Tektronix®

**DPO70000SX Series
Declassification and Security**

Instructions

Warning

The servicing instructions are for use by qualified personnel only. To avoid personal injury, do not perform any servicing unless you are qualified to do so. Refer to all safety summaries prior to performing service.

Contacting Tektronix

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■ In North America, call 1-800-833-9200.

■ Worldwide, visit *www.tek.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 their instrument.

This series of instruments contains an open architecture PC with removable mass storage. You can order additional removable mass storage devices to swap in and out of the instrument as needed for security reasons.

These products have data storage (memory) devices and data export interfaces (USB ports, Ethernet, and eSATA). These instructions describe how to clear or sanitize the memory devices and disable the data output interfaces. The instructions also describe 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 products are covered by this document:

- DPO77002SX
- DPO75902SX
- DPO75002SX
- DPO73304SX
- DPO72504SX
- DPO72304SX
- DPO72004SX
- DPO71604SX
- DPO71304SX

Terms

The following terms may be used in this document:

- **Clear.** This eradicates 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.
- **Media.** Storage/data export device. A device that is used to store or export data from the instrument, such as a USB port/ USB flash drive.
- **Sanitize.** This removes the data from media/memory so that the data cannot be recovered using any known technology. This is typically used when the device will be moved (temporarily or permanently) from a secured area to a nonsecured area.
- **Scrub.** This is equivalent to sanitize.
- **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.
- **User Accessible.** User is able to directly retrieve the memory device contents.

- **User-Modifiable.** The memory device can be written to by the user during normal instrument operation, using the instrument user 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.

- **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 must either press a rear-panel OFF switch or remove the power source from the instrument.

- **Instrument Declassification.** A term that refers to procedures that must be undertaken before an instrument can be removed from a secure environment. Declassification procedures include memory sanitization and memory removal, and sometimes both.

Clear and sanitize procedures

Memory devices

The following tables list the volatile and nonvolatile memory devices in the instrument.

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 or 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 minimum size	Function	Type of user info stored	Backed-up by battery	Method of modification	Data input method	Location	User accessible	To clear	To sanitize
SDRAM, 512M X 16 up to 1024M X 64 bits	Acquisition memory for holding and processing waveforms, and processor system RAM	User data	No	Indirectly	Written by processor system and ASICs	Analog acquisition board	Yes	Remove power from the instrument for at least 20 seconds	Remove power from the instrument for at least 20 seconds
PC RAM *PC ram size* on page 6	PC motherboard	User data	No	Indirectly	Written by processor system	PC motherboard or COM-E module	Yes	Remove power from the instrument for at least 20 seconds	Remove power from the instrument for at least 20 seconds
SDRAM, 512M X 16 bits up to 1024M X 16 bits	Acquisition memory for holding and processing digital waveforms	User data	No	Indirectly	Written by processor system	Digital acquisition board	Yes	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 minimum size	Function	Type of user info stored	Method of modification	Data input method	Location	User accessible	To clear	To sanitize
Removable hard drive *Removable solid state drive* on page 5	Holds all user-storable data (waveforms and instrument settings)	User data and user settings	Directly and indirectly	Windows UI and TekScope UI	Rear panel	Yes	*Removable solid state drive* on page 5	*Removable solid state drive* on page 5
EEPROM, 4096 bits	PCI/PCIe local bus settings	None	User cannot modify	Programmed at factory	Acquisition board	No	Not applicable, does not contain user data or setting. Clearing would disable instrument functionality.	Not applicable, does not contain user data or settings. Sanitizing would disable instrument functionality
EEPROM, 1024 bits	PCI/PCIe bridge settings	None	User cannot modify	Programmed at factory	Acquisition board	No	Not applicable, does not contain user data or setting. Clearing would disable instrument functionality.	Not applicable, does not contain user data or settings. Sanitizing would disable instrument functionality
SPI Flash 2 Megabits	Option key, event log, serial number, and model number	None	Directly	Programmed at factory. Option keys can be input by the user	Acquisition board	Yes	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.

Type and minimum size	Function	Type of user info stored	Method of modification	Data input method	Location	User accessible	To clear	To sanitize
NVRAM, 16 Megabits	Calibration data	None	User cannot modify	Programmed at factory	Acquisition board	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
NVRAM, 4 Megabytes	Motherboard BIOS and BIOS settings	None	Directly	BIOS UI. User can change BIOS settings.	PC motherboard	Yes	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

The following table lists the data export devices in the instrument.

Table 3: Media and Data export devices

Type and minimum size	Function	Method of modification	Data input method	Location	User accessible	To disable
USB port	Supports removable USB flash drive. User storage of reference waveforms, screen images, and instrument setups	Directly	Directly by system resources	USB host ports on front or rear of instrument	Yes	Remove all USB memory devices. USB devices can be formatted, stored in a secure area, or destroyed. USB ports can be disabled. *Disabling USB capability* on page 4
Ethernet	User storage of reference waveforms, screen images, and instrument setups and installation of software	Directly	System resources	Ethernet port on rear of instrument	Yes	Disconnect from Network cable. Ethernet port can be disabled. *To disable LAN ethernet connectivity using the BIOS* on page 5

Clearing solid state disk drives

NOTE. *The following procedure covers only Tektronix installed software.*

If your organization's security protocols allow the use of software to purge or clear solid state drives, you can use commercial software to erase free space on the drive before sending the instrument out for upgrades or repair. Follow the instructions that come with the software to be sure that the erasure of sensitive data from the drive complies with your organization's security protocols.

On solid state drives, the drive and the operating system work together to reallocate sectors on the drive to even out the wear of the storage cells. Make sure that software you use to purge or clear a solid state drive is approved for solid state drives.

⚠️ **CAUTION.** *Before clearing the drive to meet security requirements, be sure that an OS-restore disk and product software restore disk are available and that you have the procedures needed to restore the OS and product software.*

Sequence for clearing secure data from a drive:

1. Erase all files with the following extensions:

   - *.png; *.bmp;*.pcx, *.tif, *.jpg – These file types can be screenshots that can contain valuable information.

   - *.msk, *.set, *.wfm, *.csv, *.txt, *.dat – These file types can contain data exported from the instrument (setup, waveforms, measurement results).

2. Acquire several full memory-length acquisitions of noise (no signal attached to the input).

3. Close the TekScope application and erase the free space on the hard disk using commercial software.

Removing a removable solid state drive

For detailed information on removing parts from the instrument, see the **DPO70000SX Series Service Manual**, Tektronix part number 077-1041-xx.

⚠️ **WARNING.** *Before doing this procedure, disconnect the power cord from the line voltage source. Failure to do so could cause serious injury or death.*

⚠️ **CAUTION.** *To avoid damaging the drive, perform the following procedure in a static-safe environment with proper electro-static discharge controls in place.*

DPO70000SX series instruments.

1. Loosen the thumbscrews on the removable drive panel.

2. Pull the removable drive out from the instrument.

Disabling USB capability

The following instructions describe how to disable the built-in USB capability. 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 USB to prevent its use.

NOTE. *If you disable the USB 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 using the BIOS.

1. Press Delete during instrument Boot Up to go to the BIOS configuration menu.

2. Go to Chipset\PCH-IO Configuration.

3. Go to USB Configuration.

4. Set USB Ports Per-Port to Enabled.

5. Set all ports to Disabled. (To continue using the touchscreen, leave port 9 enabled.)

6. Hit Esc twice to return to the main BIOS configuration menu.

7. Go to Security > Administrator Password. Press Enter.

8. Specify a password. You will be asked to confirm the password by entering it again. Note the password, and store it in a safe place for future use.

9. Exit Saving Changes by pressing F4, and selecting Yes.

To disable LAN ethernet connectivity using the BIOS

1. Press Delete during instrument Boot Up to go to the BIOS configuration menu.

2. Go to Advanced BIOS Settings\Chipset Settings\PCH-IO Configuration.

3. Set both LAN1 Controller and LAN2 Controller 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 F4, and select OK to save changes and exit. The LAN system will be disabled and will no longer allow data traffic in or out.

Removable solid state drive

All user-storable data is stored on the removable drive. Sanitize or replace the drive in a manner that meets local and any other security requirements that you have.

> **NOTE.** *To see the size of the drive, refer to the (C:) local disk properties window.*

> **NOTE.** *Be sure that you create OS Restore media before scrubbing the hard drive/solid state drive or moving the instrument into a secure area.*

After the drive is sanitized or replaced, the operating system and instrument software can be reinstalled. Following reinstallation of the operating system and product software, you must run the Signal Path Compensation (SPC) procedure in the Utilities menu after a 20-minute warm-up period. This returns the instrument solid state drive to the initial state shipped from the factory.

Scrubbing the drive will not affect calibration of the instrument, since the factory calibration constants are stored on the acquisition board, 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.

PC ram size

To see the size of the PC RAM in the instrument, refer to the General tab of the Windows System Properties dialog box.

Troubleshooting

How to clear or sanitize a Non-Functional instrument

If your instrument is not functioning, you may proceed as follows:

Solid state drive

Remove the drive and return the product to Tektronix. A new drive will be installed and the instrument will be repaired and adjusted as necessary. Alternatively you may use the Removable Solid State Drive procedure before returning the product to Tektronix. *Removable solid state drive* on page 5

For removal instructions, refer to the instrument service manual, available on the Tektronix Web site at www.tektronix.com/manuals.

External memory devices

Remove any attached USB flash drive or external hard drives from the instrument before returning the instrument to Tektronix for repair.

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 clearing or removing the instrument memory

After the hard drive/solid state drive is sanitized, the operating system and instrument software must be reinstalled.

Change log

Document part number	Revision date	Change description
-02	June 18, 2019	Added DPO71604SX and DPO71604SX models to document.
-02 REV A	April 25, 2023	Added DPO72504SX and DPO72004SX models to document.
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