# mercury

# RH3480 Solid-State Data Recorder 3U SRIO VPX Radiation Tolerant SSDR

Compact, high performance solution for radiation intense environments

- Proven reliability to enable on-orbit sensor data processing and storage
- High-performance system efficiently transfers significantly more data in less time
- Application-specific customization expedites schedules and minimizes full-system design costs
- Built-in error correction and NAND mitigates defects



The RH3480 SSDR is purpose-built to withstand harsh, radiation intense environments such as those found in LEO satellites and in certain industrial or medical settings. Designed in a compact 3U form factor, the RH3480 is the highest density SSDR available on the market, serving industry needs for reliable, SWaP-optimized storage solutions as edge applications advance. Plus, the RH3480 offers long-term data integrity with the most powerful error correction code (ECC) available.

## **FEATURES**

480 GB large geometry, industrial-grade SLC NAND flash memory

Dual-host (1 host with 8 lanes) and dual port (2 hosts with 4 lanes each) options

All components radiation tolerant by design (except NAND) at > 100 krad

Proprietary horizontal Reed-Solomon algorithm for error correction

Designed for fault tolerance with multiple failed NAND flash devices

VPX compatible, VITA 48.2 compliant, P2 unpopulated

Ruggedized construction and assembly

# Performance

SRIO at 3.125 GB/s Dual port writes 18.4 GB/s, reads 16 GB/s Dual host writes 9.2 GB/s, reads 8 GB/s

#### Package

3U form factor, 160 mm or 220 mm size, 1" pitch

Weighs < 750 grams

Microprocessor and software free 480 GB guaranteed across life

## **Operation and Reliability**

Linear and host-addressable operating modes

ECC fully corrects 5 in every 16 host data bytes

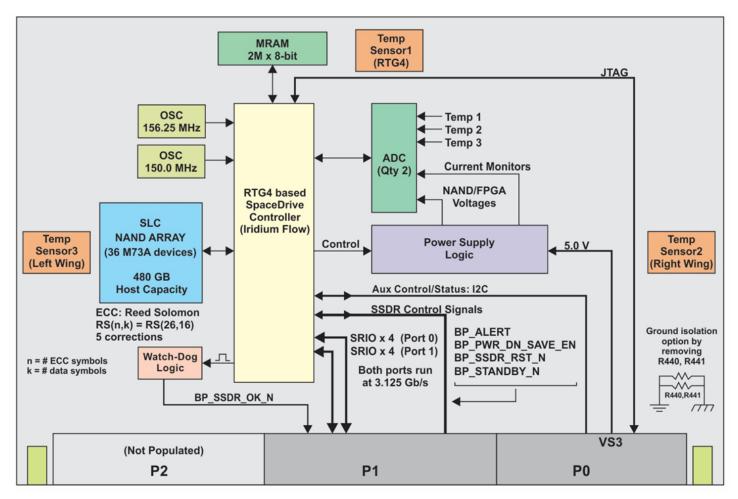
Automatic retirement of failed blocks

Abrupt power interruption protection

NAND defect mitigation for factory defects and bad blocks discovered during burn-in

Hot-swap device

Full drive erase in < 30 seconds 5V power



18 Gb/s twin port SRIO 3U SSDR configuration

#### Applications

LEO satellites

Nuclear industry

Medical industry

High-altitude aircraft

Airborne weapons

Mission-critical ground computing subsystems

Missiles

Launch vehicles

Scientific missions

## **Radiation Tolerance**

Total ionizing dose (TID) > 100 krad (all components except NAND)

SLC NAND TID > 30 krad

## RTG-4-based NAND processor and controller

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 < 10-12 errors/ bit-day (GEO solar min)

Single-event transient (SET) upset rate < 10-8 errors/bit-day (GEO solar min)

TID > 100 krad

#### Environmental

Operating temperature: -40°C to 72°C Storage temperature: -55°C to 105°C Vibration: 3 axis, 16 Grms Shock: 18 total (3+, 3- per axis)

mercury

## **VPX Connectors**

Smith's KVPX series TE connectivity multigig RT 2-R series

#### mrcy.com



# PART NUMBERING

Note: Dashes in part number are required

		F	R H3	480	N	Μ	2 8	5 - 1	0 0	0	I X	Х-	- OX
1.	Product Series, R = Mercury Systems, radiation tolerant												
2.	Form Factor, H3 = PCB uses a 3X form factor												
3.	Host Capacity, 480 = 480 GB of host accessible capacity												
4.	Encryption, N = No encryption												
5.	Media Manufacturer, M= Micron												
6.	Media Type, 2 = 1-Bit SLC NAND, 32-GBit M73A die						]						
7.	Media Operating Mode, S = SLC mode												
8.	Customizable Features 1 O = Digital ground isolated from chassis/enclosure ground (preferred) 1 = Digital ground connected to chassis/enclosure ground								]				
9.	Customizable Features 2 (VPX levered form factor) 0 = 3U 160 mm, 1 = 6U 160 mm, 2 = 3U 220 mm, 3 = 6U 220 mm Contact sales for other form factors: 280 mm, 340 mm, and leverless												
10.	Customizable Features 3												
11.	Operating Temperature, I = Industrial grade components												
12.	Design Generation Data, 12 = Generation 1 design derivation												
13.	Attribute Data												

	<b>Construction</b>	Interface Structure	Interface Type	Grade			
-01	Leaded(L)	8 Lanes (8)	SRIO(SR)	Eng Dev Unit (EDU)			
-02	Leaded(L)	8 Lanes (8)	SRIO(SR)	Flight Unit (FLT)			
-05	Leaded(L)	4 Lanes Host 1 & 2 (DH4)	SRIO(SR)	Eng Dev Unit (EDU)			
-06	Leaded(L)	4 Lanes Host 1 & 2 (DH4)	SRIO(SR)	Flight Unit (FLT)			

Example Part Number: RH3480NM2S-000I12-01 (480 GB EDU with isolated ground and Smith's connectors)



#### **Corporate Headquarters**

50 Minuteman Road Andover, MA 01810 USA +1 978.967.1401 tel +1 866.627.6951 tel +1 978.256.3599 fax

## International Headquarters Mercury International

Avenue Eugène-Lance, 38 PO Box 584 CH-1212 Grand-Lancy 1 Geneva, Switzerland +4122 884 5100 tel Learn more Visit: mrcy.com



The Mercury Systems logo and the following are trademarks or registered trademarks of Mercury Systems, Inc.: Mercury Systems, Innovation That Matters, and BuiltSECURE. Other marks used herein may be trademarks or registered trademarks of their respective holders. Mercury believes this information is accurate as of its publication date and is not responsible for any inadvertent errors. The information contained herein is subject to change without notice.



© 2021 Mercury Systems, Inc. 5056.09E\_0521\_RH3480 3U VPX SRI0 SSDR