TOSHIBA

Tech Insight:
HDD Protection

EasyGuard
Go Mobile With Confidence

Toshiba EasyGuard™ technology is a series of hardware and software enhancements to business-class notebooks that greatly improve mobile computing. By providing users with increased data security, system protection, simple connectivity and ease of use, EasyGuard™ technology is continued evidence of Toshiba's vast experience in mobile computing and our ongoing commitment to providing users with a better, more reliable notebook experience.

Toshiba EasyGuard technology comprises a number of features some of which may or may not be available on a particular Toshiba notebook depending on the model selected. See www.easyguard.toshiba.com for detailed information.

Toshiba EasyGuard™
Four core elements for more confident computing

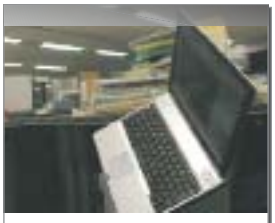
- **Protect & Fix**
  Fortifies vital information and vulnerable components against the stress and hazards mobile computers are exposed to every day.
- **Secure**
  Helps defend your data and your notebook against loss, theft or viral attack.
- **Connect**
  Helps you locate and establish a wired or wireless connection effortlessly and quickly.
- **Optimize**
  Allows you to customize the notebook's system performance so you can be more productive.

What is HDD Protection?

The Toshiba HDD Protection system is an intelligent defense mechanism that helps safeguard user information stored on the hard drive in the event of unexpected impacts, falls or excessive vibrations. The enhanced impact protection solution includes two levels of internal support specifically for the hard disk drive (HDD): shock absorption to help protect the HDD in the event of an impact or vibration and the Toshiba three-axis monitoring system.

Why is it important to protect the hard disk drive?

The HDD head is the device that moves over, without touching, the spinning media disk when reading or writing data. If the HDD head comes in contact with the spinning media, due to unexpected shock and vibration, damage to the media may result in data loss or even destroying it completely.



Accidental falls can damage a notebook disk drive.

As a result, Toshiba developed and implemented HDD Protection, to reduce the potential for the hard disk drive head to scratch HDD media in case of shock, vibration or fall. This protection results from a unique combination of a 3D accelerometer developed by Toshiba and HDD shock protection. The protection system combines the HDD Shock Absorber with the 3D accelerometer for superior protection whether the notebook is on or off.

How does HDD shock protection work?

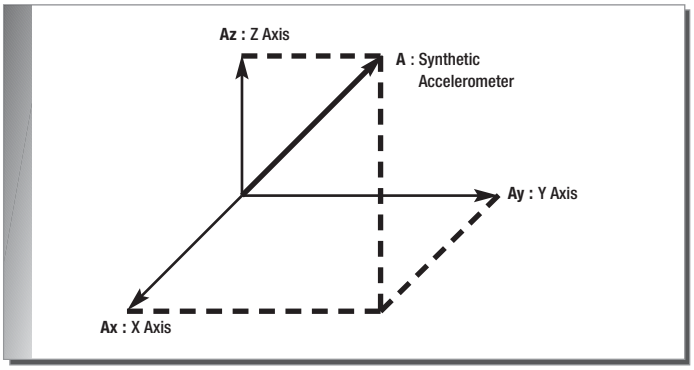
Shock protection helps safeguard the hard disk drive from vibrations caused by the rigors of daily use. It includes shock absorbing material designed to decrease the amount of energy transmitted to the HDD.

Shock absorber material is added around the hard disk drive and works as a corner bumper mechanism.

HDD Dome Shock Protector

What is a 3D accelerometer and how does it protect the HDD?

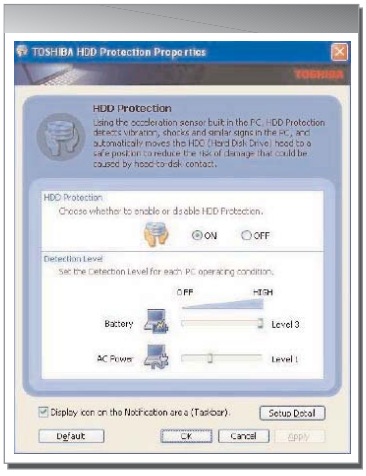
The 3D accelerometer is a full three-axis motion monitor and acceleration sensor that is capable of detecting free fall in all directions. This monitoring capability accurately detects sudden vibrations.



Upon detection of a potential fall, the head is physically removed from over/between the HDD platters and is parked in a safe position where it will not touch the platters even in the event of an impact. Once the notebook detects that its environment is safe, the HDD will resume normal operation.

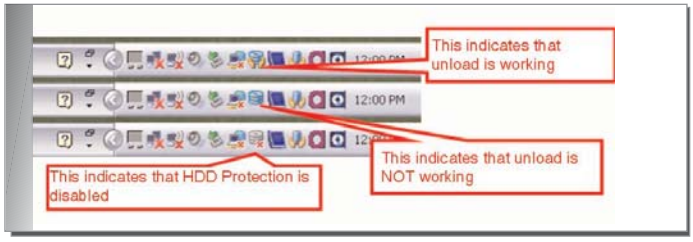
In order to avoid false detection, the HDD protection GUI (graphical user interface) offers four protection levels:

1. Off
2. Level 1: Lowest sensitivity
3. Level 2: Versatile sensitivity
4. Level 3: Highest sensitivity (default)



In some usage scenarios, such as in a car or on a user's knees, the notebook is subjected to continuous, non-risk movement. In such conditions, protection level 2 is advised. The protection level can be raised again when the notebook is used on a desk and with an AC adapter.

Ten seconds after closing the LCD or unplugging the AC adapter, the HDD protection level temporarily raises itself in anticipation of notebook movement.



The HDD Protection toolbar indicates whether the Toshiba protection is active and the HDD is in an operating or protected state. Upon detection of a potential fall or vibration, an information message will pop up informing the user of the risk.

Summary of features and benefits

3D accelerometer
- Detects free fall in all directions

HDD head unloading
- Decreases risk of media disk damage

Multiple protection levels
- Allows user to select sensitivity based on the work environment
- Visual cue tells user the HDD heads have been adequately "parked"

Shock absorption material
- Improves hard disk drive durability
- Adds minimal system weight or size