, September 2024
Supersedes: None

Published by:
Keysight Technologies
1400 Fountaingrove Parkway
Santa Rosa, CA 95403

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 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 WILL CONTROL.

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.

U.S. Government Rights

The Software is "commercial computer software," as defined by Federal Acquisition Regulation ("FAR") 2.101. Pursuant to FAR 12.212 and 27.405-3 and Department of Defense FAR Supplement ("DFARS") 227.7202, the U.S. government acquires commercial computer software under the same terms by which the software is customarily provided to the public. Accordingly, Keysight provides the Software to U.S. government customers under its standard commercial license, which is embodied in its End User License Agreement (EULA), a copy of which can be found at http://www.keysight.com/find/sweula. The license set forth in the EULA represents the exclusive authority by which the U.S. government may use, modify, distribute, or disclose the Software. The EULA and the license set forth therein, does not require or permit, among other things, that Keysight: (1) Furnish technical information related to commercial computer software or commercial computer software documentation that is not customarily provided to the public; or (2) Relinquish to, or otherwise provide, the government rights in excess of these rights customarily provided to the public to use, modify, reproduce, release, perform, display, or disclose commercial computer software or commercial computer software documentation. No additional government requirements beyond those set forth in the EULA shall apply, except to the extent that those terms, rights, or licenses are explicitly required from all providers of commercial computer software pursuant to the FAR and the DFARS and are set forth specifically in writing elsewhere in the EULA. Keysight shall be under no obligation to update, revise or otherwise modify the Software. With respect to any technical data as defined by FAR 2.101, pursuant to FAR 12.211 and 27.404.2 and DFARS 227.7102, the U.S. government acquires no greater than Limited Rights as defined in FAR 27.401 or DFAR 227.7103-5 (c), as applicable in any technical data.

Safety Notices

CAUTION

A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like 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** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like 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.

Where to Find the Latest Information

Documentation is updated periodically. For the latest information about this instrument, including firmware upgrades, application information, and product information, click the link below.

PXI Products

To receive the latest updates by email, subscribe to Keysight Email Updates at the following URL:

http://www.keysight.com/find/MyKeysight

Information on preventing analyzer damage can be found at:

www.keysight.com/find/PreventingInstrumentRepair

Is your product software up-to-date?

Periodically, Keysight releases software updates to fix known defects and incorporate product enhancements. To search for software updates for your product, go to the Keysight Technical Support website at:

http://www.keysight.com/find/techsupport

. Safety Information

Product Markings 6

Contacting Keysight 7

Where to Find the Latest Information 7

Is your product software up-to-date? 7

Contacting Keysight Sales and Service Offices 7

. Memory Declassification Procedure

Security Terms and Definitions. 10

Product Memory Sanitization 11

M91xxA PXI Modules Memory Information and Procedure 12

M910xA PXI High-Density Multiplexer. 12

M912xA PXI Matrix Switch 12

M913xA PXI Switch 13

M914xA and M915xA RF MUX. 13

M9187A PXI DIO 13

Safety Information

The following safety precautions should be observed before using these products and any associated instrumentation. These products are intended for use by qualified personnel who recognize shock hazards and are familiar with the safety precautions required to avoid possible injury. Read and follow all installation, operation, and maintenance information carefully before using the product.

WARNING

If these products are not used as specified, the protection provided by the equipment could be impaired. These products must be used in a normal condition (in which all means for protection are intact) only.

The types of product users are:

- Responsible body is the individual or group responsible for the use and maintenance of equipment, for ensuring that the equipment is operated within its specifications and operating limits, and for ensuring operators are adequately trained.
- Operators use these products for their intended function. They must be trained in electrical safety procedures and proper use of the instrument.They must be protected from electric shock and contact with hazardous live circuits.
- Maintenance personnel perform routine procedures on these products to keep them operating properly (for example, setting the line voltage or replacing consumable materials). Maintenance procedures are described in the user documentation. The procedures explicitly state if the operator may perform them. Otherwise, they should be performed only by service personnel.
- Service personnel are trained to work on live circuits, perform safe installations, and repair products.Only properly trained service personnel may perform installation and service procedures.

WARNING

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

Keysight products are designed for use with electrical signals that are rated Measurement Category I and Measurement Category II, as described in the International Electro-technical Commission (IEC) Standard IEC 60664. Most measurement, control, and data I/O signals are Measurement Category I and must not be directly connected to mains voltage or to voltage sources with high transient over-voltages. Measurement Category II connections require protection for high transient over-voltages often associated with local AC mains connections.Assume all measurement, control, and data I/O connections are for connection to Category I sources unless otherwise marked or described in the user documentation.

Exercise extreme caution when a shock hazard is present. Lethal voltage may be present on cable connector jacks or test fixtures. The American National Standards Institute (ANSI) states that a shock hazard exists when voltage levels greater than 30V RMS, 42.4V peak, or 60VDC are present. A good safety practice is to expect that hazardous voltage is present in any unknown circuit before measuring.

Operators of this product must be protected from electric shock at all times. The responsible body must ensure that operators are prevented access and/or insulated from every connection point. In some cases, connections must be exposed to potential human contact. Product operators in these circumstances must be trained to protect themselves from the risk of electric shock. If the circuit is capable of operating at or above 1000V, no conductive part of the circuit may be exposed.

Do not connect switching cards directly to unlimited power circuits. They are intended to be used with impedance limited sources. NEVER connect switching cards directly to AC mains. When connecting sources to switching cards, install protective devices to limit fault current and voltage to the card.

Before operating an instrument, ensure that the line cord is connected to a properly grounded power receptacle. Inspect the connecting cables, test leads, and jumpers for possible wear, cracks, or breaks before each use.

When installing equipment where access to the main power cord is restricted, such as rack mounting, a separate main input power disconnect device must be provided in close proximity to the equipment and within easy reach of the operator.

For maximum safety, do not touch the product, test cables, or any other instruments while power is applied to the circuit under test. ALWAYS remove power from the entire test system and discharge any capacitors before: connecting or disconnecting cables or jumpers, installing or removing switching cards, or making internal changes, such as installing or removing jumpers.

Do not touch any object that could provide a current path to the common side of the circuit under test or power line (earth) ground. Always make measurements with dry hands while standing on a dry, insulated surface capable of withstanding the voltage being measured.

The instrument and accessories must be used in accordance with its specifications and operating instructions, or the safety of the equipment may be impaired.

WARNING

Do not exceed the maximum signal levels of the instruments and accessories, as defined in the specifications and operating information, and as shown on the instrument or test fixture panels, or switching card.

When fuses are used in a product, replace with the same type and rating for continued protection against fire hazard.

Chassis connections must only be used as shield connections for measuring circuits, NOT as safety earth ground connections.

If you are using a test fixture, keep the lid closed while power is applied to the device under test. Safe operation requires the use of a lid interlock.

Instrumentation and accessories shall not be connected to humans.

Before performing any maintenance, disconnect the line cord and all test cables.

To maintain protection from electric shock and fire, replacement components in mains circuits - including the power transformer, test leads, and input jacks - must be purchased from Keysight. Standard fuses with applicable national safety approvals may be used if the rating and type are the same. Other components that are not safety related may be purchased from other suppliers as long as they are equivalent to the original component (note that selected parts should be purchased only through Keysight to maintain accuracy and functionality of the product). If you are unsure about the applicability of a replacement component, call an Keysight office for information.

WARNING

No operator serviceable parts inside. Refer servicing to qualified personnel. To prevent electrical shock do not remove covers. For continued protection against fire hazard, replace fuse with same type and rating.

Product Markings

Symbol	Definition
	The CE mark is a registered trademark of the European Community.
	Australian Communication and Media Authority mark to indicate regulatory compliance as a registered supplier.
	This symbol indicates product compliance with the Canadian Interference-Causing Equipment Standard (ICES-001). It also identifies the product is an Industrial Scientific and Medical Group 1 Class A product (CISPR 11, Clause 4).
	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 판 매자 또는 사용자는 이 점을 주 의하시기 바라 며 , 가정외의 지역에서 사용하는 것을 목적으 로 합니다.
	This product complies with the WEEE Directive marketing requirement. The affixed product label (above) 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 “Monitoring and Control instrumentation” product. Do not dispose in domestic household waste. To return unwanted products, contact your local Keysight office, or for more information see http://about.keysight.com/en/companyinfo/environment/takeback.shtml
	This symbol indicates the instrument is sensitive to electrostatic discharge (ESD). ESD can damage the highly sensitive components in your instrument. ESD damage is most likely to occur as the assembly is being installed or when cables are connected or disconnected. Protect the circuits from ESD damage by wearing a grounding strap that provides a high resistance path to ground. Alternatively, ground yourself to discharge any builtup static charge by touching the outer shell of any grounded instrument chassis before touching the port connectors.
	This symbol on an instrument means caution, risk of danger. You should refer to the operating instructions located in the user documentation in all cases where the symbol is marked on the instrument.
	This symbol indicates 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 the product.

Contacting Keysight

Where to Find the Latest Information

Documentation is updated periodically. For the latest information about these products, including instrument software upgrades, application information, and product information, see the following links:

PXI Products

Information on preventing instrument damage can be found at:

http://www.keysight.com/find/PreventingInstrumentRepair

Is your product software up-to-date?

Periodically, Keysight releases software updates to fix known defects and incorporate product enhancements. To search for software updates for your product, go to the Keysight Technical Support website at:

http://www.keysight.com/find/techsupport

Contacting Keysight Sales and Service Offices

Assistance with test and measurement needs, and information to help you find a local Keysight office, is available via the internet at, http://www.keysight.com/find/assist. If you do not have internet access, please contact your designated Keysight representative.

In any correspondence or telephone conversation, refer to the instrument by its model number and full serial number. With this information, the Keysight representative can determine whether your unit is still within its warranty period.

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 M9484C VXG. 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 at www.keysight.com/find/ad.

What you will find in this section:

– “Security Terms and Definitions” on page 10
– “Product Memory Sanitization” on page 11
– “M91xxA PXI Modules Memory Information and Procedure” on page 12
– “M910xA PXI High-Density Multiplexer” on page 12
– “M912xA PXI Matrix Switch” on page 12
– “M913xA PXI Switch” on page 13
– “M914xA and M915xA RF MUX” on page 13
– “M9187A PXI DIO” on page 13

Security Terms and Definitions

Term	Definition
Clearing	As defined in Section 8-301a of DoD 5220.22-M, 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.
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 include memory sanitization or memory removal, or both. Keysight declassification procedures are designed to meet the requirements specified in DoD 5220.22-M, Chapter 8.
Sanitization	As defined in Section 8-301b of DoD 5220.22-M, 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 specified in the “Clearing and Sanitization Matrix” in Section 5.2.5.5.5 of the ISFO Process Manual.
Secure Erase	Secure Erase is a term that is used to refer to either the clearing or sanitization features of Keysight instruments.

Product Memory Sanitization

No steps are required to sanitize any of the products in this document. Keysight provides no commands to modify any non-volatile memory on these products.

Product:

- M910xA PXI High-Density Multiplexer
- M912xA PXI Matrix Switch
- M913xA PXI Switch
- M914xA and M915xA RF MUX
- M9187A PXI DIO

M91xxA PXI Modules Memory Information and Procedure

M910xA PXI High-Density Multiplexer

Memory Type: Non-Volatile RAM	**Memory Size:** 2k bytes
Memory Function: Card specific configuration	
User Modifiable? No	**Volatile?** No
Memory Erase Processes: None, there are no commands to access this memory.	

Memory Type: Non-Volatile RAM	**Memory Size:** 128 bytes
Memory Function: Backplane interface configuration	
User Modifiable? No	**Volatile?** No
Memory Erase Processes: None, there are no commands to access this memory.	

M912xA PXI Matrix Switch

Memory Type: Non-Volatile RAM	**Memory Size:** 2k bytes
Memory Function: Card specific configuration	
User Modifiable? No	**Volatile?** No
Memory Erase Processes: None, there are no commands to access this memory.	

Memory Type: Non-Volatile RAM	**Memory Size:** 64k bytes
Memory Function: Calibration memory	
User Modifiable? No	**Volatile?** No
Memory Erase Processes: None, there are no commands to access this memory.	

Memory Type: Non-Volatile RAM	**Memory Size:** 256k bytes
Memory Function: FPGA configuration	
User Modifiable? No	**Volatile?** No
Memory Erase Processes: None, not user modifiable	

M913xA PXI Switch

Memory Type: Non-Volatile RAM	**Memory Size:** 2k bytes
Memory Function: Card specific configuration	
User Modifiable? No	**Volatile?** No
Memory Erase Processes: None, there are no commands to access this memory.	

Memory Type: Non-Volatile RAM	**Memory Size:** 128 bytes
Memory Function: Backplane interface configuration	
User Modifiable? No	**Volatile?** No
Memory Erase Processes: None, there are no commands to access this memory.	

M914xA and M915xA RF MUX

Memory Type: Non-Volatile RAM	**Memory Size:** 2k bytes
Memory Function: Card specific configuration	
User Modifiable? No	**Volatile?** No
Memory Erase Processes: None, there are no commands to access this memory.	

Memory Type: Non-Volatile RAM	**Memory Size:** 128 bytes
Memory Function: Backplane interface configuration	
User Modifiable? No	**Volatile?** No
Memory Erase Processes: None, there are no commands to access this memory.	

M9187A PXI DIO

Memory Type: Non-Volatile RAM	**Memory Size:** 2k bytes
Memory Function: Card specific configuration	
User Modifiable? No	**Volatile?** No
Memory Erase Processes: None, there are no commands to access this memory.	

Memory Type: Non-Volatile RAM	**Memory Size:** 128 bytes
Memory Function: Backplane interface configuration	
User Modifiable? No	**Volatile?** No
Memory Erase Processes: None, there are no commands to access this memory.	

This information is subject to change without notice.
© Keysight Technologies 2024

Edition 1, September 2024

M9187-90005

www.keysight.com