KEITHLEY
A Tektronix Company

touch, test, invent™ (TTI) Series 24GDI Instruments

Declassification and Security Instructions

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Introduction

If you have data security concerns, this document tells you how to clear or sanitize the Model 2450 SMU, 2460 SMU, Model 2461 SMU, or DMM7510 memory devices. It also explains how to declassify an instrument that is not functioning.

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 and Accreditation of Classified Systems under NISPOM

Contact information

If you have any questions after you review the information in this documentation, please contact your local Keithley Instruments office, sales partner, or distributor, or call Keithley Instruments corporate headquarters (toll-free inside the U.S. and Canada only) at 1-800-935-5595, or from outside the U.S. at +1-440-248-0400. For worldwide contact numbers, visit the Keithley Instruments website (*http://www.keithley.com*).

Products

This document contains procedures for the following Keithley Instruments models:

- 2450-SMU
- 2460-SMU
- 2461-SMU
- DMM7510

Terminology

The following terms may be used in this document:

- **Clear:** Removes data on media or in memory before reusing it in a secured area. Clears all reusable memory to deny access to previously unsecured information.
- **Demo setups:** Demonstration modules that come loaded on the instrument; you cannot modify them.
- **Direct method of modification:** You can modify data directly.
- **Erase:** Equivalent to clear (see above).
- **Indirect method of modification:** The instrument system resources modify the data; you cannot modify it.
- **Instrument declassification:** Procedures that must be completed before an instrument can be removed from a secure environment. Declassification procedures include memory sanitization and memory removal.
- **Media storage and data export device:** 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 power is turned off.
- **Protected user data area:** Contains data that is protected by a password.

- **Remove:** Clears instrument data by physically removing the memory device from the instrument.
- **Sanitize:** Eradicates instrument data from media and memory so it 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:** Directly retrieve and clear the contents of the memory device.
- **User accessible:** You can directly retrieve the contents of the memory device.
- **User data:** Measurement data that represents signals that you connect to the instrument.
- **User-modifiable:** You can write to the memory device during normal instrument operation using the front-panel interface or remote control.
- **User settings:** Instrument settings that you can change.
- **Volatile memory:** Temporary memory; data is lost when the instrument is turned off.

Description of Memory

All TTI instruments share a common volatile and non-volatile memory components. This document and these instructions will work for all instruments listed in the “Products” section above.

All TTI instruments contain 3 sets of volatile and non-volatile memory as described below.

MASTER (U13 on 2450-140 board): contains instrument logic, calibration data, and customer scripts, readings, and data

(2) 16MB Non-volatile NOR FLASH chips on the Digital Board

(2) 128MB Volatile DDR2 SDRAM chips on the Digital Board

BLASTER (U1 on 2450-140 board): contains instrument logic, calibration data, and customer scripts, readings, and data

(2) 16MB Non-volatile NOR FLASH chips on the Digital Board

(1) 128MB Volatile DDR2 SDRAM chip on the Digital Board

DISPLAY (U1 on 2450-110 board): contains instrument logic and customer setups and data

(2) 16MB Non-volatile NOR FLASH chips on the Digital Board

(1) 128 MB Volatile DDR2 SDRAM chip on the Digital Board

NOTE: Each TTI instrument contains a battery backed up clock that is used for time-stamping and contains no stored data.

NOTE: Older Model 2450 SMUs (Digital/Display PCB Revision C) have (2) Volatile DDR2 SDRAM chips for the BLASTER and DISPLAY, however, the process for clearing and sanitizing data is identical.

Memory devices

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

Volatile memory devices

The following table lists Series TTI volatile memory devices and relevant memory-related information.

Type and minimum size	Function	User modifiable	Data input method	Location	To clear	To sanitize
DDR2 SDRAM 256MB (master)	Temporary memory used by the microprocessor controller for internal processor operations (on the microprocessor chip)	No	None	U16 & U17 on 2450-140 Digital board	Turn instrument power off	Turn instrument power off
DDR2 SDRAM 128MB (blaster)	Temporary memory used by the microprocessor controller for internal processor operations (on the microprocessor chip)	No	None	U4 & U5 on 2450-140 Digital board	Turn instrument power off	Turn instrument power off
DDR2 SDRAM 128MB (display)	Temporary memory used by the microprocessor controller for internal processor operations (on the microprocessor chip)	No	None	U4 & U5 on 2450-110 Display board	Turn instrument power off	Turn instrument power off

Nonvolatile memory devices

The following table lists Series TTI nonvolatile memory devices and relevant memory-related information. If the table indicates that a device can be cleared by the user, see the detailed instructions in Clearing Data (on page **Error! Bookmark not defined.**).

Type and minimum size	Function	User modifiable	Data input method	Location	To clear	To sanitize
NOR FLASH Embedded Memory, 32MB (master)	Contains calibration data and user settings	Yes	Front-panel or remote interface control	U58 on the 2450-140 Digital board	Follow the Clearing Data procedures	Remove Chip
NOR FLASH Embedded Memory, 32MB (blaster)	Contains calibration data and user settings	Yes	Front-panel or remote interface control	U14 on the 2450-140 Digital board	Follow the Clearing Data procedures	Remove Chip
NOR FLASH Embedded Memory, 32MB (display)	Contains some user settings	Yes	Front-panel or remote interface control	U14 on the 2450-110 Display board	Follow the Clearing Data procedures	Remove Chip
Flash-Based FPGA	Programmable Logic	No	Firmware Upgrade Process	U68 on 2040-100 board U2 on 2450-100 board	Requires Actel ProASIC3 programmer to J46 (on 2040-100) or J829 (on 2450-100)	Remove Chip

Clearing Data

TSP scripts can be used to clear data. These scripts can be run from the front panel and a flash drive or remotely.

Clearing Data Scripts and Setups

Set the correct Command Mode

```
*LANG TSP
```

Erase user strings from nonvolatile memory

```
for name in userstring.catalog() do
   userstring.delete(name)
end
```

Erase scripts (and config lists) from nonvolatile memory

```
for name in script.user.catalog() do
   script.delete(name)
end
```

2450-SMU & 2460-SMU & 2461-SMU: Set the GPIB address to the factory default

```
gpib.address = 18
```

DMM7510: Set the GPIB address to the factory default

```
gpib.address = 16
```

Set the Command Set to the factory default

```
*LANG SCPI
```

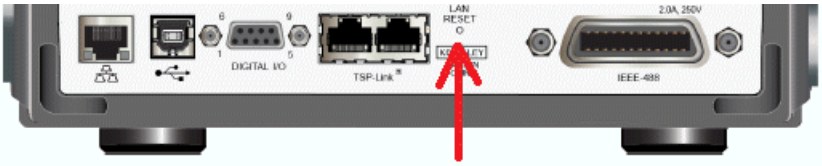
Resetting the instrument (only resets the volatile memory)

Reset instrument to factory defaults

```
*RST                    // SCPI
reset()                 // TSP
```

LAN Reset

LAN Reset resets the LAN settings and the instrument password to the system default values. To do this reset, insert a straightened paper clip into hole below LAN RESET on the rear panel. See diagram below.



Sanitize Instrument Data

The only way to sanitize data from a TTI instrument is to physically remove the non-volatile chips listed in the tables above.

To sanitize a nonfunctional instrument

To sanitize a nonfunctional instrument, remove the digital and display boards and return the instrument to Keithley Instruments for installation of replacement boards.