

TRRUST-Stor® SATA/NVMe Secure Solid State Drive (SSD)

Model: MSD01TAM6S-xxxl00-01 (SATA) NVA01TAM6S-xxxl00-02 (NVMe)

- 1 TB Secure SSD featuring 3D TLC flash technology
- -40 to +85°C operating temperature
- Designed and manufactured in a DMEA-trusted US facility
- Ideal for high-speed, heavy-duty read/write applications



PRELIMINARY*

Mercury Systems leverages its microelectronics packaging expertise to commercialize innovative solutions addressing the most challenging problems in the defense and avionics industries. The TRRUST-Stor® family of Secure Solid State Drives has been adopted by numerous military programs of record for air, land, and sea applications where security, data integrity, and physical ruggedization are mission-critical requirements that cannot be compromised.

The TRRUST-Stor 1 TB Secure SATA/NVMe SSDs utilizes the latest generation 3D TLC NAND flash memory technology to maximize storage capacity. As such, these drives are the ideal solution for applications demanding high-capacity, sustained high-speed operations.

Designed and manufactured in the United States, all TRRUST-Stor drives feature an Armor[®] controller developed by Mercury in its DMEA-trusted US facility. Unlike off-the-shelf ASIC-based controllers manufactured overseas for commercial and enterprise-grade SSDs, Mercury incorporates sophisticated security and performance algorithms optimized for the unique needs of defense applications, including:

- AES-256 encryption with XTS block cipher mode
- Industry's widest range of key management options, including: user controlled Boot image, randomly generated keys, user-filled permanent keys, BLACK key with KEK, ATA password option, or external key fill via DS-101.
- User-definable sanitization modes, ranging from TRRUST-Purge[®] (key purge) in <30ms to industry standard sanitization protocols
- Strong LDPC error correction code (ECC) and NAND overprovisioning to ensure stable long-term performance under sub-optimal operating conditions
- Optimized garbage collection algorithms to maximize write performance
- Robust power interruption solutions to prevent data loss or corruption



TRRUST-Stor SSD with Armor 4 Controller

* This product is under development, is not qualified or characterized and is subject to change without notice.

Mercury Systems is a leading commercial provider of secure sensor and safety-critical processing subsystems. Optimized for customer and mission success, Mercury's solutions power a wide variety of critical defense and intelligence programs.



^{**} Contact factory for details.

Features

1.3 TB raw capacity 1 TB user capacity (1 TB = 1,000,000,000,000 bytes) Commands: ATA-7, ATA-8 Media: 3D TLC in SLC mode (production) Form factor: 2.5" (100.45 \times 69.85 \times 9.5 mm) Voltage: 5V +/- 10%; 7W standby power (SATA) 12V \pm 15% 7W standby (NVMe) Operating temperature: -40° C to +85° C

Interfaces

DATASHEET

SATA at 1.5 GB/s, 3 Gb/s or 6 Gb/s NVMe 1.3, PCIe Gen3.0 x4 at 8 Gb/s

Performance

Sustained 128 Kbytes sequential reads and writes: Up to 540 MB/s SATA Up to 1 GB/s NVMe Reset-to-ready time: < 2s

Data Management and Protection

ECC: LDPC

UBER: 1e-18

Write endurance: 1.5 PB

Silent data corruption protection: Dual 32-bit CRC No forced EOL from firmware/controller availability Mean time between failures: >2,000,000 hours Operational stability during power interruptions SMART attributes (self-monitoring, analysis, and reporting technology)

Capacity x PE

Built-in self-test

Security

AES encryption with a 256-bit key with XTS BCM FIPS 197 Certified Encryption FIPS 140-2, CSFC (planned) Multiple Key management modes Isolated key fill port TRRUST-Purge® destroys key in less than 30 ms Hardware based erase in less than 10 seconds Industry Standard sanitization protocols US-made with full BOM and assembly control

Mechanical

100% dynamic factory burn-in Conformal Coating Operating shock: 1500 G, 0.5 ms, 1/2 sine, 6 shocks per axis 60 G, 11 ms, 1/2 sine, 6 shocks per axis Vibration: 22 Grms, Mil-STD-810F, method 514.5C-8, 15-2000 Hz, 3 axes (1 hrs each axis)

Additional Options

Extended burn-in OEM customization Ruggedized interface connectors Custom labeling

Environmental Specifications

Condition	Limits, standards	Comments
Operating temperature	-40° C to +85° C *	
Storage temperature	-40° C to +105° C *	non-condensing
Humidity	5% - 95%	non-condensing
Weight	129 gm	

*Data retention can diminish with extended storage or operations above 85° C.

Typical Applications

The Mercury TRRUST-Stor is ideal for critical applications, including:

- Storage Area Networks
- Surveillance
- Data recorders
- Field computers
- Digital map storage
- Communications systems

All design and manufacturing for the TRRUST-Stor is done in the U.S.A. in a trusted facility. Mercury has a long history as an industry-leading manufacturer of innovative, high-reliability data storage solutions.

Standard Model Numbers

MSD01TAM6S-000100-01 (SATA) NVA01TAM6S-000100-02 (NVMe)

Product Series -

- M = Mercury Systems, (TRRUST-Stor® standard series)
- A = Mercury Systems, (ASURRE-Stor® certified series)

Form Factor -

- SD = 2.5" SATA 9.5 mm
- S7 = 2.5'' SATA 7.0 mm (planned)

NAND Capacity -

01T = 1 TB Raw capacity, 800 GB host capacity

Encryption -

- A = AES-256 XTS
- N = No Encryption

Media Manufacturer

M = Standard Product

Media Type -

6 = TLC 3D NAND

Mode —

- S = SLC mode
- T = TLC mode

Customizable Features

- 0 = Standard product
- 1 = Electrically isolate (float) the enclosure from ground
- 2 = Hypertronics (Smith's Connectors) ruggedized SATA Connector
- 8 = Amphenol ruggedized SATA connector

Operating Temperature -

- I = Industrial (-40 °C to +85 °C)
- C = Commercial (0 °C to +70 °C)

Classification (Note: Must be ASURRE-Stor if selecting C or F options)

- 00 = Standard Product
- ES = Engineering Sample
- C = CSfC and FIPS-140-2 certified (planned)
- F = FIPS-140-2 certified (planned)

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Attribute Field

- 01	Construction: Interface Structure: Interface Type:	Lead Free (R) 1 Lane (1) SATA 6 Gb/s
- 02	Construction:	Lead Free (R)

Interface Structure: 4 Lane (4) Interface Type: NVMe (NV)

Example part Number: MSD01TAM6S-000I00-01 (SATA, NAND, 1TB, SLC mode)

<u>x xx 01T A M 6 x - xxx x xx - aa</u>

Need More Help? Need a Variant of This Product?

Contact Mercury's Secure SSD application engineering team at secure.ssd@mrcy.com





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