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# **M-Class Waveform Generator Sanitization Procedure**

Models ZT5211, ZT5212

User's Manual: 0004-000081  
Revision 1

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# Contact

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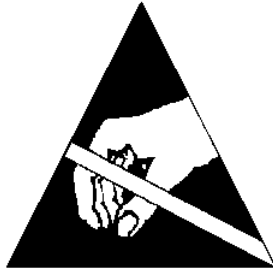
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## Handling Precautions for Electronic Devices Subject to Damage by Static Electricity

This instrument is susceptible to Electronic Static Discharge (ESD) damage. When transporting, place the instrument or module in conductive (anti-static) envelopes or carriers. Open only at an ESD-approved work surface. An ESD safe work surface is defined as follows:

- The work surface must be conductive and reliably connected to an earth ground with a safety resistance of approximately 250 kilohms.
- The surface must NOT be metal. A resistance of 30–300 kilohms per square inch is suggested.

Ground the frame of any line-powered equipment, chassis, test instruments, lamps, soldering irons, etc., directly to the earth ground. To avoid shorting out the safety resistance, ensure that the grounded equipment has rubber feet or other means of insulation from the work surface.

Avoid placing tools or electrical parts on insulators. Do NOT use any hand tool that can generate a static charge, such as a non-conductive plunger-type solder sucker. Use a conductive strap or cable with a wrist cuff to reliably ground to the work surface. The cuff must make electrical contact directly with the skin; do NOT wear it over clothing.

**Note:** Resistance between the skin and the work surface is typically 250 kilohms to 1 megohm using a commercially-available personnel grounding device.

Avoid circumstances that are likely to produce static charges, such as wearing clothes of synthetic material, sitting on a plastic-covered stool (especially when wearing woolen material), combing the hair, or making extensive pencil erasures. These circumstances are most significant when the air is dry.

When testing static sensitive devices, ensure DC power is ON before, during, and after application of test signals. Ensure all pertinent voltages are switched OFF while circuit boards or components are removed or inserted.

# Revision History

Rev	Date	Section	Description
1	7-24-09	All	Initial Release

# Introduction



The ZTEC Instruments M-Class Waveform Generators include the products listed in Table 1.1.

Model Number	Output Channels	Platforms
ZT5211	2	PCI/PXI/VXI/LXI
ZT5212	4	VXI/LXI

Table 1.1: M-Class Waveform Generator Products

Volatile and non-volatile memory for the ZTEC M-Class Waveform Generators is shown in tables 1.2 and 1.3. For security purposes, it might be necessary to clear all user-modifiable memory. There are two types of user modifiable memory: (a) volatile waveform memory for the DAC or Waveform Library, and (b) non-volatile memory for Reference Waveforms and Instrument States.

Memory Type	Size	User Modifiable	Function	Process to Sanitize
SDRAM	16M bytes	No	DSP	Power-Off
SDRAM	16M bytes	Yes	Waveform Library	Power-Off or Overwrite
SDRAM	128M bytes per channel	Yes	DAC	Power-Off or Overwrite

Table 1.2: Volatile Memory

Memory Type	Size	User Modifiable	Function	Process to Sanitize
Flash	512k bytes	No	DSP Boot Code	N/A Write-protected
Flash	512k bytes	Yes	Reference Waveforms & Instrument States	System Memory Clear command
EEPROM	Up to 2k bytes	No	Calibration Data	N/A Write-protected
EEPROM	Up to 2.25M bytes	No	FPGA Boot PROM	N/A Write-protected

Table 1.3: Non-Volatile Memory

# Sanitization Procedure



## ***Non-Volatile vs. Volatile Memory***

Reference Waveform and Instrument State memory are non-volatile and must be cleared using the System Memory Clear command. Waveform storage memory for the DAC and Waveform Library is volatile and the memory contents will decay when power is turned off. Power cycling the instrument will erase all the volatile memory within a few minutes. A rapid method to clear the volatile memory is to overwrite all the available memory with 0's.

## ***Procedure Steps***

The following procedure should be used to clear or sanitize the M-Class Waveform Generator memory:

- 1) Send the System Memory Clear SCPI command (SYST:MEM:CLE) to clear all non-volatile memory.
- 2) Create a 0.0V DC waveform in channel 1 of 8,388,608 points in length.
- 3) Copy channel 1 into the waveform library to clear the library volatile memory.
- 4) Create a 0.0V DC waveform in channel 1 of 33,554,432 points in length to clear the channel volatile memory.
- 5) Repeat step 4 for channel 2, and channels 3-4 for a 4-channel instrument.

By following this procedure, all user accessible memory will be overwritten and there will be no original information remaining.



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