TBS1000, TBS1000B/TBS1000B-EDU, TDS1000B/TDS2000B, TDS1000C-EDU/TDS2000C, and TPS2000B Series Digital Storage Oscilloscope

Declassification and Security Instructions

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Tektronix

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Tektronix

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

Instrument code and calibration settings reside in nonvolatile flash memory. Instrument setups and reference waveforms may also be stored in flash memory or on USB drives connected to the instrument.

If you have any questions, contact the Tektronix Technical Support Center at *www.tektronix.com/support*.

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:

- **TBS1000 Series.** TBS1022, TBS1042, TBS1062, TBS1102, TBS1152
- **TBS1000B Series.** TBS1032B ,TBS1052B, TBS1072B, TBS1102B, TBS1152B, TBS1202B
- **TBS1000B-EDU Series.** TBS1052B-EDU, TBS1072B-EDU, TBS1102B-EDU, TBS1152B-EDU, TBS1202B-EDU
- **TDS1000B Series.** TDS1001B, TDS1002B, TDS1012B
- **TDS2000B Series.** TDS2002B, TDS2004B, TDS2012B, TDS2014B, TDS2022B,TDS2024B
- **TDS1000C-EDU Series.** TDS1001C-EDU, TDS1002C-EDU, TDS1012C-EDU
- **TDS2000C-EDU Series.** TDS2001C, TDS2002C, TDS2004C, TDS2012C, TDS2014C, TDS2022C, TDS2024C
- **TPS2000B Series.** TPS2012B, TPS2014B, TPS2024B

The TBS1032B is available only in North America and Europe.

Required documents

To perform the procedures in this document, you will need to have access to the manuals listed below. These manuals are available on the Tektronix Web site at *www.tektronix.com/downloads*.

- TBS1000 Series Digital Storage Oscilloscope Service Manual (Tektronix part number, 077-0772-xx)
- TBS1000B Series Digital Storage Oscilloscope Service Manual (Tektronix part number, 077-0897-xx)
- TDS1000B and TDS2000B Series Digital Storage Oscilloscope Service Manual (Tektronix part number, 077-1828-xx)
- TDS2000C and TDS1000C-EDU Series Digital Storage Oscilloscope Service Manual (Tektronix part number, 077-0446-xx)
- TPS2000B Series Digital Storage Oscilloscope Service Manual (Tektronix part number, 077-0447-xx)

Terms used in this document

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 can be 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.
- **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 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.** 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.

Device terms

The following terms are used with the memory devices in this document:

- **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.

Memory devices

Volatile memory devices

The volatile memory devices for the TBS1000B and TBS1000B-EDU products are listed in the *Volatile memory devices (TBS1000B & TBS1000B-EDU)* on page 3 section.

SDRAM 512 K

Type and size	512 K X 32
Function	Acquisition memory for holding and processing waveforms, and processor system RAM
Type of user information stored	Both user data and user settings
Backed up by battery?	No
Method of modification	Indirect
Data input method	Firmware operations, user input
Location	Main Acquisition board
User accessible	No
To clear	Remove power from the instrument for at least 20 seconds.
Process to sanitize	Remove power from the instrument for at least 20 seconds.

SRAM 128 K

Type and size	SRAM, 128 K X 8
Function	Shared memory between the acquisition system and the USB processor
Type of user information stored	Both user data and user settings
Backed up by battery?	No
Method of modification	Indirect
Data input method	Firmware operations
Location	Main Acquisition board. TBS and TDS models only.
User accessible	No
To clear	Remove power from the instrument for at least 20 seconds.
Process to sanitize	Remove power from the instrument for at least 20 seconds.

Real-time clock

Type and size	Real-time clock, which contains battery backed-up memory
Function	Holds date/time data
Type of user information stored	None
Backed up by battery?	Yes
Method of modification	Indirect

Data input method	User input
Location	Main Acquisition board
User accessible	No
To clear	Remove the battery from the board.
Process to sanitize	Remove the battery from the board.

USB2

Type and size	USB 2.0 OTG host/peripheral controller, 8 K X 16 RAM
Function	Contains USB controller program and data memory
Type of user information stored	None
Backed up by battery?	No
Method of modification	Indirect
Data input method	Firmware operations
Location	Main Acquisition board. TBS and TDS models only.
User accessible	No
To clear	Remove power from the instrument for at least 20 seconds.
Process to sanitize	Remove power from the instrument for at least 20 seconds.

SRAM 64 K

Type and size	SRAM, 64 K X 16
Function	Data memory for the USB processor
Type of user information stored	None
Backed up by battery?	No
Method of modification	Indirect
Data input method	Firmware operations
Location	Main Acquisition board. TBS and TDS models only.
User accessible	No
To clear	Remove power from the instrument for at least 20 seconds.
Process to sanitize	Remove power from the instrument for at least 20 seconds.

Volatile memory devices (TBS1000B & TBS1000B-EDU)

This section lists the volatile memory devices for the TBS1000B and TBS1000B-EDU products. These products have a different hardware platform than the TBS1000, TDS1000B/TDS2000B, TDS1000C-EDU/TDS2000C, and TPS2000B Series.

SDRAM 4 M bit

Type and size	4 Mbit, 512 K X 16
Function	Acquisition memory
Type of user information stored	Both user data and user settings
Backed up by battery?	No
Method of modification	Indirect
Data input method	Firmware operations, user input
Location	Main Acquisition board
User accessible	No
To clear	Remove power from the instrument for at least 20 seconds.
Process to sanitize	Remove power from the instrument for at least 20 seconds.

LPDDR SDRAM

Type and size	1 g bit, (16 M X 16 bit) X four banks
Function	Holding and processing waveforms and processor system RAM
Type of user information stored	Both user data and user settings
Backed up by battery?	No
Method of modification	Indirect
Data input method	Firmware operations
Location	Main Acquisition board
User accessible	No
To clear	Remove power from the instrument for at least 20 seconds.
Process to sanitize	Remove power from the instrument for at least 20 seconds.

Nonvolatile memory devices

The nonvolatile memory devices for the TBS1000B and TBS1000B-EDU products are listed in the *Nonvolatile memory devices container (TBS1000B & TBS1000B-EDU)* on page 5 section.

Flash

Type and size	FLASH, 8 M X 8, 4 M X 16
Function	Holds instrument firmware, current setup, saved setups, saved reference waveforms, hard copy image files, and calibration constants
Type of user information stored	Both user data and user settings
Method of modification	Indirect
Data input method	Factory configurations, firmware operations, user input, and USB disk upgrade
Location	Main Acquisition board
User accessible	No
To clear	Perform the procedure *Clear the flash memory*.
Process to sanitize	Perform the procedure *Clear the flash memory*.

EEPROM

Type and size	EEPROM, SERIAL, 1 M
Function	Program memory for the USB processor
Type of user information stored	None
Method of modification	Indirect
Data input method	Factory configurations, USB disk upgrade
Location	Main Acquisition board. TBS and TDS models only.
User accessible	No
To clear	Not applicable, does not contain user data or settings. Cleaning would disable instrument functionality.
Process to sanitize	Not applicable, does not contain user data or settings. Sanitizing would disable instrument functionality.

Nonvolatile memory devices container (TBS1000B & TBS1000B-EDU)

This section lists the nonvolatile memory devices for the TBS1000B and TBS1000B-EDU products. These products have a different hardware platform than the TBS1000, TDS1000B/TDS2000B, TDS1000C-EDU/TDS2000C, and TPS2000B Series.

Nand flash

Type and size	2 G bit (256 X 8)
Function	Kernel code, application code, waveform data, backup data, and user stored data
Type of user information stored	Both user data and user settings
Backed up by battery?	No
Method of modification	Indirect
Data input method	Firmware operations
Location	Main Acquisition board
User accessible	No
To clear	Remove power from the instrument for at least 20 seconds.
Process to sanitize	Remove power from the instrument for at least 20 seconds.

SPI flash

Type and size	16 M bit
Function	U-boot, FPGA configurable code and constant parameters
Type of user information stored	Both user data and user settings
Backed up by battery?	No
Method of modification	Indirect
Data input method	Firmware operations
Location	Main Acquisition board
User accessible	No
To clear	Remove power from the instrument for at least 20 seconds.
Process to sanitize	Remove power from the instrument for at least 20 seconds.

Data export devices

USB host port

Type and size	USB host port
Function	Supports removable USB flash drive. User storage of reference waveforms, screen images, and instrument setups.
Method of modification	Directly
Data input method	Save
Location	Front panel
To disable	Files can be deleted or overwritten on the oscilloscope or a PC; USB flash drive can be removed and destroyed. The USB host port cannot be disabled.

USB device port

Type and size	USB device port
Function	Supports remote control and data transfer to a PC
Method of modification	Directly
Data input method	Remote control via USBTMC
Location	Rear panel
To disable	The USB device port cannot be disabled.

Compact flash card

Type and size	Compact flash card (TPS only)
Function	User storage of reference waveforms, screen images, and instrument setups
Method of modification	Directly
Data input method	By system resources
Location	Front panel
To disable	The Compact Flash port cannot be disabled.

Clear and sanitize procedures

Clear the flash memory

This procedure does not erase or change factory calibration constants.

1. Push the front panel DEFAULT SETUP button to recall the default setup.
2. Push the front panel SAVE/RECALL button.
3. Push the Action option (side bezel) button until Save Setup is selected.
4. Push the Save To option button until Setup is selected.
5. Push the Setup option button until 1 is selected.
6. Push the Save option button to overwrite setup 1 with the default setup.
7. Push the Setup and Save option buttons again to overwrite the next setup with the default setup. Repeat this step until setup 1 is selected again.
8. Push the front panel CH 1 MENU button, and then push the Coupling option button until Ground is selected.
9. Push the front panel SAVE/RECALL button.
10. Push the Action option button until Save Waveform is selected. Push the Save To option button until Ref is selected. Push the Source option button until CH1 is selected.
11. Push the To option button until RefA is selected. Push the Save option button to overwrite reference waveform RefA with the null waveform.
12. Push the To and the Save option buttons again to overwrite the next reference waveform with the null waveform. Repeat this step until reference RefA is selected again.
13. For TBS and TDS oscilloscopes, insert a USB flash drive into the USB Flash Drive port on the front of the oscilloscope. For TPS oscilloscopes, insert a compact flash card into the Compact Flash slot on the front of the oscilloscope.
14. Push the front panel UTILITY button.
15. Push the Options option button.
16. Push the Printer Setup option button.
17. Push the PRINT Button option until Saves Image To File is selected.
18. For TBS and TDS oscilloscopes, push the File Format option button until JPG is selected. For TPS oscilloscopes, select BMP instead of JPG.
19. Remove any probes from the BNC front panel connectors.

20. Push the front panel PRINT button to overwrite the hard copy image file with an image that does not contain any useful information.
21. Power off the oscilloscope, and then power on the oscilloscope to complete the process.

Clear or sanitize a non-functional instrument

If your instrument is not functioning and you need to clear or sanitize it, complete the following procedures.

Acquisition board

Remove the Acquisition board and return the product to Tektronix. A new Acquisition board will be installed, and the instrument will be repaired and adjusted as necessary.

For removal instructions, refer to your product service manual (manual part numbers are listed under *Required documents* near the front of this manual.

After removal of the Acquisition board, refer to your company's internal policies regarding handling or disposal of the board.

Compact flash card (TPS oscilloscopes only)

Remove the compact flash card and return the instrument to Tektronix for repair.

After removal of the compact flash card, refer to your company's internal policies regarding handling or disposal of the compact flash card.

USB flash drive (TBS and TDS oscilloscopes only)

Remove the USB flash drive and return the instrument to Tektronix for repair.

After removal of the USB flash drive, refer to your company's internal policies regarding handling or disposal of the flash drive.

Charges

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