

July 17, 2006

Destruction of Data in Non-Volatile Memory in the Keithley Model 6485 and 6487 Picoammeter

The Keithley Model 6585/7 contains memory devices to hold firmware code that is executed by an internal microprocessor to operate the product and memory to save setup information. The following sections describe how the data stored in the memory devices may be cleared or destroyed.

Warning: Some of the procedures in this document may expose hazardous voltage and the risk of electric shock or death. Only trained, qualified, technical persons experienced with the risks and precautions of working with electrical instruments should perform these procedures.

Description of memory devices and their use:

1. One of MC68332 microprocessor - contains some RAM for internal use and all information is lost when the unit is powered down.
2. One of 16k bit EE PROM - non-volatile memory to store user setups.
3. One of 64k by 16 bit CMOS RAM - stores buffered data.
4. One of 4M bit CMOS Flash memory – stores the operating code for the instrument.

Procedure for clearing memory content:

Note: If the Model 6485/7 starts and operates properly when powered on, it is very unlikely that the Flash memory was compromised. The microprocessor does a self test including a checksum of the memory. Any difference in the contents from the original programming will usually cause a checksum error or the unit will not function.

Warning: Follow all instructions, including safety warnings, in the service sections of the Model 6485 and 6487 manual when performing the following steps.

1. One of MC68332 microprocessor – Power down and unplug the unit for one minute.
2. One of 16k bit EE PROM –
 - a. Recall the factory setup
 - i. Press SETUP to display the restore menu:
 - ii. Use the up or down key to display the factory setup (FACT)
 - iii. Press ENTER.
 - b. Save the setup to overwrite any user setup information
 - i. Press SAVE to access the save setup menu.
 - ii. Use the up or down key to display the desired memory location ((0 = USR0, 1 = USR1, 2 = USR2).
 - iii. Press ENTER.
 - c. Repeat for all three user locations

3. One of 64k by 16 bit CMOS RAM - Power down and unplug the unit for one minute.
4. One of 4M bit CMOS Flash memory –
This procedure overwrites the content of the Flash memory with the 6485/7 operating firmware (Step 4.1) or completely and permanently destroys the ROMs and their content (step 4.2)

The operating system resides in Flash ROM. It is reprogrammable to allow field firmware updates. The reprogramming of this memory requires a software program, called the Flash Wizard, provided by Keithley Instruments Inc. If data (other than the 6485/7 operating system) was loaded into these memory devices, the 6485/7 would be non-functional.

4.1 To overwrite any suspect content in these memory devices, follow the instructions with the Keithley Flash Wizard and reload the operating firmware, using the original revision that came with the product when new, or a compatible upgrade version. The Flash Wizard first clears all content in these memory devices then overwrites them with the new the firmware Note: the firmware that is used for the upload must be know to be valid and kept secure to prevent tampering.

4.2 We do not currently offer a program to just erase this code. Complete destruction of firmware requires physical removal of integrated circuits and destruction of the integrated circuits. Note: after this action the unit is unusable.

If you have any further questions or comments, please feel free to contact my office at anytime.

Regards,



William Pelster
Director of Quality