



**3 Series MDO  
Mixed Domain Oscilloscope  
Declassification and Security Instructions**







**3 Series MDO  
Mixed Domain Oscilloscope  
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.

Supports 3 Series MDO Firmware V1.0 and above

Copyright © Tektronix. All rights reserved. Licensed software products are owned by Tektronix or its subsidiaries or suppliers, and are protected by national copyright laws and international treaty provisions. Tektronix products are covered by U.S. and foreign patents, issued and pending. Information in this publication supersedes that in all previously published material. Specifications and price change privileges reserved.

TEKTRONIX and TEK are registered trademarks of Tektronix, Inc.

### **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.tek.com](http://www.tek.com) to find contacts in your area.

---

# Table of Contents

Preface .....	3
---------------	---

## Memory devices

Volatile memory devices .....	1
Nonvolatile memory devices .....	3
Media and data export devices .....	4

## Clear and sanitize procedures

Disable the USB device port .....	7
Use the 3-SEC option to disable all I/O ports .....	7
Disable the LAN port and clear the LAN Ethernet settings .....	8
Enable the USB device port .....	8
Use the 3-SEC option to enable the I/O ports .....	9
Enable the LAN port and set the LAN Ethernet settings .....	9

## Built-in security features

When to use TekSecure .....	11
Use TekSecure to erase memory contents .....	12

## Clear or sanitize a non-functional instrument

Acquisition board .....	13
USB flash drive .....	13
Charges .....	13



---

# Preface

This document helps customers with data security concerns to sanitize or remove memory devices from the Tektronix 3 Series MDO 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](http://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
- SFO Process Manual for Certification & Accreditation of Classified Systems under NISPOM

## Products

The following Tektronix products are covered by this document:

- MDO32
- MDO34

## Required documents

To perform the procedures in this document, you might need access to the 3 Series MDO manuals listed below. These manuals are available on the Tektronix Web site at [www.tektronix.com/downloads](http://www.tektronix.com/downloads).

- 3 Series MDO Service Manual (Tektronix part number, 077-1500-xx)
- 3 Series MDO Technical Reference Manual (Tektronix part number, 077-1499-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

<b>Type and size</b>	1 GB standard
<b>Function</b>	Holds active analog acquisition data
<b>Type of user information stored</b>	User data
<b>Backed up by battery?</b>	No
<b>Method of modification</b>	Indirectly
<b>Data input method</b>	Firmware operations
<b>Location</b>	Main board
<b>User accessible</b>	No
<b>To clear</b>	Remove power from the instrument for at least 20 seconds.
<b>Process to sanitize</b>	Remove power from the instrument for at least 20 seconds.

---

### SDRAM

<b>Type and size</b>	SDRAM 128 GB (standard)
<b>Function</b>	Holds active digital acquisition data
<b>Type of user information stored</b>	User data
<b>Backed up by battery?</b>	No
<b>Method of modification</b>	Indirectly
<b>Data input method</b>	Firmware operations
<b>Location</b>	Main board
<b>User accessible</b>	No
<b>To clear</b>	Remove power from the instrument for at least 20 seconds.
<b>Process to sanitize</b>	Remove power from the instrument for at least 20 seconds.

---

### SDRAM

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

## Memory devices

---

<b>Location</b>	Main board
<b>User accessible</b>	No
<b>To clear</b>	Remove power from the instrument for at least 20 seconds.
<b>Process to sanitize</b>	Remove power from the instrument for at least 20 seconds.

---

### DDR3

<b>Type and size</b>	DDR3 1 GB (standard)
<b>Function</b>	Microprocessor system memory
<b>Type of user information stored</b>	User data and settings
<b>Backed up by battery?</b>	No
<b>Method of modification</b>	Directly
<b>Data input method</b>	Written by processor system
<b>Location</b>	Main board
<b>User accessible</b>	No
<b>To clear</b>	Remove power from the instrument for at least 20 seconds.
<b>Process to sanitize</b>	Remove power from the instrument for at least 20 seconds.

---

### SRAM

<b>Type and size</b>	SRAM 125 kB (standard)
<b>Function</b>	Arbitrary waveform storage
<b>Type of user information stored</b>	User data
<b>Backed up by battery?</b>	No
<b>Method of modification</b>	Indirectly
<b>Data input method</b>	Firmware operations
<b>Location</b>	IO board
<b>User accessible</b>	No
<b>To clear</b>	Remove power from the instrument for at least 20 seconds.
<b>Process to sanitize</b>	Remove power from the instrument for at least 20 seconds.

---

## Nonvolatile memory devices

### Flash 2 GB - Internal use only

Type and size	eMMC Flash 2 GB
Function	Holds instrument calibration data, serial number, option key, instrument operating system, and application software.
Type of user information stored	None
Method of modification	Indirectly
Data input method	Firmware operations, user input
Location	Main board
User accessible	No

### Flash 2 GB - External use only

Type and size	eMMC Flash 2 GB
Function	Holds all user-storable data, such as waveforms, setups, measurement results, and instrument settings.
Type of user information stored	User data, user settings
Method of modification	Directly
Data input method	Firmware operations, user input
Location	Main board
User accessible	No
Process to clear/sanitize	Use the procedure <a href="#">Use TekSecure to erase memory contents</a> on page 12 to erase reference waveforms and instrument setups. Then use the procedure <a href="#">Disable the LAN port and clear the LAN Ethernet settings</a> on page 8 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

<b>Type of user information stored</b>	None
<b>Method of modification</b>	Indirectly
<b>Data input method</b>	Not applicable
<b>Location</b>	IO board
<b>User accessible</b>	Not applicable
<b>To clear</b>	Not applicable, no user data
<b>Process to sanitize</b>	Not applicable, no user data

---

**EEPROM**

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

---

## Media and data export devices

<b>Three USB host ports</b>	Supports removable USB flash drive
<b>Function</b>	User storage of reference waveforms, screen images, and instrument setups
<b>Method of modification</b>	Directly
<b>Data input method</b>	User writeable
<b>Location</b>	Two USB host port on the front of the instrument One 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.
<b>User accessible</b>	Yes
<b>Process to disable</b>	The USB host port cannot be disabled with 3 Series MDO instruments without the 3-SEC option. If your instrument has the 3-SEC option, perform the procedure <a href="#">Use the 3-SEC option to disable all I/O ports</a> on page 7 to disable the two USB host ports.

---

**USB device port**

<b>Function</b>	Supports remote control and data transfer to a PC.
<b>Method of modification</b>	Directly
<b>Data input method</b>	Remote control via USBTMC
<b>Location</b>	USB device port on rear of the instrument

---

<b>User accessible</b>	Yes
<b>Process to disable (for instruments with the 3-SEC option)</b>	Perform the procedure <a href="#">Use the 3-SEC option to disable all I/O ports</a> on page 7 to disable the device ports.
<b>Process to disable (for instruments without the 3-SEC option)</b>	Perform the procedure <a href="#">Disable the USB device port</a> on page 7 to disable the USB device port.

---

**LAN Ethernet connector**

<b>Function</b>	Transfer data
<b>Method of modification</b>	Directly
<b>Data input method</b>	Not applicable
<b>Location</b>	CAT5 connector on rear of the instrument
<b>User accessible</b>	Yes
<b>Process to disable (for instruments with the 3-SEC option)</b>	Perform the procedure <a href="#">Use the 3-SEC option to disable all I/O ports</a> on page 7 to disable the device ports.
<b>Process to disable (for instruments without the 3-SEC option)</b>	Perform the procedure <a href="#">Disable the LAN port and clear the LAN Ethernet settings</a> on page 8 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 3 Series MDO 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 cables from the instrument.
2. Tap **Utility > I/O > USB Device Port**.
3. Tap **USB Device Port** to toggle the port to **Off**.

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

## Use the 3-SEC option to disable all I/O ports

If your instrument has the 3/SEC option installed, use the following procedure to turn off all of the I/O ports.

1. Tap **Utility > Security > Advanced**.
2. Use the Multipurpose knob to enter the password.
3. Tap **I/O Ports (USB, LAN)** to toggle the ports **Off**.  
Tap **Firmware Updates** to toggle the ability to update the firmware to **Off**.
4. Tap outside the menu to close the menu.
5. 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. Tap **Utility > I/O**.
4. Ensure that the LAN panel is selected.
5. Tap **LAN Reset** button. Wait for this operation to complete.
6. Tap outside the menu to remove the menu.

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. Tap **Utility > Security > Advanced**.
2. Tap **Enter Password**.
3. Use the keyboard to enter the password.
4. Tap **I/O Ports (USB, LAN)** to toggle the ports **On**.
5. Tap outside the menu to close the menu.
6. Power off the oscilloscope, and then power it back on to complete the process.

## Use the 3-SEC option to enable the I/O ports

If your instrument has the 3-SEC option installed, use the following procedure to turn on all of the I/O ports.

1. Tap **Utility > Security > Advanced**.
2. Tap **Enter Password**.
3. Use the keyboard to enter the password.
4. Tap **I/O Ports (USB, LAN)** to toggle the ports **On**.
5. Tap outside the menu to close the menu.
6. 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. Install a network cable to the LAN port on the rear of the instrument.
2. Push the front-panel **Default Setup** button.
3. Tap **Utility > Security > Advanced**.
4. Tap **Enter Password**.
5. Use the keyboard to enter the password.
6. Tap **I/O Ports (USB, LAN)** to toggle the ports **On**.
7. Tap outside the menu to close the menu.
8. Power off the oscilloscope, and then power it back on to complete the process.
9. Tap **Utility > I/O**.
10. Ensure that the LAN panel is selected.
11. Tap the Network Address **Manual** button. Wait for this operation to complete.
12. Double-tap the **Instrument IP Address** field and enter the address.
13. Double-tap the **Gateway IP Address** field and enter the address.
14. Double-tap the **Subnet Mask** field and enter the mask.
15. Double-tap the **DNS IP Address** field and enter the address.
16. Tap the **Apply Changes** button.
17. Double-tap the **Host Name** field and enter the name.
18. Double-tap the **Domain Name** field and enter the name.
19. Double-tap **Service Name** field and enter the name.

20. Tap the **Apply Changes** button.
21. Push the **Change e\*Scope and LXI Password** side-bezel button.
22. Push the **Clear** lower-bezel button.
23. 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 without the need for recalibration.

The 3 Series MDO oscilloscopes has USB host ports: located at the lower right corner of the front panel, and 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. Tap **Utility** and then select **Security**.
2. Tap **Run TekSecure** button. Wait for the “TekSecure operation complete” dialog box to display.
3. Tap outside the menu to close the dialog box.
4. 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 *3-Series MDO Service Manual* (Tektronix part number, 077-1500-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 service manual available on the Tektronix Web site at [www.tektronix.com/manuals](http://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.

