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

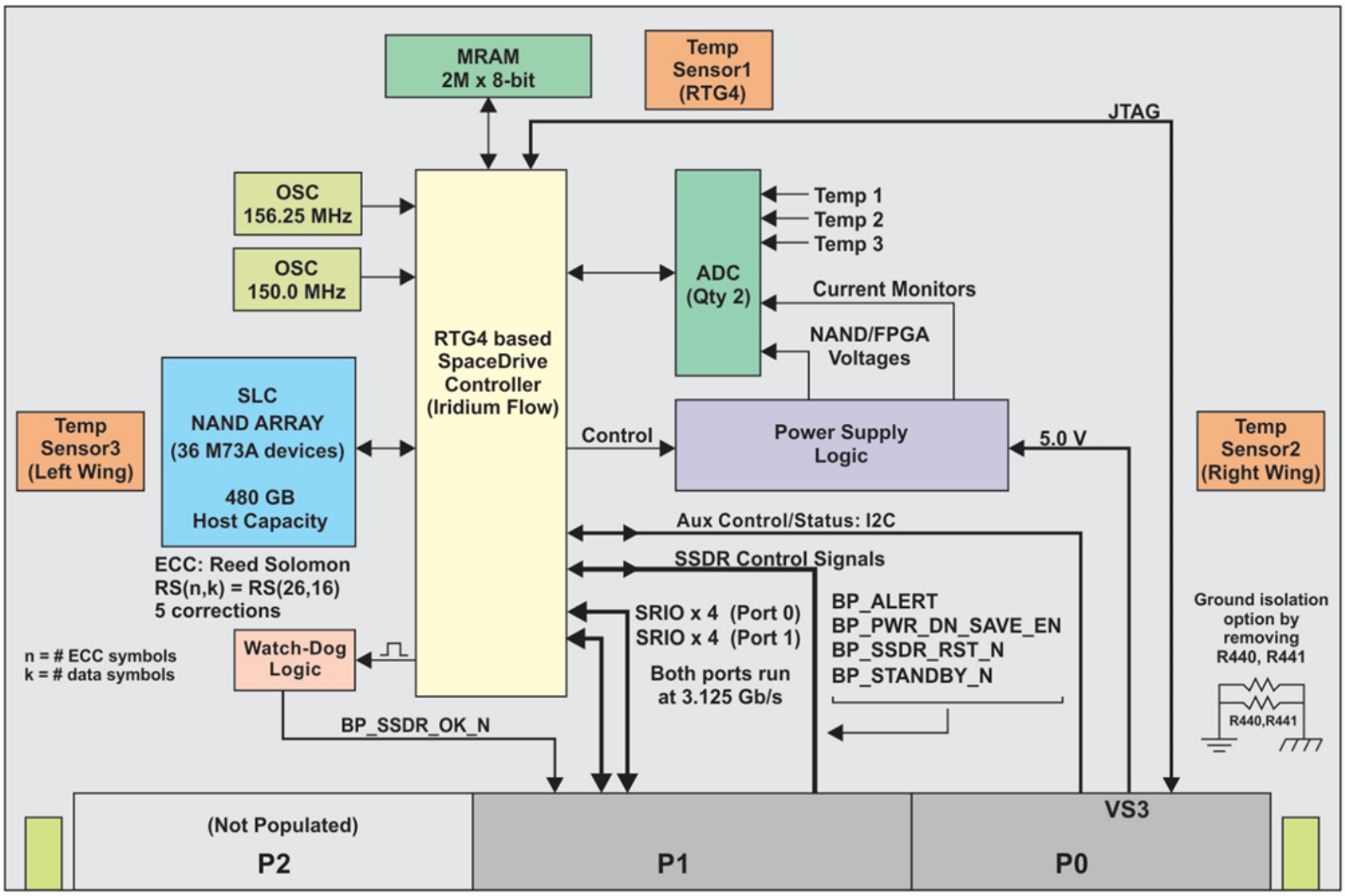
Abrupt power interruption protection

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^2/mg

Single-event latch-up (SEL) immunity to LET > 103 MeV.cm^2/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)

VPX Connectors

Smith's KVPX series

TE connectivity multigig RT 2-R series

PART NUMBERING

Note: Dashes in part number are required

R H3 480 N M 2 S - 0 0 0 I XX - 0X

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
   0 = 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
    0 = Smith's VPX connectors, 1 = TE connectivity multigig RT 2-R VPX connectors
11. Operating Temperature, I = Industrial grade components
12. Design Generation Data, 12 = Generation 1 design derivation
13. Attribute Data

	Construction	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)

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