Agilent U1083A Digitizers

Product Security Features & Certificate of Volatility

Agilent Technologies

Product Declassification and Security

The following products / families are covered by this document:

U1083A-001
U1083A-002
U1083A-003
U1083A-005
U1083A-007

Manual Part Number

U1092-90054

Edition

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Agilent Technologies, Inc.

Notices

Sales and Technical Support

To contact Agilent for sales and technical support, refer to the "support" links on the following Agilent web resources:

- www.agilent.com/find/Digitizers
- www.agilent.com/find/assist (worldwide contact information for repair and service)

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Front and Rear Panel Symbols:

This symbol indicates separate collection for electrical and electronic equipment, mandated under EU law as of August 13, 2005. All electric and electronic equipment are required to be separated from normal waste for disposal (Reference WEEE Directive, 2002/96/EC).

Table of Contents

Introduction

This document details the internal memory locations of the instrument and describes instrument security features and the steps to declassify an instrument through memory sanitization or removal. For additional information on a particular product, the Agilent Instrument Security Database may be accessed at: www.agilent.com/find/security

For general information, the Agilent Aerospace and Defense web page may be found: www.agilent.com/find/ad

Terms and 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. As defined in Section 8-301a of DoD 5220.22-M, "National Industrial Security Program Operating Manual (NISPOM)",
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. Agilent declassification procedures are designed to meet the requirements specified in DoD 5220.22-M (NISPOM), Chapter 8.
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 (The instrument is declassified). Agilent 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.
Secure Erase	Secure Erase is a term that is used to refer to either the clearing or sanitization features of Agilent instruments.

Instrument Memory

This section contains information on the types of memory available in your instrument. It explains the size of memory, how it is used, its location, volatility, and the sanitization procedure.

Instrument memory locations

Description	VME / 2eSST Interface Controller
Purpose / Contents	Interface to VME bus / Configuration Register, Control & Status Registers
Size / Technology	512 KB
Non-volatile?	No
User accessible?	Yes
Location in instrument	Base card
Written by	Normal operation
Sanitization method	Power removal

Description	Control FPGA
Purpose / Contents	Module controller / Operating firmware & configuration
Size / Technology	105 x 4 Kb blocks / RAM
Non-volatile?	No
User accessible?	No
Location in instrument	Base card
Written by	Factory only
Sanitization method	Power removal

Description	DPU - Processing FPGA
Purpose / Contents	Data processing / Agilent or user firmware, configurations, data
Size / Technology	384 + 5760 Kb / RAM
Non-volatile?	No
User accessible?	Yes
Location in instrument	Base card
Written by	Normal operation
Sanitization method	Power removal

Description	DPU - Communications FPGA
Purpose / Contents	Communications / Agilent or user firmware, configurations, data
Size / Technology	659 + 6768 Kb / RAM
Non-volatile?	No
User accessible?	Yes
Location in instrument	Base card
Written by	Normal operation
Sanitization method	Power removal

Description	Parameters EEPROM
Purpose / Contents	Module configuration parameters, serial number, capablities
Size / Technology	256 Kb EEPROM
Non-volatile?	Yes
User accessible?	No
Location in instrument	Base card
Written by	Factory only
Sanitization method	None

Description	Acquisition Memory
Purpose / Contents	Acquisition data storage
Size / Technology	2x 256 MB / DDR2 DRAM
Non-volatile?	No
User accessible?	Yes
Location in instrument	Base card
Written by	Normal operation
Sanitization method	Power removal

Description	Front-end CPLD
Purpose / Contents	Control of the front-end electronics / Operating firmware & configurations
Size / Technology	128 Macrocells / CPLD
Non-volatile?	Yes
User accessible?	No
Location in instrument	Front-end mezzanine card
Written by	Factory only
Sanitization method	None

Description	Firmware Storage and User Storage
Purpose / Contents	Stores operating firmware / Agilent or user firmware, User storage area
Size / Technology	32 MB / NAND Flash
Non-volatile?	Yes
User accessible?	Yes
Location in instrument	Base card
Written by	Firmware programming, Direct user access
Sanitization method	See See "Memory Clearing, Sanitization and/or Removal Procedures" on page 9

Additional / Optional memory locations

Certain model options of the U1083A will also contain additional processing / memory devices on mezzanine cards. The models that feature these additional mezzanine cards are:

- U1083A-005, contains one DZ3500 mezzanine
- U1083A-007, contains one DZ4800 mezzanine

DZ3500 mezzanine (U1083A-005), or DZ4800 mezzanine (U1083A-007)

Description	Mezzanine FPGA
Purpose / Contents	Control and processing / Operating firmware, configurations and data
Size / Technology	780 + 4752 Kb / RAM
Non-volatile?	No
User accessible?	No
Location in instrument	Option mezzanine card
Written by	Normal operation
Sanitization method	Power removal

Description	Mezzanine Firmware Storage
Purpose / Contents	Stores operating firmware and configuration information
Size / Technology	32 MB / NAND Flash
Non-volatile?	Yes
User accessible?	No
Location in instrument	Option mezzanine card
Written by	Factory only
Sanitization method	None

Memory Clearing, Sanitization and/or Removal Procedures

This section explains how to clear, sanitize, and remove memory from your instrument for any non-volatile memory location that can be written to during normal operation.

Volatile Memories

The volatile memory in the instrument does not retain any information when power is removed from the instrument. Therefore sanitization of these areas may be achieved by removal of the instrument power.

Non User-accessible Memories

Since these locations may only be programmed by Agilent Technologies in the factory, they cannot contain any user or acquisition data. It is therefore not necessary to perform any sanitization on these areas.

Non-volatile, User-accessible Memories

There is only one memory area which falls under this category:

Description	**Firmware and User Storage**
Purpose / Contents	Stores operating firmware / Agilent or user firmware, User storage area
Size / Technology	32 MB / NAND Flash
Clearing procedure	In relation to table below 'Annex 1 - Firmware and User Storage areas', write a valid .bit file to each of the locations. The bit file may be the Agilent supplied standard digitizer firmware for example. For more information on how to write to these areas please refer to the U1083A User Manual.
Sanitization procedure	There is no guaranteed method of removing all user data. This is because Flash memory may be subject to 'bad' blocks during its operational life. When this occurs they are 'marked' as unusable and removed from the available logical memory. Since it is possible that these blocks may still contain sensitive user programs or data, and since it may not be possible to overwrite them, complete sanitization is not possible. The 'Memory removal' technique must be used.
Memory removal	The Flash memory IC may be removed from the main board prior to disposal or repair of the module. Please note that if the module is being sent for repair or calibration, removal of this IC will invalidate the warranty. Agilent will take all possible steps to repair the board, but if damage has been caused during the removal if the IC the purchase of a replacement unit may be necessary. Refer to the information below 'Annex 1 - Memory Removal Procedure'
Write protecting	Not applicable

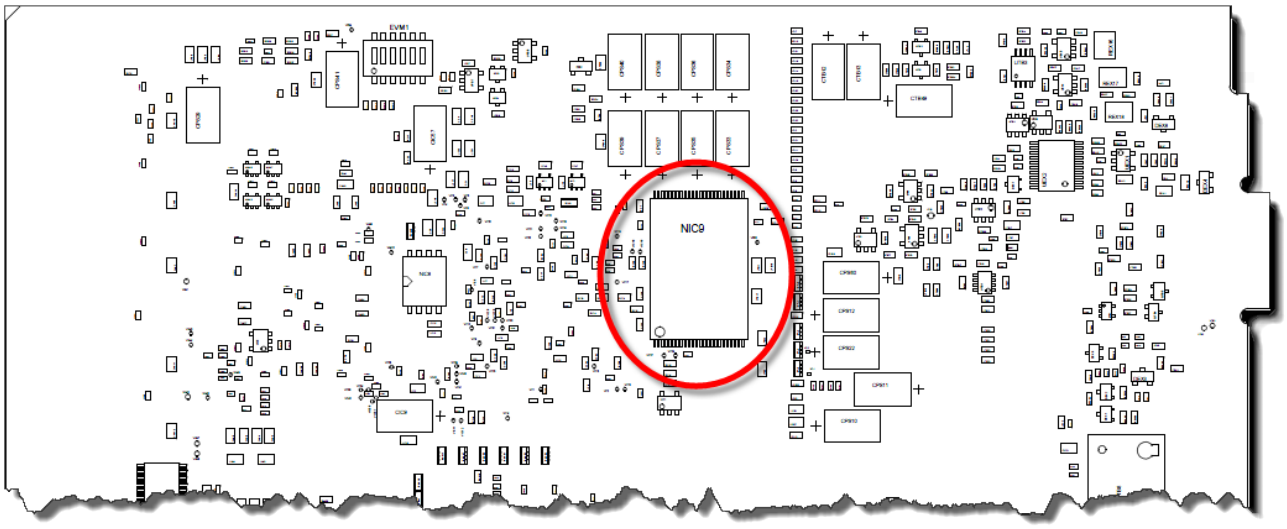
Annex 1 - Firmware and User Storage areas

The table below give a breakdown of the internal structure of the Firmware & User Storage area. Zone 16 is the translation table which the Flash memory controller uses to allocate physical blocks to logical blocks. It is not possible to erase this zone, but equally it will not contain any user program or data.

Zone	Contents	Logical Block	Size (Bytes)
0	DPU Processing FPGA, Configuration 0	1-22	2843152
1	DPU Processing FPGA, Configuration 1	23-44	2843152
2	DPU Processing FPGA, Configuration 2	45-66	2843152
3	DPU Processing FPGA, Configuration 3	67-88	2843152
4	DPU Processing FPGA, Configuration 4	89-110	2843152
5	DPU Processing FPGA, Configuration 5	111-132	2843152
6	DPU Processing FPGA, Configuration 6	133-154	2843152
7	DPU Communications FPGA, Configuration 0	155-186	4133176
8	DPU Communications FPGA, Configuration 1	187-218	4133176
9	DPU Communications FPGA, Configuration 2	219-250	4133176
10	DPU Communications FPGA, Configuration 3	251-282	4133176
11	DPU Communications FPGA, Configuration 4	283-314	4133176
12	DPU Communications FPGA, Configuration 5	315-346	4133176
13	DPU Communications FPGA, Configuration 6	347-378	4133176
14	User Zone 0	379-410	4133176
15	User Zone 1	411-442	4133176
16	Translation Table	0	2048

Annex 2 - Memory Removal Procedure

With reference to the component overlay shown below, locate the Flash memory IC (Samsung K9F1G08U0B) as indicated. It is located on the upper rear side of the main-board.
De-solder the IC using a method that will not damage other components or the PCB pads.



Procedure for Declassification of a Faulty Instrument

To declassify a faulty instrument, perform the 'Memory Removal Procedure'.

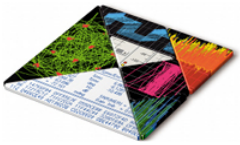
References

1 **DoD 5220.22-M, "National Industrial Security Program Operating Manual (NISPOM)"** United States Department of Defense. Revised February 28, 2006. May be downloaded in Acrobat (PDF) format from: www.dss.mil/isp/fac_clear/download_nispom.html

2 **ODAA Process Guide for C&A of Classified Systems under NISPOM** Defense Security Service. DSS-cleared industries may request a copy of this document via email, by following the instructions at: http://www.dss.mil/isp/odaa/request.html

The Modular Tangram

The four-sided geometric symbol that appears in Agilent modular product literature is called a tangram. The goal of this seven-piece puzzle is to create shapes—from simple to complex. As with a tangram, the possibilities may seem infinite as you begin to create a new test system. With a set of clearly defined elements—hardware, software—Agilent can help you create the system you need, from simple to complex.



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