

# Industrial Storage Modules- Advantech SQFlash with Power Saving and Security Features

Author: Ethan Chen/ Tones Yen

E-mail: [ethan.chen@advantech.com.tw](mailto:ethan.chen@advantech.com.tw); [tones.yen@advantech.com.tw](mailto:tones.yen@advantech.com.tw)

## Introduction of Advantech SQFlash

Flash memory is a non-volatile storage memory that can be digitally programmed/re-programmed and erased. As technology continuously advances, the demands for greater density and better flash memory performance increase as well. These days, flash memory is no longer a component that resides only in your computer – It also performs as a media and photo album, or a filing cabinet that stores all your personal or business data.

SQFlash are Advantech's industrial storage modules designed for embedded users with higher compatibility, performance, and reliability in mind, also with 3 years longevity and fixed specification support that is most asked for by embedded customers. SQFlash comes in various interfaces including CompactFlash & CFast, 2.5" PATA & SATA SSD, PATA DOM, SATA DOM and USB DOM. And for security, features have been implemented at firmware and application levels in order to decrease customers' integration effort, and increase the reliability of our Flash modules.

## Advantech SQFlash Increases Reliability

The IC controller in [SQFlash](#) has a built-in low voltage detection feature. When the power source drops lower than 2.9 V, an internal RESET will trigger and the controller will stop all activities to the flash—avoiding data accidentally being written because of low power (also preventing invalid access to the flash module during power loss). And, While the operating voltage is between 2.7 ~ 3.3 V, the flash module will function as normal.

For increased reliability, if the IC controller is writing data and suddenly the power supply fails, it will judge if it has written one full page and if not, the data will not be written. The controller IC has a recovery mechanism implemented in firmware. After powering up, the controller will check data programmed in the flash previously when it was accessed, if data has been detected as invalid, it will ignore the invalid part, then merge older valid data with newer valid data, to create a new combination of valid data. This reduces the chances of getting wrong data from flash modules caused by incomplete program or data writing on the flash.

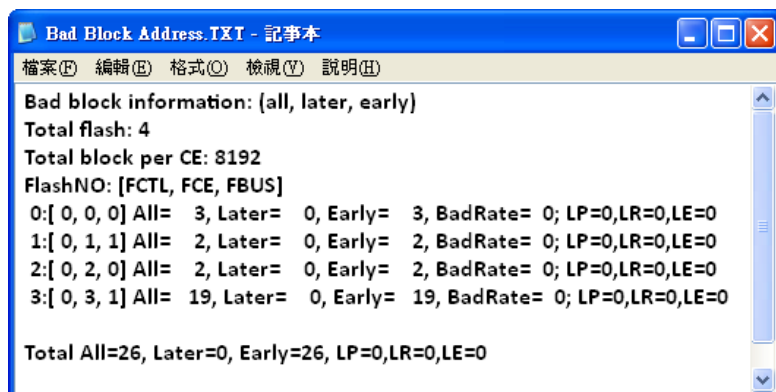
## Advantech SQFlash Test : Sudden Power Down Cycle Time Testing

Test Sample Capacity : 8GB  
Test Method : Sudden Power Down  
Conditions for H/W Platform :  
Power Control Machine x 1  
SOM CPU Board x 1  
SOM Environmental Board x 1  
[SQF-P10](#)S2-8G-CTE x 1

Condition for S/W Tool :  
Windows XP SP2 O.S.  
BurnInTest V6.0 Pro  
Advantech Power off count tool  
Auto run agent tool

**Result : Works normally up to 5496 times. No Later Bad Block occurrence.**

Actual Picture :



## Sudden Power Down Cycle Time Testing Result

Under normal working situations, SQFlash achieved 5496 successful test results, which showed the stability and reliability of Advantech's SQFlash. When using flash products, unavoidable conditions can occur and this may affect the reliability of the data, such as high/low temperatures, unstable voltages and vulnerable power supplies. If the power suddenly goes down or surges when the machine is operating or the voltage is lower than the specification, then processing data and file information could get lost, even the memory device itself may get damaged. These results showed that Advantech's SQFlash modules had the capability to fully protect their application.

## Which Kinds of Territory Should Use SQFlash

When using memory cards, users care most about stability, long life, speed, data loss and quality. Applications in industrial computing require even higher stability and reliability, and serious systemic problems can result if the memory card becomes damaged or critical data is lost without warning. Advantech [SQFlash](#) can be used in the following fields:

- Company and Enterprise
- Automatic Machine & Manufacture
- Medical & Hospital
- Harbor & Vehicle
- Manufacture factory
- Server & Recording

Not only does SQFlash provide great performance, Advantech is dedicated to continuously develop the security software which protects intellectual property. Advantech provides Flash Security ID to avoid applications being copied, Flash Lock which can detect corresponding platforms when accessed, and User Life Monitoring which can check the health of the flash. [SQFlash](#) are available in various interface. They can fulfill all kinds of applications, and they provide 3 years longevity and fixed specification support. Advantech SQFlash easily integrates into your application with decreased design effort, enhanced reliability and performance.

### **About Advantech SQFlash- An Industrial Storage Modules with Secure Management**

Advantech SQFlash is an industrial storage modules, designed for embedded users with high performance, compatibility and reliability. It also develop security software directly combine with storage modules, provide a safety and reliability application environments. Learn more about SQFlash, please visit <http://www.advantech.com/embcore/industrialstoragemodules.aspx>

**Advantech Co., Ltd.** –Founded in 1983, Advantech delivers visionary and trustworthy industrial computing solutions that empower businesses. We cooperate closely with solution partners to provide complete solutions for a wide array of applications in diverse industries, offering products and solutions in three business categories: Embedded ePlatform, eServices & Applied Computing, and Industrial Automation groups. With more than 3,400 dedicated employees, Advantech operates an extensive support, sales and marketing network in 18 countries and 39 major cities to deliver fast time-to-market services to our worldwide customers. Advantech is a Premier Member of the Intel® Embedded and Communications Alliance, a community of embedded and communications developers and solution providers. (Corporate Website: [www.advantech.com](http://www.advantech.com)).

Copyright © 2010 Advantech Co., Ltd. All rights reserved.