



ToughDisk[®] Rugged SATA Hard Disk

Drop-in Replacement for Standard 3.5" SATA Disks

Low-cost alternative to solid-state data storage

Breakthrough disk protection technology delivers:

- Rugged upgrade for standard 3.5" low profile SATA and SAS disks
- Extreme temperature, altitude and humidity performance
- Enterprise class data rates at half the wattage of comparable quality SAS disks
- Shock and vibration protection even when removed from the host platform
- 3 Gigabit per second Serial ATA interface (supports 1.5Gb/s)
- 480 Megabit per second USB 2.0 (only 3.5" SATA disk with USB)
- Much greater storage density at a fraction of the cost of solid-state storage



Conventional hard disks are typically the "weakest link" preventing COTS-based computer systems from reliably operating in extended altitude, humidity, temperature or vibration/shock environments. Solid-state disk alternatives are prohibitively expensive and do not offer the same storage density as hard disks. TD3500 ToughDisks bridge the gap between conventional hard disks and expensive solid-state solutions, providing much of solid-state's performance in a conventional 3.5" disk form factor.



Features:

- Industry leading rugged capacity of 320GB
- Expanded altitude of -15,000ft to 85,000ft
- Expanded operational temperature range of -40C to +70C
- Industry's only vibration and shock hardened 3.5" SATA disk
- Over 90MB/s maximum sustained read and write performance
- Industry leading 3Gb/s SATA interface with eSATA, xSATA and ESD protection
- 480 Mb/s USB2.0 auxiliary port enables full 320GB access to systems lacking SATA connectivity
- Low power 5VDC operation with support for additional 12VDC and 28VDC inputs
- I2C management for applications that demand extended BITE

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ToughDisk® Technology

Formation's ToughDisk technology addresses the ever-growing demand for data storage capacity and performance in harsh environments. Over 30 years of disk experience are embodied in an acceleration and climate-control engine (ACE). ACE is an integration of proprietary firmware, electronics, and mechanisms that deliver leading-edge storage capacity, performance, and reliability over a wide range of environmental extremes. ACE overcomes limitations that previously prevented hard disk use in severe environments. ToughDisk performs reliably in environments that would destroy conventional hard disks, at a fraction of the cost of solid-state storage.

The ToughDisk sealed machined enclosure protects against high altitude, dust and humidity. Constant sea-level density air maintains optimal disk head height and shock/vibration protection. Conduction cooled internal components

make the TD3500SATA the easy design choice for both convection and conduction cooled systems.

The overall package guards the hard disk both when mounted in the host platform and when removed for transportation or storage. A built-in processor independently monitors, controls and logs environmental conditions, or optionally allows the host application to monitor and control the environmental subsystem.

Formation has delivered thousands of rugged disk systems, high-performance RAID systems, and avionics-class servers for mission-critical applications including streaming multimedia (e.g., reconnaissance data), aircraft health information and sensitive financial data. ToughDisk combines our latest patented developments with over three decades of leading-edge disk application innovation.

Specifications:

Characteristic

TD3500 SATA

Capacity	320GB
Operating temperature*	-40C to +70C
Average seek plus rotational latency*	9.1ms
Sustained transfer rate (max)	>90 MB/s
Humidity (over temp range)	Any non-condensing
Altitude	-15000 to 85,000 feet
Operational shock	350G @2ms half sine
Non-operational shock	800G @ 2ms half sine
Dimensions	4" H * 1.022" H * 5.75" D
Weight	1.31lb (590 g)
5 VDC (max active)	8 Watts
Heater current, if optional voltage connected. Wattage decreases as internal components reach optimal temperature.	0 Watts when not connected 0.4 amps @ 5 VDC .96 amps @ 12 VDC 1.4 amps @ 28 VDC
External cable lengths (when used with SATA specified HBA, cables)	1 meter, SATA Gen1i or Gen2i 2 meter, SATA Gen1m or Gen2m 4 meter, SATA Gen1x or Gen2x

*See users manual for details.

Features and specifications subject to change without notice.



Formation, Inc.
121 Whittendale Drive
Moorestown, NJ 08057
USA

Ph: +1.856.234.5020
Fax: +1.856.234.5242
Email: sales@formation.com
Web: www.formation.com