KEITHLEY   A GREATER MEASURE OF CONFIDENCE

Preserving Model 4200-SCS Software and Data Integrity

Introduction

The Model 4200-SCS Semiconductor Characterization system is a high precision measurement instrument and includes hardware and software features suitable for semiconductor device characterization. The instrument is built on a PC (personal computer) architecture—it contains a motherboard with the main processor, RAM, physical hard drive, compact disk (CD) and floppy disk drives, and other typical PC hardware elements. It uses the Microsoft Windows operating system. While such architecture brings users lots of benefits—ease of use, a large amount of on-board test and data storage space, built-in Windows tools and utilities—it also makes it necessary to undertake the standard precautions associated with using any PC-based system. This Tech Note specifically addresses software and data backup issues.

Applicability

The information in this Tech Note applies to all 4200-SCSs produced to date and those currently in production as of this writing (June 2004). This includes Keithley Test Environment Interactive (KTEI), Versions 4.1.5 through 5.0.

Software integrity

The 4200-SCS has been thoroughly tested and configured for maximum system stability, reliability, and performance in the factory-standard configuration. While users are permitted to install certain additional software, we strongly encourage them to refer to Chapter 10 "System Administration" of the Reference Manual before doing so. While the Reference Manual can't and doesn't cover all possible use cases and scenarios, it's important to use caution and common sense when working with the 4200-SCS. For example, system stability may be compromised if untested/unapproved software is installed on the 4200-SCS's hard drive or if computer viruses reach the system via a network connection. Certain software tools included in the standard installation on each 4200-SCS, such as FAZAM (Full Armor Zero Administration) and Diskeeper, can help preserve software integrity if they're configured and used properly.

While some other software can be un-installed and re-installed on the 4200-SCS, users can't successfully reformat the hard drive formatting and re-install the operating system. Attempting to do so will render the system inoperable, and will require factory repair.

Test setup and data integrity

Even if the 4200-SCS is used and maintained properly, the possibility of hard drive failure still poses a risk, albeit small, of data loss. The best way to protect and preserve user test setups and measurement data is to back them up. In this case, "backup" refers to saving the latest copy of the data periodically on an external storage device. Backups can be performed in several different ways.

Preserving Model 4200-SCS
Software and Data Integrity

First, consider exactly what data needs to be backed up. With a 4200-SCS in its original factory configuration, all the user application files (i.e., KITE projects, device and test libraries, KULT libraries) and test results are contained in the default directory **C:\S4200\kiuser**. Unless a system user (or administrator) creates new directories located elsewhere—on a 4200 hard drive, or otherwise—backing up the **C:\S4200\kiuser** directory is all that's necessary to preserve all test setups and test results. If multiple users have their own directories, for example, **C:\S4200\Johns_tests** and **C:\S4200\Janes_tests**, all those directories (folders) need to be backed up. Selective backup of the **C:\....\data** subfolders (e.g., as in **C:\S4200\ kiuser\ Projects\default\tests\data**) isn't recommended, because this doesn't preserve the application files necessary to restore the test setups/conditions the user(s) created.

In cases where additional data is being generated either automatically (e.g., a User Test Module is programmed to output test results into **C:\TestData\test001.dat**) or manually (e.g., users process data files using MS Excel), it's essential to back up these files or directories as well.

Finally, it's possible to back up the contents of the entire hard drive. This doesn't provide the most efficient utilization of the memory space on the storage device, because a large portion of memory will be occupied by the 4200-SCS system files and application program files. Such backups may only be justified if storage space is not an issue, and if the user file directory structure is too complex to allow for selective backups.

The second aspect to consider is the actual technical implementation of the back-up process. While a number of options are available, there are only two major determining factors: the amount of data and the storage devices available. Naturally, the amount of data to be backed up will determine the storage space requirements, which in turn determines the appropriate type of storage device/media.

For amounts of data of 1.4 MB or less, the easiest solution is simply backing up onto a 3.5-inch double-density floppy disk, using the floppy drive built into the 4200-SCS.

On 4200-SCS units equipped with a CD-RW (compact disk read-write) drive, users can back up onto the compact disk. The CDs available today can store up to 700MB of data.

Other back-up methods require external storage devices that aren't provided with the 4200-SCS. Popular choices include ZIP disks, storage tape devices, and network servers. Some of these devices may be capable of storing the contents of the entire 4200-SCS hard drive, as discussed previously. The wide variety of data storage devices available and the details associated with installing and using them are too complex to discuss here, so users should consult the operating manuals that come with those devices.

Summary

Improper use of the 4200-SCS or system hardware failures may compromise the integrity of the system's application software and test data. Proper system admin- istration and maintenance, as well as regular data backups, are recommended to prevent irrecoverable data losses.

**Preserving Model 4200-SCS
Software and Data Integrity**

KEITHLEY