Fast Flash Disk 2.5" Ultra ATA
Outstanding Flash Disk Performance

- 1GB to 90.1GB disk capacity

- 2.5" standard form factor

- ATA-6: Ultra DMA 0-5 ,DMA 0-2 and PIO 0-4 transfer modes

- 100.0 MBytes/sec burst read/write rate

- 40.0 MBytes/sec sustained read/write rates

- Quick security erase in seconds

- Sanitize confidential data, comply with DoD, NSA , US Air force, Army, Navy and IRIG

- TrueFFS® technology

- >5,000,000 Write/Erase cycles, unlimited Read

- Enhanced endurance by dynamic wear-leveling

- SMART (Self-Monitoring, Analysis and Reporting Technology)

- Data integrity under unstable power conditions

- MIL-STD 810F and and NEBS Level 3 compliant

- **5 Year Warranty**

For additional information please contact ffd@m-systems.com

Overview

M-Systems' Fast Flash Disk (FFD) 2.5" Ultra ATA Flash Disk is a state-of-the-art solid-state disk, based on NAND flash technology, that provides the functionality of a hard disk with no moving parts. FFD 2.5" Ultra ATA Flash Disk is an ideal, rugged storage solution for mission-critical applications that must operate under harsh environmental conditions.

FFD 2.5" Ultra ATA Flash Disk delivers outstanding reliability and enhanced endurance thanks to M-Systems' TrueFFS® technology, which applies dynamic wear-leveling and bad block management. Due to its unique design, FFD 2.5" Ultra ATA Flash Disk provides high-performance sustained read and write rates up to 100MB/s and supports Ultra DMA 0-5, DMA 0-2 and PIO 0-4 transfer modes.

FFD 2.5" Ultra ATA Flash Disk is fully compatible with the ATA-6 interface, and has the same mechanical dimensions and mounting holes of traditional mechanical disks. It is a true drop-in replacement for rotating 2.5" ATA disks with highest reliability.

M-Systems' family of FFDs has been providing rugged, mass storage solutions to an expansive range of industries since 1997. In air force, navy and army installations, it has been field-tested inside data recorders, moving maps, sonar, radar, fire control systems, black boxes, data acquisition systems, C4ISR, telemetry systems, rugged laptops and servers.

Specifications

Capacity

Unformatted (MBytes)	1024, 2048, 4096, 6144, 8192, 12288, 16384, 20480, 24576, 28672, 32768, 36864, 40960, 45056, 49152, 53248, 57344, 61440, 65536, 69632, 73728, 77824, 81920, 86016, 90112.

IDE Compatibility

ANSI- INCITS 361 - ATA-6; ANSI- INCITS 340 - ATA-5; ANSI- INCITS 317 - ATA-4; ANSI-X3.298-1997 - ATA-3; ANSI-X3.279-1996 - ATA-2

Performance

Burst Read/ Write:	100.0 MBytes/sec
Sustained Read:	40.0 MBytes/sec
Sustained Write:	40.0 MBytes/sec
Access time:	<0.04 ms

Physical

Form factor: 2.5"
Mounting: Industry standard, 44 pins connector
Case dimensions:(mm):   100.2(L) X 69.8(W) X 9.4 to 37.4(H)
Weight: 0.1 Kg for 4GB; 0.3 Kg for 90GB

Environmental

Operating temperature
  Commercial: 0°C to +70°C
  Enhanced: -25°C to +75°C
  Extended: -40°C to +85°C
Storage temperature: -55°C to +95°C
Humidity: 5% to 95% relative, non-condensing
Operating altitude: Up to 80,000 feet
Operating shock: 1,500G, MIL-STD-810F
Operating vibration: 16.3G RMS (random, 20Hz to 2000Hz;
                          3 vibration axes), MIL-STD-810F

Power

Input voltage: 5VDC (+/- 5%)
Typical power consumption:

	4.0GB	90.1GB
Idle	2.7 W	3.1 W
Standby	2.5 W	3.1 W
Sustained read/write	2.7 W	4.5 W
Sanitize	3.0 W	6.0 W

Reliability

MTBF: 1,493,418 hours MTBF for 4.0 GB based on Telcordia SR-332, GB, 25°
                      C
EDC/ECC   Embedded EDC/ECC, based on BCH Algorithm
BER (Bit Error Rate) $< 10^{-20}$
Reliability features
  Built-in power-up self-test (BIT)
  Manual and automatic self-diagnostics
  TrueFFS® bad block management
  Data integrity under power-cycling
  SMART (Self-Monitoring, Analysis and Reporting Technology) remote monitoring

Endurance
  Unlimited read cycles
  >5,000,000 Write/Erase cycles

TrueFFS® dynamic wear-leveling

Garbage collection process

>10 years' data retention

User Interface & Configuration

Interface: 16-bit

Master/Slave mode: Jumper-selectable

ATA transfer modes: PIO 0-4; DMA 0-2; UDMA 0-5

Firmware upgrade: Field upgrade capability

Format: Factory low-level format

Drivers: None required

Power LED: Green

Access LED: Red

Enhanced Security Erase

Entire disk security erase in seconds

Partial security erase

Auto-resume security erase/sanitize on power interrupt

Power-Free security erase/sanitize

Sanitize complies with NISPOM DoD 5220.22-M, NSA 130-2, Air Force AFSSI 5020, Army 380-19, Navy NAVSO P-5239-26 and IRIG-106 NTISSP-9

Secure erase/sanitize software interrupt, hardware interrupt optional

Compliance

CE, UL, EN 55022 Class B, CISPR 22 Class B, AS/NZS 3548 Class B, BSMI CNS 13438 Class B, CAN/CSA-V-3/2001.04 (VCCI), FCC Part 15 Class B, EN 61000-3-2, EN 61000-3-3, IEC 61000-4-2/3/4/5/6/8/11, MIL-STD-810F

Customization

PCB conformal coating

Faster read/write rates

Made in the USA and for FMF

Warranty

5 years (longer warranty period can be supported)

Ordering Information
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FFD-25-UATA-CCCCC-T-H

CCCCC: Unformatted capacity (MB)	1024, 2048, 4096, 6144, 8192, 12288, 16384, 20480, 24576, 28672, 32768, 36864, 40960, 45056, 49152, 53248, 57344, 61440, 65536, 69632, 73728, 77824, 81920, 86016, 90112.

T: Operating temperature range

    Blank - Commercial: 0°C to +70°C

    N - Enhanced: -25°C to +75°C

    X - Extended: -40°C to +85°C

H: Case Height (mm)

    A -   9.4mm up to 4.0GB

    B - 13.4mm up to 16.3GB

    C - 17.4mm up to 28.6GB

    D - 21.4mm up to 40.9GB

    F - 29.9mm up to 65.5GB

    H - 37.9mm up to 90.1GB

For additional information regarding FFD please contact ffd@m-systems.com

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