

# Secure Solid State Drives (SSD)

## Mercury TRRUST-Stor<sup>®</sup> MissionPak



**7-pin Model:** MMRxxxAM6S-000lxx-01 (SATA SLC mode)  
MMRxxxAM6T-000lxx-01 (SATA TLC mode)<sup>4</sup>

**19-pin Model:** MMSxxxAM6x-000lxx-01, (SATA, Short)<sup>4</sup>  
MMSxxxAM6x-000lxx-02, (NVMe, 1-Lane, Short)<sup>4</sup>  
MMLxxxAM6x-000lxx-03, (NVMe, 2-Lane, Long)<sup>4</sup>



- Engineered to CSfC, FIPS 140-2, and Common Criteria (CC) requirements (Planned)
- SATA and NVMe models
- Supports all popular military sanitized protocols plus self-destruct
- AES-256 XTS encryption with user fillable keys
- Heavily ruggedized, water-resistant form-factor



ADVANCED\*

The Mercury TRRUST-Stor MissionPak SSD series expands the concept of hand-held storage to new frontiers by integrating the latest generation Armor™ NAND processor with AES-256 XTS encryption, multiple key management modes, DS-101 key fill, and self-destruct capability into an ergonomically packaged water-resistant form-factor designed for ease of use in harsh, possibly insecure environments.

Featuring the latest generation 3D NAND, TRRUST-Stor MissionPak is available in extended capacity TLC models and extended-life SLC-mode models. It includes the security and certifications of the popular ASURRE-Stor<sup>®</sup> SSD, in a heavily ruggedized, water-resistant ultra-portable form-factor. With options for either SATA or NVMe, TRRUST-Stor MissionPak is the perfect choice for mission critical applications where reliability, security, and ruggedization are the key to mission success.

### Features

- Single 3.3 to 5.5 V ± 5% supply
- Designed and manufactured in the secure DMEA-accredited facility
- Mercury proprietary Armor 4 NAND processor
- Third generation 3D NAND flash technology.
  - TLC models (extended capacity) and SLC models (extended-life)
- Host usable capacity<sup>1</sup>
  - SLC model: 128, 256, 512\*\* GB
  - TLC model: 384, 768, 1536\*\* GB

\*\*Long form factor only
- Write Endurance:  $1.5 \text{ PB} \left( \frac{\text{Capacity} \times \text{PE}}{4} \right)$  PE = Program Erase

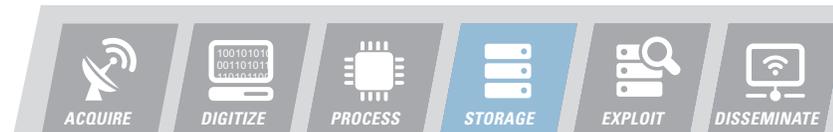
- Total Bytes Written (TBW)<sup>2</sup>
  - 7.7 PB (512 GB SLC mode)
  - 3.8 PB (1536 GB TLC mode)
- FIPS 140-2 and CSfC certified models F and C suffix<sup>4</sup>
  - Compliant to the NIAP EE and AA protection profiles
  - User and Crypto Officer Roles
- Multiple key management modes including user TRRUST-Boot secure boot image
- AES Key-Flipper technology eliminates key burn-in
- Fast Clear: Less than 10 seconds
- SKL and CYZ-10 compatible (19-pin model)
- Sequential Read/Write performance:<sup>3</sup>
  - SATA: Up to 300 MB/s
  - NVMe: Up to 1000 MB/s
- Ultra-strong LDPC Hard/Soft Error Correction
- UBER (Uncorrectable Bit Error Rate): 10<sup>-18</sup>
- Ruggedized water-resistant potted enclosure (non-potted optional)
- Hot Swap capable
- MTBF: 2 million hours @ 25 °C, Telcordia

### NOTES:

1. One Gigabyte (GB) = 1,000,000,000 bytes.  
100 MB/s = 100,000,000 bytes per second.
2. Data retention may diminish with extended storage or operation at temperatures above 70 °C. Operation at 85 °C requires maintaining Tcase at 85 °C or less.
3. Performance values based on 128 KiB sequential transfers, largest capacity model, and empty drive.
4. Planned

\*This product is under development, is not qualified or characterized and is subject to change or cancellation 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.



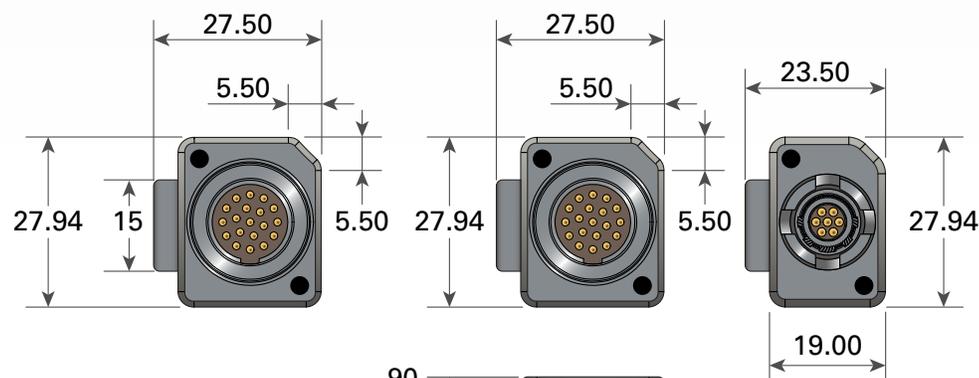
## Mechanical

- Vibration: 40.0 Grms, 15-2000 Hz, 3 axes, 6 hrs
- Operating shock: 3000 G, 0.5 ms, 1/2 sine  
100 G, 11 ms, 1/2 sine
- Operating Temperature: -40 °C to +85 °C<sup>3</sup>  
Boot Holdoff from -55 °C to -40 °C
- Storage Temperature: -55 °C to +105 °C<sup>3</sup>
- Humidity: 100% condensing. Water immersion to 2 feet for 10 minutes.
- Altitude: 80,000 feet
- Weight: 80 grams (short from factor)

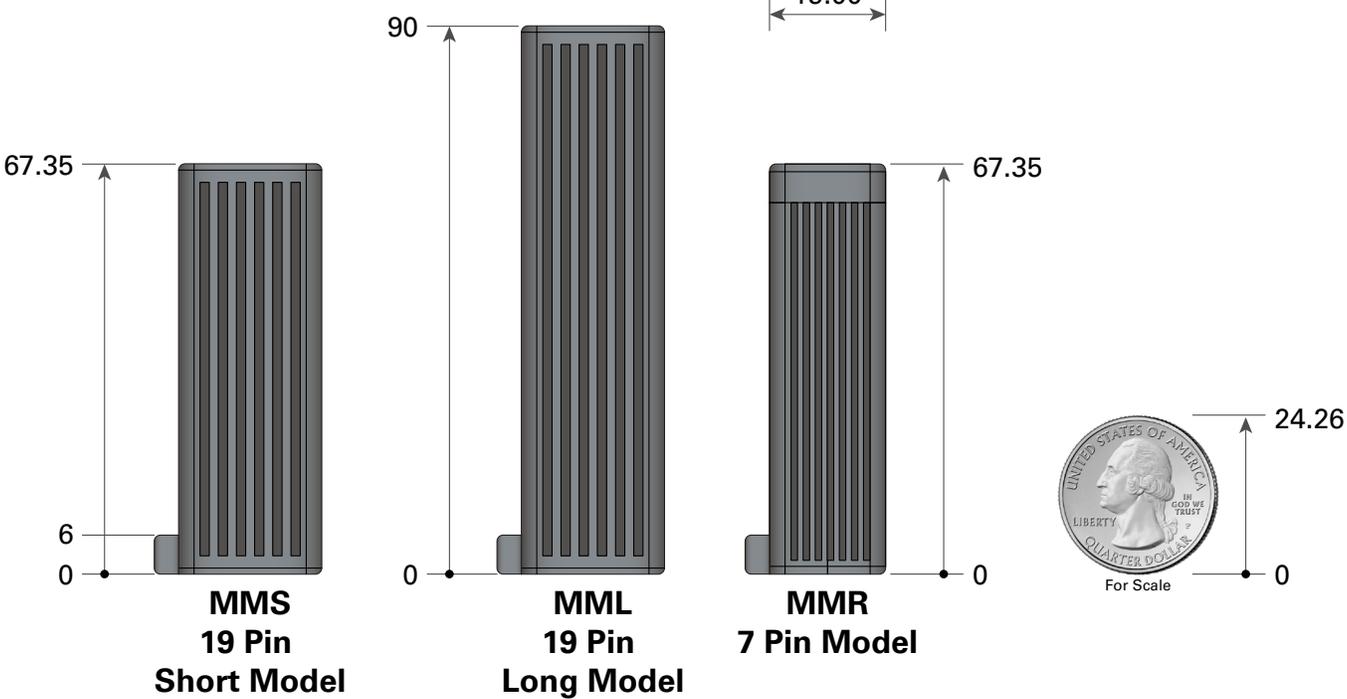
## Typical Applications



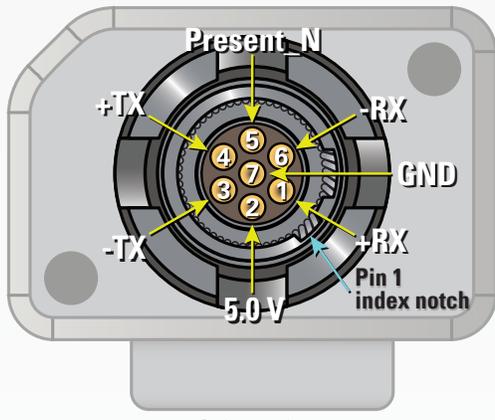
## Product Dimensions (in millimeters)



The host side "plug" connector is available from [Spacecraft Connectors Corp. KwikSnap Series \(SCTAC\)](http://Spacecraft Connectors Corp. KwikSnap Series (SCTAC)).



## MMR – 7 Pin Model



Pinout on 7 pin Receptacle  
 TX pin names are outputs from MissionPak  
 RX pin names are inputs to MissionPak

### 7 Pin Description

| Pin #       | 1   | 2    | 3   | 4   | 5         | 6   | 7   |
|-------------|-----|------|-----|-----|-----------|-----|-----|
| Description | +RX | 5.0V | -TX | +TX | Present_N | -RX | GND |

## MML, MMS – 19 Pin Model



Pinout on 19 pin Receptacle  
 TX pin names are outputs from MissionPak  
 RX pin names are inputs to MissionPak

### 19 Pin Description

|             |           |           |           |       |           |
|-------------|-----------|-----------|-----------|-------|-----------|
| Pin #       | 1         | 2         | 3         | 4     | 5         |
| Description | +TX1      | -TX1      | GND       | +RX1  | -RX1      |
| Pin #       | 6         | 7         | 8         | 9     | 10        |
| Description | GND       | -TX2/LED1 | +TX2/LED2 | GND   | +RX2/LED3 |
| Pin #       | 11        | 12        | 13        | 14    | 15        |
| Description | +RX2/LED4 | Vb/Auth   | +5.0V     | +5.0V | +DS-101   |
| Pin #       | 16        | 17        | 18        | 19    |           |
| Description | -DS-101   | 232-TX    | 232-RX    | ETRIG |           |

Part Numbering *(dashes in the part number are required)*

X XX xxx X M x m - 123 I xx - aa

**Product Series**

- M = TRRUST-Stor® series, standard model without FIPS 140-2, Common Criteria or CSfC certifications
- A = \*ASURRE-Stor® certified series with FIPS 140-2, and Common Criteria certifications. Eligible for use in CSfC 2-layer encryption solutions upon certification

**Form Factor**

- MR = MissionPak (SATA, 7-Pin Short Model)
- ML = MissionPak (SATA/NVMe, 19-Pin Long Model)\*
- MS = MissionPak (SATA/NVMe, 19-Pin Short Model)\*

**NAND (Capacity available to Host)**

- xxx = 128, 256, 512\* GB SLC mode; 384, 768, 1536\* GB TLC mode
- \*Long form factor only

**Encryption Type**

- A = AES-256 XTS                      V = SuiteA (Sponsored)
- Q = Post Quantum\*                  N = No Encryption

**Media**

- M = Standard product

**Media Type**

- 2 = 1-bit SLC NAND, 32Gb      6 = 3-bit TLC 3D NAND

**Operating Mode**

- S = SLC mode                      T = TLC mode

**Customizable Features fields One, Two and Three**

- G00 = Standard product, gray      B00 = Standard product, black      G10 = gray, non-potted      B10 = black, non-potted

**Operating Temperature**

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

**Classification**

- ES = Engineering Sample                      F = \*FIPS-140-2 certified
- C = \*CC and FIPS-140-2 certified; CSfC component listed upon qualification      00 = Standard product

**Attributes**

- |      |                                  |      |                                  |          |
|------|----------------------------------|------|----------------------------------|----------|
| - 01 | Construction: Lead Free (R)      | - 03 | *Construction: Lead Free (R)     | *Planned |
|      | Interface Structure: 1 Lane (1)  |      | Interface Structure: 2 Lane (2)  |          |
|      | Interface Type: SATA 6 Gb/s (SA) |      | Interface Type: NVME (NV)        |          |
| - 02 | *Construction: Lead Free (R)     | - 04 | *Construction: Leaded BGAs (L)   |          |
|      | Interface Structure: 1 Lane (1)  |      | Interface Structure: 1 Lane (1)  |          |
|      | Interface Type: NVME (NV)        |      | Interface Type: SATA 6 Gb/s (SA) |          |

Example part Number: MML512AM6S-G00I00-01 (TRRUST-Stor SATA, Long, 512 GB, SLC, Gray)  
 AMR256AM6S-B00IC-01 (ASURRE-Stor SATA, Short, 256 GB, SLC, Black, CSfC)

**Need More Help?**  
**Need a Variant of This Product?**

Contact Mercury's Secure SSD application engineering team at [secure.ssd@mrcy.com](mailto:secure.ssd@mrcy.com)

|   |  |  |   |
|---|--|--|---|
|  |                       |  |  |
| Download our<br>Secure SSD Tech Brief   | Download our<br>Demystifying Hardware<br>Full Disk Encryption<br>Technology for Military<br>Data Storage | Download our<br>Safeguarding Mission<br>Critical Data Whitepaper                     | Download our<br>Microelectronics<br>Quick Reference Guide                             |

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