# TLA700/TLA7000 Series Tektronix Logic Analyzer Declassification and Security

# Instructions

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Tektronix

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# Preface

This document helps customers with data security concerns to sanitize or remove memory devices from the TLA700 and TLA7000 Series Logic Analyzer family modules.

These products have data storage (memory) devices and data output devices. These instructions tell how to do the following:

- Clear or sanitize the memory devices
- Clear or sanitize an instrument that is not functioning

## Products

The following Tektronix products are covered by this document:

- TLA7AA1, TLA7AA2, TLA7AA3, TLA7AA4
- TLA7AB2, TLA7AB4
- TLA7AC2, TLA7AC3, TLA7AC4
- TLA7NA1, TLA7NA2, TLA7NA3, TLA7NA4
- TLA7N1, TLA7N2, TLA7N3, TLA7N4
- TLA7P2, TLA7P4
- TLA7NQ2, TLA7NQ4
- TLA7XM
- TLA7PG2
- TLA7D1, TLA7D2
- TLA7E1, TLA7E2

## Related Documents

Refer to the following service documents available on the Tektronix Web site at www.tektronix.com/manuals or to the TLA Documentation CD that is available with your product:

- *TLA700 Series Mainframe Installation Manual*
- *TLA7000 Series Mainframe Installation Manual*
- *Tektronix Logic Analyzer Module (TLA7AAx, TLA7ABx & TLA7NAx) Service Manual*
- *TLA7ACx Logic Analyzer Module Service Manual*
- *Tektronix Logic Analyzer Module (TLA7Nx, TLA7Px, & TLA7Qx) Service Manual*
- *TLA7PG2 Pattern Generator and Probes Service Manual*
- *TLA721 Benchtop & TLA7XM Expansion Mainframe Service Manual*
- *TLA7Dx & TLA7Ex Digitizing Oscilloscope Service Manual*

## 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.
- **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.
- **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-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.

# Clear and Sanitize Procedures

## Memory Devices

The following tables list the volatile and nonvolatile memory devices.

You only need to perform the *Nonvolatile Memory Security Procedure* to clear the instrument. (See page 4, *Nonvolatile Memory Security Procedure*.)

### Table 1: Volatile memory devices

| Type and minimum size | Function | User modifiable | Data input method | Location | To clear | To sanitize |
|---|---|---|---|---|---|---|
| DRAM, 1 M X 8 | Firmware execution code | No | Written by the processor system | LPU board | Remove power source from the instrument for at least 20 seconds. | Remove LPU board and either securely store it or destroy it. |
| DRAM, 1 M X 4 | Firmware execution code | No | Written by the processor system | LPU board, Enhanced Monitor board, TLA7PG2 Clock & Backplane interface board | Remove power source from the instrument for at least 20 seconds. | Remove LPU board and either securely store it or destroy it. |
| DRAM, 1 M X 16 | Firmware execution code | No | Written by the processor system | LPU board | Remove power source from the instrument for at least 20 seconds. | Remove LPU board and either securely store it or destroy it. |
| DRAM, 64 K X 16 | Firmware execution code | No | Written by the processor system | LPU board | Remove power source from the instrument for at least 20 seconds. | Remove LPU board and either securely store it or destroy it. |
| BICMOS | Firmware execution code | No | Written by the processor system | LPU board | Remove power source from the instrument for at least 20 seconds. | Remove LPU board and either securely store it or destroy it. |
| SDRAM 4 M X 16 | Acquisition memory for storing acquired data | No | Written by controller ASICs | Acquisition board | Remove power source from the instrument for at least 20 seconds. | Remove acquisition board and either securely store it or destroy it. |
| SDRAM 1 M X 16 | Acquisition memory for storing acquired data | No | Written by controller ASICs | Acquisition board | Remove power source from the instrument for at least 20 seconds. | Remove acquisition board and either securely store it or destroy it. |
| SDRAM 16 M X 16 | Acquisition memory for storing acquired data | No | Written by controller ASICs | Acquisition board | Remove power source from the instrument for at least 20 seconds. | Remove acquisition board and either securely store it or destroy it. |
| ASIC 16 K | Processor execution memory | No | Written by ASICs | Acquisition board | Remove power source from the instrument for at least 20 seconds. | Remove acquisition board and either securely store it or destroy it. |

### Table 1: Volatile memory devices (cont.)

| Type and minimum size | Function | User modifiable | Data input method | Location | To clear | To sanitize |
|---|---|---|---|---|---|---|
| SRAM, 128 K X 8 | Firmware execution code | No | Written by the processor system | LPU board | Remove power source from the instrument for at least 20 seconds. | Remove LPU board and either securely store it or destroy it. |
| IC memory 256 K X 16 bit | Pattern generator data | No | Written by ASICs | TLA7PG2 PG board | Remove power source from the instrument for at least 20 seconds. | Remove PG board and either securely store it or destroy it. |

### Table 2: Nonvolatile memory devices

| Type and minimum size | Function | User modifiable | Data input method | Location | Process to clear | To sanitize |
|---|---|---|---|---|---|---|
| FLASH, 2 M X 8 | Stores instrument firmware | No | Programmed at the factory, no user data | LPU board | Load new firmware image. See manual. | Remove LPU board and either securely store it or destroy it. |
| FLASH, 1 M X 16 | Stores instrument firmware | No | Programmed at the factory, no user data | LPU board | Load new firmware image. See manual. | Remove LPU board and either securely store it or destroy it. |
| FLASH, 2 M X 8 | Stores instrument firmware | No | Programmed at the factory, no user data | Probe Flash Adapter board | Load new firmware image. See manual. | Remove Probe Flash Adapter board and either securely store it or destroy it. |
| FLASH, 256 K X 8 | Stores instrument firmware | No | Programmed at the factory, no user data | TLA7Dx & TLA7Ex LPU board | Load new firmware image. See manual. | Remove LPU board and either securely store it or destroy it. |
| FLASH, 256 K X 8 | Stores instrument firmware | No | Programmed at the factory, no user data | TLA7XM Enhanced Monitor board | Load new firmware image. See manual. | Remove Enhanced Monitor board and either securely store it or destroy it. |
| NVRAM, 32 K X 8 | Stores instrument serial number and calibration constants | No | Written by processor | LPU board | N/A. No user data stored in this device. | Remove LPU board and either securely store it or destroy it. |
| NVRAM, 512 K X 8 | Stores instrument serial number and calibration constants | No | Written by processor | TLA7Dx & TLA7Ex LPU board | N/A. No user data stored in this device. | Remove LPU board and either securely store it or destroy it. |
| EPROM 64 K X 16 | Stores instrument firmware | No | Programmed at the factory, no user data | TLA7XM Enhanced Monitor board | N/A. No user data stored in this device. | Remove Enhanced Monitor board and either securely store it or destroy it. |

**Table 2: Nonvolatile memory devices (cont.)**

| Type and minimum size | Function | User modifiable | Data input method | Location | Process to clear | To sanitize |
|---|---|---|---|---|---|---|
| EEPROM 1 K X 8 | Stores instrument firmware | No | Programmed at the factory, no user data | TLA7XM Enhanced Monitor board | N/A. No user data stored in this device. | Remove Enhanced Monitor board and either securely store it or destroy it. |
| PROM | Stores instrument firmware | No | Programmed at the factory, no user data | TLA7XM Enhanced Monitor board | N/A. No user data stored in this device. | Remove Enhanced Monitor board and either securely store it or destroy it. |
| EPROM 2048 X 8 | Stores instrument firmware | No | Programmed at the factory, no user data | TLA7PG2 Clock & Backplane interface board, TLA7PG2 PG board | N/A. No user data stored in this device. | Remove TLA7PG2 boards and either securely store them or destroy them. |
| EPROM 512 K X 8, Flash | Stores instrument firmware | No | Programmed at the factory, no user data | TLA7PG2 Clock & Backplane interface board | N/A. No user data stored in this device. | Remove TLA7PG2 Clock & Backplane interface board and either securely store it or destroy it. |
| EPROM 256 K X 16 | Stores instrument firmware | No | Programmed at the factory, no user data | TLA7PG2 Clock & Backplane interface board | N/A. No user data stored in this device. | Remove TLA7PG2 Clock & Backplane interface board and either securely store it or destroy it. |
| EPROM 1 M X 1 bit | Stores instrument firmware | No | Programmed at the factory, no user data | TLA7PG2 PG board | N/A. No user data stored in this device. | Remove TLA7PG2 PG board and either securely store it or destroy it. |
| EEPROM 256 K X 8 | Stores instrument firmware | No | Programmed at the factory, no user data | LPU board, Acquisition board | N/A. No user data stored in this device. | Remove circuit boards and either securely store them or destroy them. |

## Nonvolatile Memory Security Procedure

User data is not stored in nonvolatile memory. To secure nonvolatile memory, proceed as follows:

1. To remove the LPU board from the module, refer to the appropriate module service manual for the remove and replace procedures. (See page iv, *Related Documents*.)
2. To remove the Enhanced Monitor board from the TL7XM mainframe, refer to the *TLA721 Benchtop & TLA7XM Expansion Mainframe Service Manual* for the remove and replace procedures. (See page iv, *Related Documents*.)
3. To remove the TLA7PG2 Clock & Backplane interface board or the TLA7PG2 PG board, refer to the *TLA7PG2 Pattern Generator and Probes Service Manual* for the remove and replace procedures. (See page iv, *Related Documents*.)
4. Since there is no way for you to clear nonvolatile memory, either store these circuit boards in a secure area or destroy them.

## Data Export Devices

The following table lists the analog output data export devices in the TLA7Axx series logic analyzer modules.

**Table 3: Data export devices (Analog Outputs)**

| Type | Function | User modifiable | Input method | Location | Process to disable |
|---|---|---|---|---|---|
| Analog outputs | Provides an analog copy of signals from the device under test | No | From the device under test | Front panel of module | N/A. Outputs cannot be disabled. |

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

**Table 4: Data export devices (Backplane)**

| Type | Function | User modifiable | Input method | Location | Process to disable |
|---|---|---|---|---|---|
| Backplane | Interfaces with TLA mainframe | No | Instrument function and application software | Backplane connectors | Power off the TLA mainframe power and remove the module. (See below.) |

### Backplane

To locate and remove the module from the TLA mainframe, refer to the *TLA7000 Series Mainframe Installation Manual* or to the *TLA700 Series Mainframe Installation Manual* on the Tektronix Web site at www.tektronix.com/manuals or on the TLA Documentation CD.

# Troubleshooting

## How to Sanitize or Clear a Nonfunctional Instrument

If your instrument is not functioning and you need to clear it, remove the power source from the instrument for at least 20 seconds.

To sanitize the instrument, remove the circuit boards and either securely store them in a safe location or destroy them. You can also return the circuit boards to Tektronix; Tektronix will repair and replace the circuit boards as necessary.