



SMART RUGGED™

T5EN | PCIe/NVMe U.2 and M.2

SMART's RUGGED™ T5EN U.2 and M.2 2280 PCIe/NVMe Gen3x4 solid state drives (SSDs) deliver high performance, high capacity storage solutions optimized for defense, aerospace and other applications requiring durable, rugged and secure storage.

Powered by a flexible, custom flash controller, T5EN SSDs provide sustained read/write performance to meet the needs of high throughput applications such as flight data recorders and sensor data capture. T5EN SSDs are also well suited for high-reliability telemetry, surveillance, and mission critical applications.

T5EN U.2 SSDs provide capacities up to 7680GB and the M.2 up to 3840GB. Both have pSLC options of storage using 3D TLC Nand Flash. They are more reliable, offer superior performance, and require less power and cooling than traditional hard disk drives (HDDs). Contains pFail protection.

Features & Benefits

- AES-XTS 256-bit encryption automatically protects all data written to the drive
- OPAL 2.0 compliant
- True industrial grade storage solution for “no-compromise” applications
- Advanced flash management for enhanced reliability and durability
- Self-Monitoring Analysis and Reporting Technology (S.M.A.R.T.) support
- 100% 8 hour burn-in over Temperature (-40°C to +85°C, I-Temp Version)
- SafeDATA™ technology is a standard feature that safeguards the integrity, functionality and data of the SSD in the event of sudden power loss

Product Family Overview

| Capacity | Sequential Performance | Random Performance |
|-----------------|---|---|
| 960GB to 7680GB | Up to 3200 MB/s Read Up to 1600 MB/s Write | 310,000 IOPS Read 245,000 IOPS Write |

One gigabyte, or GB, equals one billion bytes when referring to drive capacity. Accessible capacity may vary based on the operating environment and drive formatting



Applications

- Defense
- Aerospace
- Flight Data Recorders
- Sensor Capture
- Telemetry
- Surveillance

Specifications

| | U.2 PCIe/NVMe |
|------------------------|---|
| NAND Type | TLC |
| Compliance | |
| PCIe | Gen 3 x 4 |
| NCQ: | Up to 32 Queue Depth |
| Performance | |
| Sequential | Up to 3,200 MB/s Read Up to 1,600 MB/s Write |
| Random | Up to 310,000 IOPs Read Up to 245,000 IOPs Write |
| Capacity | |
| 3D-TLC ¹ | U.2: 960GB, 1920GB, 3840GB, 7680GB M.2 TLC: 480GB, 960GB, 1920GB, 3840GB |
| pSLC | U.2: 320GB, 640GB, 1280GB, 2560GB M.2: 160GB, 320GB, 640GB, 1280GB |
| Reliability | |
| MTBF ² | > 2M hours, Telcordia 25°C |
| Data Reliability | 1 in 10 ¹⁷ bits read |
| Data Retention | > 10 years @ 25°C |
| Endurance ³ | TLC: 625 Total Drive Writes pSLC: 6,250 Total Drive Writes |
| Warranty | 1 Year |
| Power | |
| Input Voltage | U.2: 12.0V +/- 5% M.2: 3.3V ± 5% |
| Idle (typical) | < 1.5 W |
| Operational (typical) | < 9.0 W |
| Environmental | |
| Operating Shock | 50G, (11ms duration, half sine wave) |
| Vibration | 10G(Peak, 10~2000Hz) |
| Altitude | 24,384m [80,000 ft.] |
| Relative Humidity | 5% to 95% non-condensing |
| Conformal Coating | Optional |
| Operating Temp | Industrial (-40° C to 85° C) ^{4,5} |
| Storage Temp | -55° C to 90° C |
| Mechanical | |
| Length | 100mm |
| Width | 69.85mm |
| Height | 7mm |
| Connector | U.2 |

- (1) One gigabyte, or GB, equals one billion bytes when referring to drive capacity. Accessible capacity may vary based on the operating environment and drive formatting
- (2) Based on 480GB drive
- (3) Under typical conditions
- (4) 7680GB TLC and 2560GB pSLC models may have limitations in certain cross-temp applications
- (5) The operating environment for U.2: 7680 GB TLC, 2560 GB pSLC models is limited to -20°C – 85°

Data Security Features

| | U.2 PCIe/NVMe |
|-------------|---|
| Encryption | AES-XTS 256-bit (FIPS 197 compliant) |
| Elimination | ATA-8 Security Erase DoD NISPOM 5220.22-M DoD NISPOM 5220.22-M-Sup 1 NSA/CSS Manual 130-2 NSA/CSS Manual 9-12 Army AR 380-19 Navy NAVSO P-5239-26 Air Force AFSSI-5020 External trigger |

U.2 Ordering Information

| Part Number | Density |
|-------------------------------|---------|
| I-Temp TLC | |
| HRCN7P7680ME001* ⁵ | 7680GB |
| HRCN7P3840HI001* | 3840GB |
| HRCN7P1920HI001* | 1920GB |
| HRCN7P0960HI001* | 960GB |
| HRCN7P0480HI001* | 480GB |
| I-Temp pSLC | |
| HRCN7P2560PE001* ⁵ | 2560GB |
| HRCN7P1280JI001* | 1280GB |
| HRCN7P0640JI001* | 640GB |
| HRCN7P0320JI001* | 320GB |
| HRCN7P0160JI001* | 160GB |

*Conformal Coat Option Replace "001" with "CC1"

M.2 2280 Ordering Information

| Part Number | Density |
|--------------------|---------|
| I-Temp TLC | |
| HRCN3P3840MI001* | 3840GB |
| HRCN3P1920HI001* | 1920GB |
| HRCN3P0960HI001* | 960GB |
| HRCN3P0480HI001* | 480GB |
| I-Temp pSLC | |
| HRCN3P1280PI001* | 1280GB |
| HRCN3P0640JI001* | 640GB |
| HRCN3P0320JI001* | 320GB |
| HRCN3P0160JI001* | 160GB |

*Conformal Coat Option Replace "001" with "CC1"



For more information, please visit: www.smartm.com

*Product images are for promotional purposes only. Labels may not be representative of the actual product.

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