MDO3000 Series Oscilloscope Declassification and Security Instructions

077-0980-00

Tektronix

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- 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 Tektronix MDO3000 Series Mixed Domain Oscilloscopes.

These products have data storage (memory) devices and data output devices. 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.

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:

- MDO3012
- MDO3014
- MDO3022
- MDO3024
- MDO3032
- MDO3034
- MDO3052
- MDO3054
- MDO3102
- MDO3104

Required documents

To perform the procedures in this document, you might need access to the MDO3000 series manuals listed below. These manuals are available on the Tektronix Web site at *www.tektronix.com/downloads*.

- MDO3000 Series Service Manual (Tektronix part number, 077-0981-xx)
- MDO3000 Series Technical Reference Manual (Tektronix part number, 077-0979-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

The following sections list the volatile and nonvolatile memory devices in the standard instrument and listed options.

Volatile memory devices

DDR3

Type and size	1 GB standard
Function	Holds active analog acquisition data
Type of user information stored	User data
Backed up by battery?	No
Method of modification	Indirectly
Data input method	Firmware operations
Location	Main 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.

SDRAM

Type and size	SDRAM 128 GB (standard)
Function	Holds active digital acquisition data
Type of user information stored	User data
Backed up by battery?	No
Method of modification	Indirectly
Data input method	Firmware operations
Location	Main 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.

SDRAM

Type and size	SDRAM 32 MB (standard)
Function	ASIC execution memory
Type of user information stored	User data and settings
Backed up by battery?	No
Method of modification	indirectly
Data input method	Firmware operations

Location	Main 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.

DDR3

Type and size	DDR3 1 GB (standard)
Function	Microprocessor system memory
Type of user information stored	User data and settings
Backed up by battery?	No
Method of modification	Directly
Data input method	Written by processor system
Location	Main 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

Type and size	SRAM 125 kB (standard)
Function	Arbitrary waveform storage
Type of user information stored	User data
Backed up by battery?	No
Method of modification	Indirectly
Data input method	Firmware operations
Location	IO 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

Flash 128 MB

Type and size	Flash 128 MB
Function	Holds instrument calibration data, serial number, option key, instrument operating system and application software. Also holds all user-storable data, such as waveforms, measurement results, and instrument settings.
Type of user information stored	User data, user settings
Method of modification	Indirectly
Data input method	Firmware operations, user input
Location	Main board
User accessible	No
To clear	Not applicable for calibration constants. Use the procedure *Use TekSecure to erase memory contents* to erase reference waveforms and instrument setups. Then use the procedure *Disable the LAN port and clear the LAN Eithernet settings* to disable the LAN ethernet and to clear information, such as IP addresses.
Process to sanitize	Not applicable for calibration constants. Use the procedure *Use TekSecure to erase memory contents* to erase reference waveforms and instrument setups. Then use the procedure *Disable the LAN port and clear the LAN Eithernet settings* to disable the LAN ethernet and to clear information, such as IP addresses.

Serial real-time clock

Type and size	Serial real-time clock
Function	Real-time clock with battery backup
Type of user information stored	Time/date
Method of modification	Indirectly
Data input method	Not applicable
Location	Main board
User accessible	Not applicable
To clear	Not applicable, no user data
Process to sanitize	Not applicable, no user data

EEPROM

Type and size	EEPROM 1 Kbit
Function	Holds signal generator calibration data
Type of user information stored	None
Method of modification	Indirectly
Data input method	Not applicable
Location	IO board
User accessible	Not applicable

To clear	Not applicable, no user data
Process to sanitize	Not applicable, no user data

EEPROM

Type and size	EEPROM 1 Kbit
Function	Application module firmware
Type of user information stored	None
Method of modification	Not applicable
Data input method	Not applicable
Location	MDO3000 application modules
User accessible	Not applicable
To clear	Not applicable, no user data
Process to sanitize	Not applicable, no user data

Media and data export devices

Two USB host ports	Supports removable USB flash drive
Function	User storage of reference waveforms, screen images, and instrument setups
Method of modification	Directly
Data input method	User writeable
Location	One USB host port on the front of the instrument On USB host port on the rear of the instrument Files can be deleted or over-written on the oscilloscope or on a PC. USB flash drive can be removed or destroyed.
User accessible	Yes
Process to disable	The USB host port cannot be disabled with MDO3000 Series instruments without the MDO3SEC option. If your instrument has the MDO3SEC option, perform the procedure *Use the MDO3SEC option to disable all IO ports* to disable the two USB host ports.

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	USB device port on rear of the instrument
User accessible	Yes

Process to disable (for instruments with the MDO3SEC option)	Perform the procedure *Use the MDO3SEC option to disable all I/O ports* to disable the device ports.
Process to disable (for instruments without the MDO3SEC option)	Perform the procedure *Disable the USB device port* to disable the USB device port.

LAN Ethernet connector

Function	Transfer data
Method of modification	Directly
Data input method	Not applicable
Location	CAT5 connector on rear of the instrument
User accessible	Yes
Process to disable (for instruments with the MDO3SEC option)	Perform the procedure *Use the MDO3SEC option to disable all I/O ports* to disable the device ports.
Process to disable (for instruments without the MDO3SEC option)	Perform the procedure *Disable the LAN port and clear the LAN Ethernet settings* to disable the Ethernet port.

Clear and sanitize procedures

NOTE. *Sanitizing or clearing the instrument cannot be reversed. But the instrument application software and calibration information is left unchanged after the sanitizing or clearing operations. There is no need for a post-sanitization or clear procedure for the MDO3000 Series of instruments. The instrument can begin normal use and function immediately after the sanitizing or clearing procedures.*

Disable the USB device port

Complete the following steps to disable the USB device.

1. Remove any USB cable or device from the USB device port on the rear of the instrument.
2. Push the front-panel **Utility** button.
3. Push the **Utility Page** lower-bezel button and use the **Multipurpose a** knob to select **I/O**.
4. Push the **USB** lower-bezel button.
5. Push the **Disabled (Off Bus)** side-bezel button to disable the USB device port.

The USB device port is now disabled and no longer allows traffic in or out of the port.

Use the MDO3SEC option to disable all I/O ports

If your instrument has the MDO3SEC option installed, use the following procedure to turn off all of the I/O ports.

1. Push the front-panel **Utility** button.
2. Push the **Utility Page** lower-bezel button and use the **Multipurpose a** knob to select **Security**.
3. Push the **Security Password** lower-bezel button.
4. Use the Multipurpose knob to enter a password.
5. Push the **I/O Ports** lower-bezel button.

   To disable all USB and Ethernet ports on the oscilloscope, push the **OK Disable All Ports** on the side-bezel button.
6. Push the **Menu Off** front-panel button to close the dialog box.
7. Power off the oscilloscope, and then power it back on to complete the process.

To reset the instrument RAM, do the following:

1. Power off the instrument for at least 20 seconds.
2. Power on the instrument.

Disable the LAN port and clear the LAN Ethernet settings

To disable the LAN port and clear LAN Ethernet settings, such as IP addresses, complete the steps in this procedure.

CAUTION. *This procedure clears network connectivity information. Record all of the settings before clearing them.*

1. Remove the network cable from the LAN port on the rear of the instrument.
2. Push the front-panel **Default Setup** button.
3. Push the front-panel **Utility** button.
4. Push the **Utility Page** lower-bezel button and use the **Multipurpose a** knob to select **I/O**.
5. Push the **Network Configuration** lower-bezel button.
6. Push the **Manual** side-bezel button. Wait for this operation to complete.
7. Push the **Set IP Address Manually** side-bezel button.
8. Push the ↑ or ↓ arrow side-bezel button to position the cursor on the **Instrument IP Address** field.
9. Push the **Clear** lower-bezel button.
10. Push the ↓ arrow side-bezel button to position the cursor on the **Gateway IP Address** field.
11. Push the **Clear** lower-bezel button.
12. Push the ↓ arrow side-bezel button to position the cursor on the **Subnet Mask** field.
13. Push the **Clear** lower-bezel button.
14. Push the ↓ arrow side-bezel button to position the cursor on the **DNS IP Address** field.
15. Push the **Clear** lower-bezel button.
16. Push the **OK Accept** side-bezel button.
17. Push the **Ethernet and LXI** lower-bezel button.
18. Push the **–more- 1 of 2** side bezel button to get to the second page of side bezel menus.
19. Push the **Change Names** side-bezel button.

20. Push the ↑ or ↓ arrow side-bezel button to position the cursor on the **Hostname** field.
21. Push the **Clear** lower-bezel button.
22. Push the ↓ arrow side-bezel button to position the cursor on the **Domain Name** field.
23. Push the **Clear** lower-bezel button.
24. Push the ↓ arrow side-bezel button to position the cursor on the **Service Name** field.
25. Push the **Clear** lower-bezel button.
26. Push the **OK Accept** side-bezel button.
27. Push the **Change e*Scope and LXI Password** side-bezel button.
28. Push the **Clear** lower-bezel button.
29. Push the **OK Accept** side-bezel button.

The LAN system is disabled and no longer allows data traffic in or out. The relevant LAN Ethernet settings are also cleared.

Enable the USB device port

Complete the following steps to enable the USB device.

1. Push the front panel **Default Setup** button.
2. Push the front-panel **Utility** button.
3. Push the **Utility Page** lower-bezel button and use the **Multipurpose a** knob to select **I/O**.
4. Push the **USB** lower-bezel button.
5. Push the **Connect to Computer or Connect to PictBridge Printer** side-bezel button to enable the USB device port.

Use the MDO3SEC option to enable the IO ports

If your instrument has the MDO3SEC option installed, use the following procedure to turn on all of the I/O ports.

1. Push the front-panel **Utility** button.
2. Push the **Utility Page** lower-bezel button and use the **Multipurpose a** knob to select **Security**.
3. Push the **Security Password** lower-bezel button.
4. Use the Multipurpose knob to enter a password.
5. Push the **I/O Ports** lower-bezel button.

   To disable all USB and Ethernet ports on the oscilloscope, push the **OK Enable All Ports** on the side-bezel button.
6. Push the **Menu Off** front-panel button to close the dialog box.
7. Power off the oscilloscope, and then power it back on to complete the process.

Enable the LAN port and set the LAN Ethernet settings

To Enable the LAN port and set the LAN Ethernet settings, such as IP addresses, complete the steps in this procedure.

1. Push the front panel **Default Setup** button.
2. Push the front-panel **Utility** button.
3. Push the **Utility Page** lower-bezel button and use the **Multipurpose a** knob to select **I/O**.
4. Push the **Network Configuration** lower bezel button.
5. Push the **Manual** side bezel button. Wait for this operation to complete.
6. Push the **Set IP Address Manually** side bezel button.
7. Push the ↑ or ↓ arrow side-bezel button to position the cursor on the **Instrument IP Address** field.
8. Enter the relevant field data using the lower bezel buttons and **Multipurpose a** knob.
9. Push the ↓ arrow side-bezel button to position the cursor on the **Gateway IP Address** field.
10. Enter the relevant field data using the lower bezel buttons and **Multipurpose a** knob.
11. Push the ↓ arrow side-bezel button to position the cursor on the **Subnet Mask** field.
12. Enter the relevant field data using the lower bezel buttons and **Multipurpose a** knob.

13. Push the ↓ arrow side-bezel button to position the cursor on the **DNS IP Address** field.
14. Enter the relevant field data using the lower bezel buttons and **Multipurpose a** knob.
15. Push the **OK Accept** side-bezel button.
16. Push the **Ethernet and LXI** lower-bezel button.
17. Push the **–more- 1 of 2** side bezel button to get to the second page of side bezel menus.
18. Push the **Change Names** side-bezel button.
19. Push the ↑ or ↓ arrow side-bezel button to position the cursor on the **Hostname** field.
20. Enter the relevant field data using the lower bezel buttons and **Multipurpose a** knob.
21. Push the ↓ arrow side-bezel button to position the cursor on the **Domain Name** field.
22. Enter the relevant field data using the lower bezel buttons and **Multipurpose a** knob.
23. Push the ↓ arrow side-bezel button to position the cursor on the **Service Name** field.
24. Enter the relevant field data using the lower bezel buttons and **Multipurpose a** knob.
25. Push the **OK Accept** side-bezel button.
26. Push the **Change e*Scope and LXI Password** side-bezel button.
27. Enter the relevant field data using the lower bezel buttons and **Multipurpose a** knob.
28. Push the **OK Accept** side-bezel button.

Built-in security features

When to use TekSecure™

Use the TekSecure function to erase setup and reference waveform data stored in internal flash memory. Using TekSecure will not affect the calibration of the instrument because the calibration constants are stored on the Acquisition board, completely separate from any acquisition data. This allows complete erasure or removal of any secure data without affecting the oscilloscope calibration. It also allows the oscilloscope to be calibrated in a non-secure site and then used in a secure site with the need for recalibration.

The MDO3000 Series oscilloscopes have two USB host ports: one on the front panel and one on the rear panel. Any USB flash devices can be removed and stored or destroyed.

The TekSecure function does the following:

- Replaces all waveforms in all reference memories with null sample values
- Replaces the current front-panel setup and all stored setups with the default setup values
- Calculates the checksums of all reference waveform memory and setup memory locations to verify successful completion of waveform and setup erasure
- Displays a dialog indicating whether the secure erase was successful or unsuccessful

NOTE. *TekSecure does not erase or change factory calibration constants or Ethernet settings.*

Use TekSecure to erase memory contents

To use TekSecure, do the following:

1. Push the front-panel **Utility** button.
2. Push the **Utility Page** lower-bezel button and use the **Multipurpose a** knob to select **Security**.
3. Push the **TekSecure Erase Memory** lower-bezel button.
4. Push the **OK Erase Setup and Ref Memory** side-bezel button. Wait for the "TekSecure operation complete" dialog box to display.
5. Push the **Menu Off** front-panel button to close the dialog box.
6. Power off the oscilloscope, and then power it back on to complete the process.

To reset the instrument RAM, do the following:

1. Power off the instrument for at least 20 seconds.
2. Power on the instrument.

Clear or sanitize a non-functional instrument

Use the following procedures to clear or sanitize a non-functional instrument.

Acquisition board

Only qualified personnel should perform service procedures. Read the General Safety Summary and the Service Safety Summary in the *MDO3000 Series Service Manual* (Tektronix part number, 077-0981-xx) before performing any service procedures.

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 the *MDO3000 Series Service Manual* available on the Tektronix Web site at www.tektronix.com/manuals.

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

USB flash drive

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

After removing 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.