DSA8300 Series
Digital Serial Analyzers
Declassification and Security

Instructions

www.tektronix.com

077-0576-00

Tektronix

Contacting Tektronix

Tektronix, Inc.
14150 SW Karl Braun Drive
P.O. Box 500
Beaverton, OR 97077
USA

For product information, sales, service, and technical support:

- In North America, call 1-800-833-9200.
- Worldwide, visit www.tektronix.com to find contacts in your area.

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Preface

This document helps customers with data security concerns to sanitize or remove memory devices from the DSA8300 Series Digital Serial Analyzers.

These products have data storage (memory) devices and data output devices (USB ports). These instructions tell how to clear or sanitize the memory devices and disable the data output devices. The instructions also tell how to declassify an instrument that is not functioning.

Reference

The procedures in this document are written to meet the requirements specified in:

- NISPOM, DoD 5220.22–M, Chapter 8
- ISFO Process Manual for Certification & Accreditation of Classified Systems under NISPOM

Products

The following Tektronix product is covered by this document:

DSA8300

Terms

The following terms may be used in this document:

- **Clear.** This removes data on media/memory before reusing it in a secured area. All reusable memory is cleared to deny access to previously stored information by standard means of access.
- **Erase.** This is equivalent to clear.
- **Instrument Declassification.** A term that refers to procedures that must be undertaken before an instrument is removed from a secure environment. Declassification procedures include memory sanitization and memory removal, and sometimes both.
- **Media storage/data export device.** Any of several devices that can be used to store or export data from the instrument, such as a USB port.

- **Power off.** Some instruments have a “Standby” mode, in which power is still supplied to the instrument. For the purpose of clearing data, putting the instrument in Standby mode does not qualify as powering off. For these products, you will need to either press a rear-panel OFF switch or remove the power source from the instrument.
- **Remove.** This is a physical means to clear the data by removing the memory device from the instrument. Instructions are available in the product Service Manual.
- **Sanitize.** This eradicates the data from media/memory so that the data cannot be recovered by other means or technology. This is typically used when the device will be moved (temporarily or permanently) from a secured area to a non-secured area.
- **Scrub.** This is equivalent to sanitize.
- **User Accessible.** User is able to directly retrieve the memory device contents.
- **User-modifiable.** The user can write to the memory device during normal instrument operation, using the instrument interface or remote control.
- **Volatile memory.** Data is lost when the instrument is powered off.
- **Nonvolatile memory.** Data is retained when the instrument is powered off.

Clear and Sanitize Procedures

Memory Devices

The following tables list the volatile and nonvolatile memory devices in the standard instrument and listed options. Detailed procedures to clear or sanitize these devices, if any, are shown following each table.

Terminology

The following terms are used in the tables in this section:

- User data – Describes the type of information stored in the device. Refers to waveforms or other measurement data representing signals connected to the instrument by users.
- User settings – Describes the type of information stored in the device. Refers to instrument settings that can be changed by the user.
- Both – Describes the type of information stored in the device. It means that both user data and user settings are stored in the device.
- None – Describes the type of information stored in the device. It means that neither user data nor user settings are stored in the device.
- Directly – Describes how data is modified. It means that the user can modify the data.
- Indirectly – Describes how data is modified. It means that the instrument system resources modify the data and that the user cannot modify the data.

Table 1: Volatile memory devices

Type and min. size	Function	Type of user info stored	Backed-up by battery	Method of modification	Data Input method	Location	User accessible	To clear	Process to sanitize
PPC board:									
SDRAM 512 MB (std)	Embedded microprocessor system memory	Acquisition system calibration, setup	No	Indirectly	Firmware operations	Slot-PPC board J130	No	Remove power from the instrument for at least 20 seconds.	Remove power from the instrument for at least 20 seconds.
EFE board:									
Cyclone FX2 onboard program/data RAM, 16 KB	Embedded microprocessor system memory	Acquisition system calibration, setup	No	Indirectly	Firmware operations	EFE board U1001	No	Remove power from the instrument for at least 20 seconds.	Remove power from the instrument for at least 20 seconds.
MC9S08AC16 onboard RAM, 1 KB	Embedded microprocessor system memory	Front end setup and operation	No	Indirectly	Firmware operations	EFE board U6M, U6N	No	Remove power from the instrument for at least 20 seconds.	Remove power from the instrument for at least 20 seconds.
DSP onboard RAM, 192K x 24-bit (4 each)	Program RAM, instruction cache, X-data, Y-data	Channel setup and operation	No	Indirectly	Firmware operations	EFE board U01_1, U01_3, U01_5, U01_7	No	Remove power from the instrument for at least 20 seconds.	Remove power from the instrument for at least 20 seconds.
OFE board: No volatile memory devices									
Timebase board:									
DSP onboard RAM, 192K x 24-bit	Program RAM, instruction cache, X-data, Y-data	Channel setup and operation	No	Indirectly	Firmware operations	Timebase board U421	No	Remove power from the instrument for at least 20 seconds.	Remove power from the instrument for at least 20 seconds.
Windows motherboard:									
SDRAM,4 GB	Windows system memory	User data, user settings	No	Directly	Written by processor system	Slot-PC board	Yes	Remove power from the instrument for at least 20 seconds.	Remove power from the instrument for at least 20 seconds.
Display adapter:									
COACh3 processor, volatile memory not specified	Touchscreen USB controller	None	None	Indirectly	Firmware operations	Display Adapter board U2	No	Remove power from the instrument for at least 20 seconds.	Remove power from the instrument for at least 20 seconds.

Table 1: Volatile memory devices (cont.)

Type and min. size	Function	Type of user info stored	Backed-up by battery	Method of modification	Data Input method	Location	User accessible	To clear	Process to sanitize
Front panel:									
Cypress CY7C660-13C-PVXC processor RAM, 256 Bytes	Front panel USB controller	None	None	Indirectly	Firmware operations	Front Panel board U25	No	Remove power from the instrument for at least 20 seconds.	Remove power from the instrument for at least 20 seconds.

Table 2: Nonvolatile memory devices

Type and min. size	Function	Type of user info stored	Method of modification	Data Input method	Location	User accessible	To clear	To sanitize
PPC board:								
PROM serial config 17S20XL, 179160 bits	PIF FPGA serial config	None	None	Purchased already programmed	PPC board U231	No	Not applicable, does not contain user data or settings. Clearing would disable instrument functionality.	Not applicable, does not contain user data or settings. Sanitizing would disable instrument functionality.
Boot Flash, 512 KB	PPC boot flash	None	Indirect	Purchased already programmed	PPC board U440	No	Not applicable, does not contain user data or settings. Clearing would disable instrument functionality.	Not applicable, does not contain user data or settings. Sanitizing would disable instrument functionality.
EEPROM, 128 Bytes	Embedded bridge serial config	None	Indirect	Purchased already programmed	PPC board U750	No	Not applicable, does not contain user data or settings. Clearing would disable instrument functionality.	Not applicable, does not contain user data or settings. Sanitizing would disable instrument functionality.
Temperature sensors DS1621, 5 bytes (2 each)	Temperature sense thermostat setup	None	Indirect	Purchased already programmed	PPC board U300, U800	No	Not applicable, does not contain user data or settings. Clearing would disable instrument functionality.	Not applicable, does not contain user data or settings. Sanitizing would disable instrument functionality.

Table 2: Nonvolatile memory devices (cont.)

Type and min. size	Function	Type of user info stored	Method of modification	Data Input method	Location	User accessible	To clear	To sanitize
M25PE80 flash, 1 MB	Holds instrument calibration data, nomenclature, serial number, option keys, and error log	None	Indirect	Firmware operations	PPC board U510	No	Not applicable, does not contain user data or settings. Clearing would disable instrument functionality.	Not applicable, does not contain user data or settings. Sanitizing would disable instrument functionality.
Battery-backed NVRAM, 128 KB	Holds instrument calibration data, nomenclature, serial number, option keys, and error log	None	Indirect	Firmware operations	PPC board U520	No	Not applicable, does not contain user data or settings. Clearing would disable instrument functionality.	Not applicable, does not contain user data or settings. Sanitizing would disable instrument functionality.
EFE board:								
Cyclone FX2 onboard program flash, 16 KB	Embedded microprocessor system memory	None	Indirect	Firmware operations	EFE board U1001	No	Not applicable, does not contain user data or settings. Clearing would disable instrument functionality.	Not applicable, does not contain user data or settings. Sanitizing would disable instrument functionality.
Temperature sensors DS1621, 5 bytes (3 each)	Temperature sense thermostat setup	None	Indirect	Purchased already programmed	EFE board U05, U06, U42	No	Not applicable, does not contain user data or settings. Clearing would disable instrument functionality.	Not applicable, does not contain user data or settings. Sanitizing would disable instrument functionality.
MC9S08AC16 onboard flash, 16 KB	Front end processor	None	Indirect	Purchased already programmed	EFE board U06M, U06N	No	Not applicable, does not contain user data or settings. Clearing would disable instrument functionality.	Not applicable, does not contain user data or settings. Sanitizing would disable instrument functionality.
M25PE80 flash, 1 MB	Holds EFE calibration and compensation data	None	Indirect	Firmware operations	EFE board U101	No	Not applicable, does not contain user data or settings. Clearing would disable instrument functionality.	Not applicable, does not contain user data or settings. Sanitizing would disable instrument functionality.
DSP onboard ROM, 192 x 24-bit (4 each)	Bootstrap ROM	None	Indirect	Firmware operations	EFE board U01_1, U01_3, U01_5, U01_7	No	Not applicable, does not contain user data or settings. Clearing would disable instrument functionality.	Not applicable, does not contain user data or settings. Sanitizing would disable instrument functionality.
OFE board:								

Table 2: Nonvolatile memory devices (cont.)

Type and min. size	Function	Type of user info stored	Method of modification	Data Input method	Location	User accessible	To clear	To sanitize
M25PE80 flash, 1 MB	Holds OFE calibration and compensation data	None	Indirect	Firmware operations	OFE board U05	No	Not applicable, does not contain user data or settings. Clearing would disable instrument functionality.	Not applicable, does not contain user data or settings. Sanitizing would disable instrument functionality.
Timebase board:								
M25PE80 flash, 1 MB	Holds timebase and instrument calibration and compensation data	None	Indirect	Firmware operations	Timebase board U331	No	Not applicable, does not contain user data or settings. Clearing would disable instrument functionality.	Not applicable, does not contain user data or settings. Sanitizing would disable instrument functionality.
Windows motherboard:								
MX25L3205D serial flash, 4 MB	Motherboard BIOS	None	Indirect	BIOS setup	Motherboard BIOS11 socket	No	Not applicable, does not contain user data or settings. Clearing would disable instrument functionality.	Not applicable, does not contain user data or settings. Sanitizing would disable instrument functionality.
ICH9DO, 16K	Motherboard South Bridge	None	Indirect	I/O setup	Motherboard ICH9_DO	No	Not applicable, does not contain user data or settings. Clearing would disable instrument functionality.	Not applicable, does not contain user data or settings. Sanitizing would disable instrument functionality.
Removable Hard Drive, 160 GB	Holds instrument operating system and application software. Holds all user-storable data such as waveforms, measurement results, and instrument settings.	User data, user settings	Indirect	Firmware operations, user input	Rear panel, removable	Yes	Erase the hard drive with commercial erasure software. Reinstall instrument-specific Microsoft Windows 7 Ultimate using the OS Restore process. Reinstall the instrument software using the supplied application recovery disk. See *Clearing Hard Disk Drives*.	Remove the hard drive. Sanitize or store the removed hard drive in a secure area, or destroy the hard drive. When the hard drive is removed, no user data remains in the instrument. (See page 11, *To Sanitize the Removable Hard Drive*.)
Display adapter:								
COACh3 processor, nonvolatile memory not specified	Touchscreen USB controller	None	None	Yes (Touchscreen driver / cal)	Display Adapter board U2	No	Not applicable, does not contain user data or settings. Clearing would disable instrument functionality.	Not applicable, does not contain user data or settings. Sanitizing would disable instrument functionality.

Table 2: Nonvolatile memory devices (cont.)

Type and min. size	Function	Type of user info stored	Method of modification	Data Input method	Location	User accessible	To clear	To sanitize
Front panel:								
Cypress CY7C660-13C-PVXC processor PROM, 8 KB	Front panel USB controller	None	None	None	Front Panel board U25	No	Not applicable, does not contain user data or settings. Clearing would disable instrument functionality.	Not applicable, does not contain user data or settings. Sanitizing would disable instrument functionality.

Media and Data Export Devices

Table 3: Media and data export devices

Type and min. size	Function	Method of modification	Data Input method	Location	User accessible	Process to disable
Read - write CD/DVD drives	Store and transport data	directly	User writeable	Front panel.	Yes	Remove all CDs and DVD. Rewritable CDs and DVDs can be formatted, stored in a secure area, or destroyed. Non-rewritable CDs and DVDs can either be stored or destroyed. The CD/DVD Drive can be disabled. (See page 9, *To Disable USB and Read/Write DVD/CD for Windows Using the Windows Device Manager*.)
USB host port (supports removable USB flash drive)	User storage of reference waveforms, screen images, and instrument setups	directly	User writeable	USB host port on front of instrument, plus four host ports on rear of instrument Files can be deleted or over-written on the oscilloscope or a PC, or USB flash drive can be removed and destroyed.	Yes	Remove all USB memory devices. USB devices can be formatted, stored in a secure area, or destroyed. The USB ports can be disabled. (See page 9, *To Disable USB and Read/Write DVD/CD for Windows Using the Windows Device Manager*.)
LAN Ethernet connector	Transfer data	directly	N/A	Rear panel.		Disconnect from Network cable. The Ethernet port can be disabled. (See page 10, *To Disable LAN Ethernet Connectivity Using the BIOS*.)
GPIB connector	Transfer data	directly	N/A	Rear panel	Yes	The GPIB device can be disabled. (See page 11, *To Disable GPIB Using the Windows Device Manager*.)
Serial port	Transfer	directly	N/A	Rear panel	Yes	Cannot be disabled.
Parallel port	Transfer	directly	N/A	Rear panel	Yes	Cannot be disabled.

General Media Sanitizing Information

Turn power off for at least 20 seconds to clear all volatile memory. All user storable data (waveforms and instrument settings) are stored on the removable hard drive, on a writeable CD/DVD drive, or through an attached USB media device, such as a flash drive. The hard drive is located on the rear panel. The writeable CD/DVD drive is located on the front panel. The USB ports are located on the rear panel (4 each), and front panel (1 each).

To sanitize the hard drive, remove the hard drive from the instrument and store or destroy. Additional hard drives can be purchased from Tektronix. Alternately, there are DOD-approved scrubbing software packages available for the hard drive. Tektronix has no recommendations regarding the available packages. After the hard drive has been sanitized (scrubbed), reinstall the operating system and instrument software (in that order) using the DSA8300 Operating System Restore and Product Software restore media that came with the instrument.

Reinstalling the operating system or the product application software will not affect calibration of the instrument. All mainframe-related calibration constants are stored in nonvolatile memory on the timebase, EFE, or OFE boards, rather than on the hard drive. This allows complete erasure/removal of any secure data without affecting oscilloscope calibration. It also allows the instrument to be calibrated in a non-secure site then used in a secure area without need for recalibration.

Read-write CD/DVD drives are standard on this product. Remove all CDs or DVDs. Rewritable CD/DVD discs can be formatted, stored, or destroyed. Nonrewritable CD discs can be stored or destroyed.

Five USB ports are standard on this product. Remove USB media devices and store or destroy them.

Disabling Media and Data Export Devices

The following instructions describe how to disable USB, Read/Write DVD/CD capability, LAN Ethernet connectivity, and GPIB connectivity. Using the BIOS disables the devices for DOS and Windows programs, while the Windows Device Manager disables the devices for Windows programs. These procedures disable both USB and the CD-RW to prevent their use.

NOTE. *If you disable the USB, Read/Write DVD/CD and LAN in the following procedures, you cannot write new firmware to the hard drive. To do so, you must enable one of these items.*

To Disable USB DOS from the BIOS.

1. Press **F2** during initial instrument power on sequence to go to the BIOS configuration menu.
2. Go to **Advanced > USB Configuration**.
3. Set High-Speed USB and Legacy USB Support to **Disabled**.
4. Press **Esc** once to return to the main BIOS configuration menu.
5. Go to **Security > Set Supervisor Password**.
6. Press **Enter**.
7. Enter a password. You will be asked to confirm the password by entering it again. Record the password and store it in a safe place for future use.
8. Set User Access Level to **No Access**.
9. Press **F10** and select **OK** to exit and save BIOS changes.

To Disable USB and Read/Write DVD/CD for Windows Using the Windows Device Manager.

1. Connect a PS2 mouse and a PS2 keyboard to the instrument before powering on (because USB will be disabled).
2. Log on to the instrument as an administrator.
3. Right-click **My Computer** on the desktop and select **Properties**.
4. Select the **Hardware** tab.
5. Click **Device Manager**.
6. Expand the Universal Serial Bus controllers entry by clicking the + next to it.
7. Double-click the first **USB Root Hub** entry.
8. Select the **Power** tab.

9. If the Device Description is **Generic USB Hub (4 ports)**, double-click the next **USB Root Hub** entry (see steps 7 and 8).

CAUTION. *It is critical to leave the "Generic USB Hub (4 ports)" device operating; otherwise, the front panel will not function.*

10. If the Device Description is not **Generic USB Hub (4 ports)**, click the **General** tab and select **Do not use this device (disable)** in the Device usage drop-down list.
11. Click **OK**.
12. Repeat steps 7 through 11 for each USB Root Hub shown in the Device Manager window.
13. Expand **DVD/CD drives** in the Device Manager window by clicking the + next to it.
14. Right-click **TEAC DW-224E-C** and select **Disable**.
15. Exit the Device Manager window.
16. Restart the instrument to implement the changes.

NOTE. *You should password-protect the Windows Administrator account and set up Guest accounts for end users so that these changes cannot be easily reversed.*

To Disable LAN Ethernet Connectivity Using the BIOS.

1. Press **F2** during instrument power on to go to the BIOS configuration menu.
2. Go to **Advanced > Peripheral Configuration**.
3. Set Onboard LAN to **Disabled**.

4. Press **Esc** once to return to the main BIOS configuration menu.

NOTE. *If you do not use a BIOS password, the LAN can be reactivated by any user.*

5. Press **F10** and select **OK** to save changes and exit. The LAN system will be disabled and will no longer allow data traffic in or out.

To Disable GPIB Using the Windows Device Manager.

1. Connect a PS2 mouse and a PS2 keyboard to the instrument before powering on (because USB will be disabled).
2. Log on to the instrument as an administrator.
3. Right-click **My Computer** on the desktop and select **Properties**.
4. Click **Device Manager**.
5. Expand the device category **National Instruments NI-Device GPIB Interfaces**.
6. Right-click on **PCI-GPIB**.
7. Select **Disable** from the list.
8. Exit the Device Manager window.

To Sanitize the Removable Hard Drive. All user-storable data is stored on the rear-panel removable hard drive. Sanitize or replace the hard drive in a manner that meets all security requirements for your location.

After the hard drive is sanitized or replaced, reinstall the operating system (OS) and instrument software (in that order) using the provided OS recovery media and instrument application software media.

Scrubbing the hard drive does not affect calibration of the instrument because the factory calibration constants are stored on the PPC, timebase, EFE, and OFE boards, entirely separate from any acquisition data or user files. You can completely erase or remove any secure data without affecting the calibration of the instrument. You can also calibrate the instrument in a nonsecure site, and then use the instrument in a secure area without recalibration.

Troubleshooting

How to Clear or Sanitize a Non-Functional Instrument

If your instrument is not functioning, perform the following actions and return the instrument for Tektronix for repair. Describe the initial problem with the product. Tektronix will install replacement parts and then repair and return the instrument.

Hard Disk Drives

Remove the hard disk by unscrewing the two retaining screws and pulling out the hard drive tray. Store the drive in a secure location. A new hard drive will be installed and the instrument will be repaired and adjusted as necessary.

Read/Write CD/DVD Drives

Remove all CDs or DVDs from the Read/Write CD/DVD drive. If the instrument cannot power on, insert a small paper clip into the hole next to the CD/DVD drive drawer latch and push to release the drawer and remove the disc. Store or destroy the disc according to the security policies of your organization.

External Memory Devices

Remove any USB flash drives or external hard drives from the instrument.

Refer to your company's internal policies regarding handling or disposal of the external memory device.

Charges

Replacement of any missing hardware will be charged according to the rate at the time of replacement.

How to Recover from Sanitizing or Installing a New Instrument Hard Drive

After the hard drive is sanitized or replaced with a new (empty) hard drive, the operating system and instrument software must be reinstalled (in that order) from the OS restore and application software install media. The restore software runs automatically if the CD/DVD drive is the first bootable device. If the CD/DVD drive is not the first bootable device, press the F2 key during instrument power-on to open the instrument BIOS window and enable the CD/DVD drive as the first bootable device before performing a restore from the recovery media.

Change Log

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077-0576-00	20110727	First release.