PA4000 Series Power Analyzers Declassification and Security

Instructions

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Preface

If you have data security concerns, this document helps you to sanitize or remove memory devices from the Tektronix PA4000 Power Analyzer.

The PA4000 Power Analyzer has data storage (memory) devices and data output devices (USB ports, RS232, GPIB connector (optional), and LAN Ethernet connector). These instructions explain how to clear or sanitize the memory devices.

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

Products

The following Tektronix products are covered by this document:

- PA4000 (1, 2, 3 or 4 channels).

Related Documents

The *Tektronix PA4000 Power Analyzer User Manual*, part number 077-0815-xx, is available on the Tektronix Web site at www.tektronix.com/manuals.

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.
- **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 push 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.** The user is able to directly retrieve the memory device contents.
- **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

The following terms are used in the tables in this section:

Type of User Info Stored

This column describes the type of user information that is stored in the device:

- **User data.** Waveforms and other measurement data that represent signals that users connect to the instrument.
- **User settings.** Instrument settings that the user can change.
- **Both.** Both user data and user settings are stored in the device.
- **None.** Neither user data nor user settings are stored in the device.

Method of Modification

This column indicates the method of modifying data:

- **Direct.** The user can modify the data.
- **Indirect.** The instrument system resources modify the data. The user cannot modify the data.

User Accessible

This column indicates whether the user can retrieve the device contents:

- **Yes.** The user can directly retrieve the memory device contents.
- **No.** The user cannot retrieve the memory device contents.

To Clear

This column tells how to clear data from the media or memory device before reusing it in a secured area. All reusable memory is cleared to deny access to previously stored information by standard means of access.

To Sanitize

This column tells how to eradicate the data from the media or memory device 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.

Memory Devices

The following tables list the volatile and nonvolatile memory devices in the standard instrument and listed options. Detailed procedures to clear or sanitize these devices, if any, are shown following each table.

Table 1: Volatile memory devices for the PA4000

Type and minimum size	Function	Type of user info stored	Backed up by battery	Method of modification	Data input method	Location	User accessible	To clear
Internal SRAM (34 kBytes)	Main DSP system memory	User settings	No	Indirectly	Firmware	CPU Card, U3	No	Remove power from the instrument for at least 20 seconds.
DRAM (2 Mbytes)	Display memory	Data on display	No	Indirectly	Firmware	CPU Card, U24	No	Remove power from the instrument for at least 20 seconds.
SRAM (1 MBytes)	Main DSP system memory	User settings	No	Indirectly	Firmware	CPU Card, U2	No	Remove power from the instrument for at least 20 seconds.
Internal SRAM (512 kBytes) x 4	Analog measurement system program	Measurement results	No	Indirectly	Firmware	CPU Card U28, U30, U32 and U34	No	Remove power from the instrument for at least 20 seconds.
Ethernet controller Internal 3808 Bytes	Ethernet controller variables	Results transfer	No	Indirectly	Firmware	Ethernet / USB card, U4	No	Remove power from the instrument for at least 20 seconds.
USB client controller (4 kBytes)	USB client variables	Results transfer	No	Indirectly	Firmware	Ethernet / USB card, U3	No	Remove power from the instrument for at least 20 seconds.

Table 2: Nonvolatile memory devices

Type and minimum size	Function	Type of user info stored	Method of modification	Data input method	Location	User accessible	To clear	To sanitize
EEPROM, 128 kBytes	Calibration constants	None	Indirect via firmware	Factory configuration	Analog module, U1	No	Not applicable, does not contain user data or settings. Clearing would disable instrument functionality.	Not applicable, does not contain user data or settings. Sanitizing would disable instrument functionality.
EEPROM, (128 kBytes)	User configuration storage	User config. storage	Indirect via firmware	User changing the configuration of the product	CPU Card, U8	No	See instructions below.	Not applicable. Sanitizing would disable instrument functionality.
CPU internal flash (512 kBytes)	Stores operating code	None	Indirect via firmware	Firmware upgrade program	CPU Card, U3	No	Not applicable, does not contain user data or settings. Clearing would disable instrument functionality.	Not applicable. Sanitizing would disable instrument functionality.
CPU external flash (1 Mbyte)	Stores operating code	None	Indirect via firmware	Firmware upgrade program	CPU Card, U4	No	Not applicable, does not contain user data or settings. Clearing would disable instrument functionality.	Not applicable. Sanitizing would disable instrument functionality.
USB client processor (64 kBytes)	Stores operating code	None	None	Factory programming	USB /	No	Not applicable, does not contain user data or settings. Clearing would disable instrument functionality.	Not applicable. Sanitizing would disable instrument functionality.
Ethernet controller (128 kBytes)	Stores operating code	None	None	Factory programming	CPU card	No	Not applicable, does not contain user data or settings. Clearing would disable instrument functionality.	Not applicable. Sanitizing would disable instrument functionality.

Secure User Memory

To secure the non-volatile memory, follow the *Secure* procedure below. In any case, no measurement results are stored. Only instrument setup and calibration may be are stored in memory inside the PA4000.

Secure

To erase confidential data from your PA4000 power analyzer, perform the following procedure. This procedure does not erase or change factory calibration constants.

The following user settings need to be cleared as separate actions:

- Current configuration
- User configurations 1 though 8
- User Communications Settings (these are not reset by loading the default configuration)

To reset the current configuration (used at power on).

1. Press the front panel **MENU** button.
2. Scroll down to **User Configuration**.
3. Select **Load Default Configuration**.
4. Wait for confirmation that the configuration has been loaded.

To reset configurations 1 through 8 to default.

1. First load the default configuration as detailed above.
2. Select **Configuration 1** (the first configuration below *Save To USB* option).
3. Scroll down to **Save Current Configuration** and select this option (bottom soft key).
4. When finished, select **OK**.
5. If the name of the configuration is not “Configuration 1”, then rename the configuration.
6. Repeat steps 2 through 5 for configurations 2 through 8.

To clear the communication settings.

1. Press the front panel **MENU** button.
2. Scroll down to **Interfaces**.
3. In the RS232 menu, set the baud rate to the factory default of **38400**.
4. In the GPIB menu set the address to the factory default of **5**.
5. In the Ethernet IP Selection Method menu, select the factory default of **Set IP using DHCP**.
6. In the Ethernet Static IP Setting menu, set the IP address to **192.168.2.255**, the Subnet mask to **255.255.255.0** and the Default Gateway to **192.168.2.1** (factory defaults).

Data Export Devices

The following table lists the data export devices. Detailed procedures to disable these devices, if any, are shown in the table.

Table 3: Data export devices

Type	Function	Method of modification	Data input method	Location	User accessible	To disable
USB host port (supports removable USB flash drive)	User storage of results and instrument setup	directly	User writeable	USB host port on front of instrument Files can be deleted or over-written on the PC, or USB flash drive can be removed and destroyed.		The USB host port cannot be disabled.
USB device port	Supports remote control and data transfer to a PC.	directly	Remote control via USBTMC	USB device port on rear of instrument		The USB client device port cannot be disabled.
LAN Ethernet connector	Supports remote control and data transfer to a PC	directly	Remote control	Rear panel.		The Ethernet LAN controller cannot be disabled.
GPIB connector	Supports remote control and data transfer to a PC	directly	Remote control	Rear panel (optional)		The GPIB interface cannot be disabled.
RS232 connector	Supports remote control and data transfer to a PC	directly	Remote control	Rear panel		The RS232 interface cannot be disabled.