

# TRRUST-Stor<sup>®</sup> VPX RT

## Radiation-Tolerant Large Geometry SLC NAND SpaceDrive

Models RH3440NM2S-000I00-01 (EDU)  
RH3440NM2S-000I00-02 (FLT)



- Innovative Mercury SpaceDrive NAND controller
- 3U SpaceVPX form-factor
- Radiation-tolerant solid state storage
- 440 GB large geometry SLC NAND
- ECC and spare mitigation for bit errors and failing devices



IN DEVELOPMENT\*

Mercury's TRRUST-Stor series of radiation-tolerant solid state drives represent the world's first commercially available, customizable SSDs precision-engineered for the harshest operating environments on earth and beyond. Although designed for commercial satellite applications, these blazingly fast, high reliability drives are a perfect fit for applications with potential for radiation exposure, including high-altitude aircraft, airborne weapons and mission-critical ground computing systems.

The TRRUST-Stor RH3440 includes advanced error correction algorithms paired with large geometry industrial-grade Single-Level Cell (SLC) NAND flash memory. Designed for fault-tolerance with multiple failed NAND flash devices, the RH3440 offers long-term data integrity for applications where device repair or replacement is cost-prohibitive. Recognizing that no two mission requirements are identical, power consumption, ECC, capacity and spare devices are tunable against performance to create the perfect set of features as required by each unique mission.

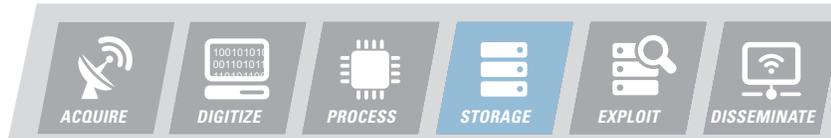
### Standard Features

- All devices except the large geometry SLC NAND: Radiation tolerant to 100K rad
  - NAND flash 30K rad minimum
- 3U SpaceVPX form factor
- Performance:
  - 1160 MB/s SRIO (8000 Mbits/sec)
  - Options for lower power, lower speed operation
- Smiths connectors: KUPX series

- Operating mode: Data recorder
  - Write, read, erase, repeat
  - Sequential writes only
  - Random reads, any time
- Capacity to host:
  - 440 GB
  - Host capacity is constant over entire life
- Error correction:
  - Ultra strong horizontal reed Solomon ECC algorithm
  - Corrects bit errors, defects and several failing devices
  - Extends NAND endurance
  - Automatically replaces worn out blocks with spare blocks
- Bad block table:
  - Supports field upgrades
- Multi-device defect mitigation
- Radiation-tolerant design: RTG4-based NAND processor
  - Configuration upsets immunity to LET > 103 MeV.cm<sup>2</sup>/mg
  - Single-event latch-up (SEL) immunity to LET > 103 MeV.cm<sup>2</sup>/mg
  - Registers SEU rate < 10<sup>-12</sup> errors/bit-day (GEO Solar Min)
  - Single-event transient (SET) upset rate < 10<sup>-8</sup> errors/bit-day (GEO Solar Min)
  - Total ionizing dose (TID) > 100 Krad
- NAND endurance:
  - Minimum 50,000 drive over writes
  - Up to 15 drive over-writes/day for 7 years
  - 26 PB minimum
  - Minimum 6 month retention at EOL
- Reliability:
  - Microprocessor-free design
  - State machine driven, no software
  - Automatic block retirement
  - Abrupt power interruption protection
  - Corruption free design
  - UBER: Better than 1E-19

\* This product is under development, 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.

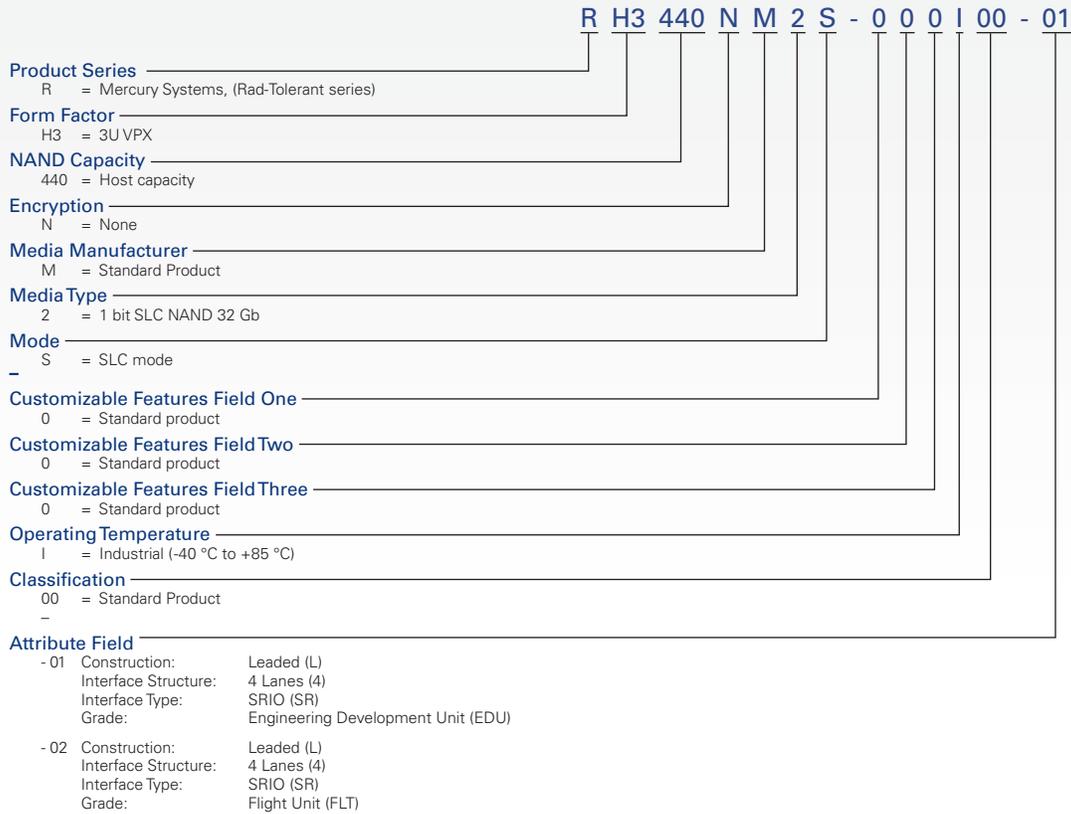


- Erase operation: < 30 seconds
- Status data:
  - All voltages
  - 1 temperature sensors
  - Spares remaining
  - Erase cycle count
- 100% dynamic burn-in
- Ruggedized construction and assembly
- Rail temperature: -40 °C to +75 °C
- Storage temperature: -55 °C to +105 °C
- Vibration: 3 axis 15 min/axis
  - Random: 10-2000 Hz, 0.16 G<sup>2</sup>/Hz
  - Sine: 15 Grms, 10-2000 Hz
- Shock: (3+, 3- per axis) 18 total
  - 15 G, 40 ms, ½ sine
  - 100 G, 6 ms, ½ sine
- Weight: < 500 grams
- Power: 12V (50mA) and 5V
- BOM, schematics and design document available on request

**Applications include:**

- Low Earth Orbit Satellites (LEO); Contact Mercury for other orbit solutions
  - Missiles
  - Launch vehicles
  - Scientific payloads
  - Terrestrial applications with radiation exposure

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



Example part Number: RH3440NM2S-000I00-01 (EDU)

**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)



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**CORPORATE HEADQUARTERS**  
50 Minuteman Road  
Andover, MA 01810-1008 USA  
+1 (978) 967-1401  
+1 (866) 627-6951  
Fax +1 (978) 256-3599

**MICROELECTRONIC SECURE SOLUTIONS**  
3601 East University Drive  
Phoenix, AZ 85034-7217 USA  
+1 (602) 437-1520  
Fax +1 (602) 437-1731

