

# HRS-M1HC SATA SSD

SMART High Reliability Solutions™ M1HC 2.5" SATA solid state drives (SSDs) is one of the most data-protected and secure SSDs available. Its ruggedized design is built to withstand 1000g, 0.5 ms of operating shock. The M1HC is also built to operate over 30,000 m of altitude, or 100,000 ft. Its superior reliability is proven with 1 in 10<sup>15</sup> bits read and over 10 years of built-in data retention. Engineers designing for high-capacity, highly secure, military applications will want to consider the M1HC as part of their project. Utilizing a fast SATA 6Gb/s interface, the M1HC delivers 520MB/s sequential read and 500MB/s sequential write speeds, up to 70,000 random read IOPS and up to 70,000 random write IOPS. Capacities of 1, 2, 4, and 8 Terabytes are available using cost effective multi-level cell (MLC) NAND Flash. A robust set of diagnostic tools is provided through SSD-specific S.M.A.R.T attributes which can be used to monitor the health of the drive.

## Data Security

The M1HC SSD provides some of the most comprehensive security features available. It automatically protects all user data written with an AES 256-bit encryption that is FIPS 197 certified. It implements military security procedures such as NSA 9-12, AR 380-19, NAVSO P-5239-26, and AFFSI-5020 for ground forces, naval and air protection needs. Also included are TCG/Opal 2.0 Compliance, Sanitize Device feature set, and the Security feature set per the ATA-8 specification, including deleting the encryption key in less than 10 milliseconds.

## Write Termination

When the SSD has too many bad blocks, the M1HC enters Write Termination mode, whereby no more data can be written.

## Features

- ▶ High capacity, 1, 2, 4, and 8 TB
- ▶ High Random and Sequential I/O Performance
- ▶ Cost-Effective MLC Flash
- ▶ Ruggedized Enclosure (Shock, Vibration)
- ▶ Write Termination
- ▶ Adaptive Thermal Protection
- ▶ Static and Dynamic Wear Leveling
- ▶ Firmware Updatable
- ▶ Low Power Management
- ▶ Ideal for High and Low Temperature Applications
- ▶ S.M.A.R.T. Attributes to Monitor Drive Health
- ▶ AES 256-bit Encryption to automatically Protect all Data Written to the Drive
- ▶ TCG/Opal 2.0 Compliant

## HRS-M1HC SATA Product Family

Capacity	Sustained Performance	Random Performance
1TB, 8TB	480MB/s Read 420MB/s Write	40,000 IOPS Read 40,000 IOPS Write
2TB, 4TB	480MB/s Read 480MB/s Write	44,000 IOPS Read 77,000 IOPS Write



HRS-M1HC

## HRS-M1HC SATA Specifications

2.5" SATA	
<b>Performance</b>	
Burst	600MB/s
Sequential	480MB/s Read, 480MB/s Write <sup>1</sup>
Random	IOPS Read 44,000 <sup>1</sup> IOPS Write 77,000 <sup>1</sup>
Interface	SATA 6 Gb/s
<b>Capacity</b>	
MLC	1, 2, 4, 8TB
<b>Reliability</b>	
MTBF	1.5M hours
Power Loss Protection	Fast Flush of Cached Data
Endurance	250TB Written on 8TB capacity <sup>2</sup>
Data Retention	12 months @ 30°C
Warranty	1 Year
<b>Data Security</b>	
Encryption	AES 256-bit
Elimination	ATA-8 Security Erase and Military Procedures
<b>Power</b>	
Input Voltage	5 V +/-10%
Idle (typ)	1.8 W
Active Read/Write (typ)	3.1 / 5.2 W
<b>Environmental</b>	
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 95°C
Operating Shock, Acceleration Force	1000 g half-sine, 0.5 ms
Operating Vibration, Freq/Displacement	16.3 g rms, 10-2,000Hz
Operating Vibration, Freq/Acceleration	80Hz/20g
Operating Vibration Orientation	X, Y, Z axis/60 min for each
Relative Humidity	95% under 55°C (operational)
Altitude	30,480m (100,000 ft)
<b>Mechanical</b>	
Length	100.00mm
Width	69.85mm
Height	7mm (1, 2, 4TB) 9.5mm (8TB)

(1) Typical I/O performance numbers as measured fresh-out-of-the-box (FOB) using Iometer with a queue depth of 32

(2) Based on full sustained 4KB random write workload (1TB, 2TB) and full sustained 128K random write workload (4TB, 8TB)

## HRS-M1HC SATA Ordering Information

Part Number	Capacity (TB)
HR8A2P001TDI001	1
HR8A2P002TDI001	2
HR8A2P004TDI001	4
HR8A2P008TDI001	8

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