86100 Series
Infiniium DCA Oscilloscope

This manual provides the documentation for the following instruments

86100D
86100C

User's Manual

KEYSIGHT TECHNOLOGIES

Notices

Trademark Acknowledgements

N/A

Manual Part Number

Print Date

October 2014

Supersedes: None

Published in USA

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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.

Warranty

This Keysight technologies instrument product is warranted against defects in material and workmanship for a period of three years from the date of shipment. During the warranty period, Keysight Technologies will, at its option, either repair or replace products that prove to be defective. For warranty service or repair, this product must be returned to a service facility designated by Keysight Technologies. Buyer shall prepay shipping charges to Keysight Technologies, and Keysight Technologies shall pay shipping charges to return the product to Buyer. For products returned to Keysight Technologies from another country, Buyer shall pay all shipping charges, duties, and taxes.

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 URLs:

http://www.keysight.com/find/86100D

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

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

Information on preventing instrument damage can be found at:

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

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Contacting Keysight Sales and Service Offices

Assistance with test and measurement needs, and information on finding a local Keysight office, is available on the Internet at:

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

If you do not have access to the Internet, please contact your field engineer.

NOTE 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.

Products Covered by this Document

Product Family Name	Product Names	Model Numbers
Oscilloscopes	Infiniium DCA Oscilloscope Mainframe	86100C, 86100D

This document describes instrument security features and the steps to declassify an instrument through memory clearing, sanitization or removal.

For additional information, go to:

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

NOTE Be sure that all information stored by the user in the instrument that needs to be saved is properly backed up before attempting to clear any of the instrument memory. Keysight Technologies cannot be held responsible for any lost files or data resulting from the clearing of memory. Be sure to read this document entirely before proceeding with any file deletion or memory clearing.

This document contains sample information to indicate the content and style of typical sections in a particular Security Document. The details may or may not apply to specific instruments, so check and edit all information as appropriate.

Security Terms and Definitions

Term	Definition
Clearing	As defined in Section 8-301a **of** Error! Reference source not found., clearing is the process of radicating 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 **Error! Reference ource not found.**, Chapter 8.
Sanitization	As defined in Section 8-301b of **Error! Reference source not found.**, sanitization is the process of emoving 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 **Error! Reference source not ound.**.
Secure Erase	Secure Erase is a term that is used to refer to either the clearing or sanitization features of Keysight 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.

Table 1: Summary of instrument memory

Memory Type and Size	Writable During Normal Operation?	Data Retained When Powered Off?	Purpose/ Contents	Data Input Method	Location in Instrument and Remarks	Sanitization Procedure
HDD/SSD 40 GByte or 80 GByte	Yes	Yes	Windows OS Mainframe Firmware Calibration and License files. User files including instrument states, waveforms and screen shots.	OS, User	Drive Bay	Remove Drive
Main Memory (DRAM) 4 GByte or 8 GByte	Yes	No	PC Memory	OS, User	CPU board	Remove Main Power
EEPROM	No	Yes	FPGA Code.	NA	Acquisition Board Contains no user data.	NA
EEPROM	No	Yes	FPGA Code.	NA	Distribution Board (86100D only) Contains no user data.	NA
SRAM	Yes	No	Data Acquisition Control, Storage and Cal Tables	FW Operations	Acquisition Board	Remove Main Power
SRAM	Yes	No	Data Buffers	FW Operations	Distribution Board (86100D only)	Remove Main Power

Summary of Memory Declassification Procedures

This section explains how to clear, sanitize, and remove memory from your instrument, for all classes of memory that are writeable during normal operation.

IMPORTANT Before beginning clearing or sanitization, be sure to write down and save the instrument's Option and License Key information. The "**Error! Reference source not found.**" procedure rases the option and license key information and this information is essential for successful restoration of the instrument's operating system.

NOTE Read this entire document before using any sanitization procedure. Failure to do so may necessitate returning the instrument to an Authorized Keysight Service Center for firmware downloads and recalibration.

Table 2: Declassify HDD/SSD

Description and purpose	HDD/SSD stores Windows operating system, instrument firmware and Software, calibration files, license files and customer data including screen shots, instrument setups, measurement data or any other programs or data the customer wished to save.
Size	Either 40 GB (early 86100C) or 80 GB (late 86100C, 86100D)
Memory clearing	Remove and Secure drive
Memory sanitization	Remove and Secure drive
Memory removal	Remove SSD as described below: For Option 092 (Standard HD) the user must remove the instrument cover and locate the SSD on the main deck near the CPU board. The drive can be removed by taking four screws from the mounting bracket and disconnecting the SATA cables. For Option 090 (Removable HD) the hard drive can be removed externally by unscrewing the rear access panel and pulling the drive out. Option 090 ships with two identical drives so one can be kept in the secure area and the second hard drive can be used outside of the secure area or when returning the instrument to Agilent for calibration or repair.
Memory validation	NA
Remarks	

KEYSIGHT TECHNOLOGIES

User and Remote Interface Security Measures

Remote Access Interfaces

The GPIB command **LLO** (local lockout) can be sent by the controller to prevent front-panel keyboard access.

The user is responsible for providing security for the I/O ports for remote access by controlling physical access to the I/O ports. The I/O ports must be controlled because they provide access to most user settings, user states, and the display memory.

Operating System Security Features

USB Mass Storage Device Security

To prevent USB write capability create a new registry key of: HKLM\System\CurrentControlSet\Control\StorageDevicePolicies.

Then create a REG_DWORD entry in it called WriteProtect. Set it to “1” and you'll be able to read from USB drives but not write to them

Remote Access Interfaces

The user is responsible for providing security for the I/O ports for remote access by controlling physical access to the I/O ports. The I/O ports must be controlled because they provide access to all user settings, user states and the display image.

The I/O ports include RS-232, GPIB and LAN.

The LAN port provides the following services, which can be selectively disabled:

a) http
b) ftp
c) sockets
d) telnet

There is also a ‘ping’ service, which presently cannot be selectively disabled. The concern here might be that it is possible to discover IP addresses of connected instruments in order to query their setups over the net or break into the code.

Reset Remote Interface (GPIB) Address.

1. Click Utilities, Remote Interface.
2. Enter 7.
3. Close the window

Procedure for Declassifying a Faulty Instrument

Remove and secure the HDD/SSD.

For instruments with a removable drive; power the instrument off and remove the drive from the rear panel access panel.

For instruments with an internal drive; follow the procedure below to remove the instrument cover to access the internal drive for removal.

Removing the Instrument Cover to Access Non-removable HDD/SSD

CAUTION Electrostatic discharge (ESD) can damage or destroy electrostatic components. All work on electronic assemblies should be performed at a static-safe work station.

1. Disconnect the power cord from the instrument.

WARNING Opening covers or removing parts is likely to expose dangerous voltages. Disconnect the instrument from all voltages before it is opened.

2. Remove the four cabinet screws and four feet screws, as shown in Figure 1.

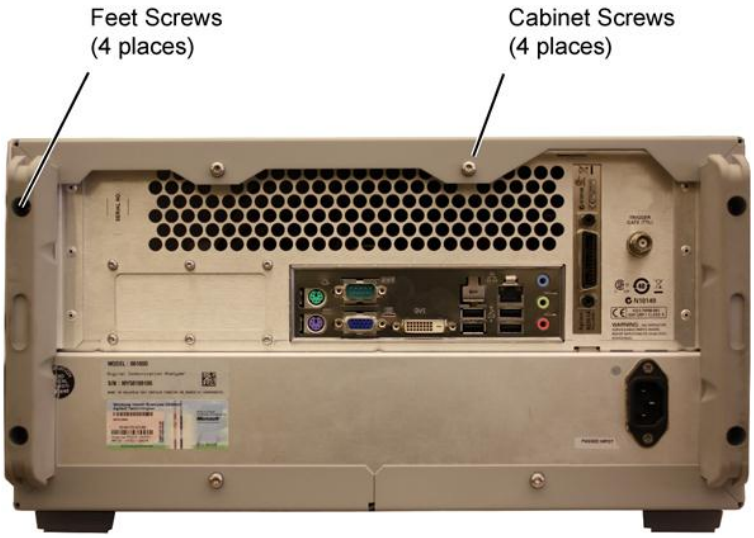

Figure 1. Removing the Rear Cabinet Screws

3. Remove the two screws that secure each handle to the side of the mainframe, as shown in Figure 2.

Figure 2 Removing the Side Handles

4. Use a small flat- bladed screw driver to remove the hole plug on the bottom of the instrument to avoid damaging the plug.

Figure 3. Removing the Timebase Adjustment Access Plug

5. Locate the front left foot and its retaining clip as identified in Figure 4.

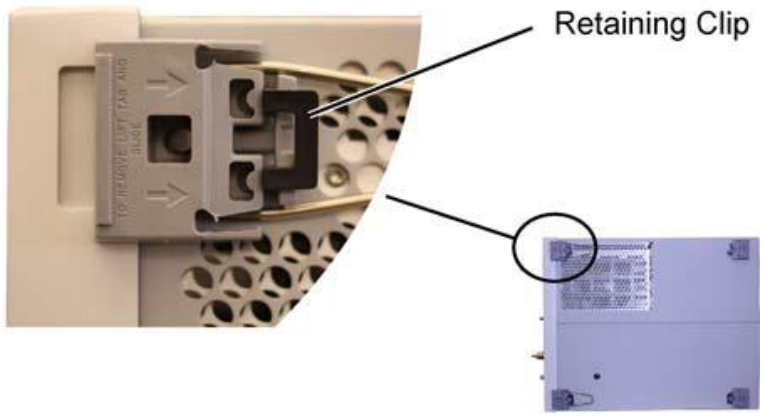

Figure 4. Front Left Foot

6. Carefully insert the blade of a flat- bladed screwdriver under the black retaining clip. Gently pry the clip straight up from the foot as shown in Figure 5.

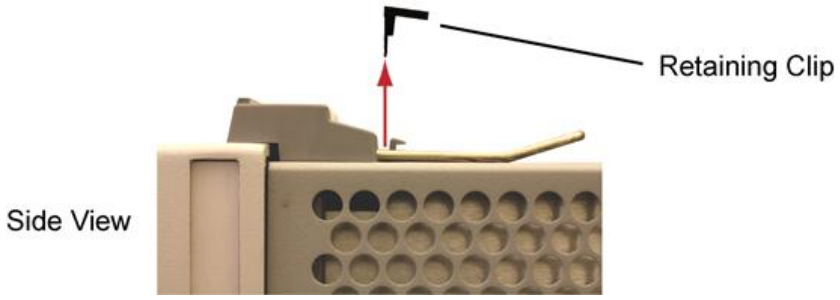

Figure 5. Removing the Front Left Foot

7. Push the foot's release tab in the direction indicated in Figure 6 and remove the foot

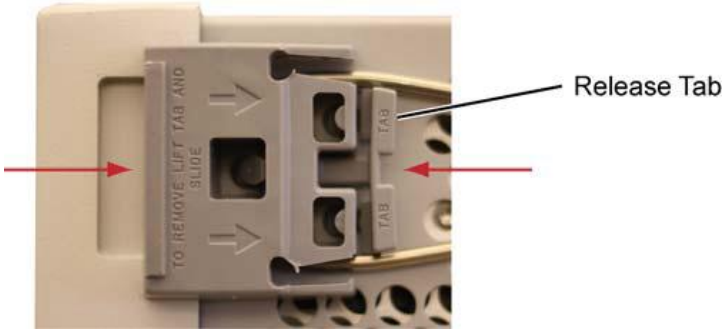

Figure 6. Release Tab

8. To slide the cover off the instrument, first turn the mainframe upside down on the bench. Place your hands on each side of the cover, and using your thumbs, push the instrument out the front of the cover.

9. Once the instrument has begun to slide forward, you can then set the instrument on its side and slide the cover off completely and locate the drive in the rear of the instrument for removal.