

# Portable & Rugged RAID

# Series RU5

## 5 TB Compact RAID for Harsh Environments

Now you can take your demanding enterprise data-intensive application on the road! RU5 is a lightweight portable RAID subsystem built to extreme military standards to withstand any harsh field environment. It's easy to deploy: simply plug and play with any host having an Ultra320 SCSI adapter port. Ideal for transportable ground, ship-board or airborne data applications for emergency, military, police, oil exploration, mining, field studios, mapping, video, data acquisition and field data analysis.

### Portable & Rugged RU5

#### Transportable

- Compact and lightweight - 23 pounds
- Large recessed handle with rubber grip
- Can be stacked two high

#### Ruggedization

- MIL-STD-810E, 461D, 1472F
- Operates from 0° to 120°F
- Thumbscrew lock-down drive carriers
- Robust aluminum chassis and cage
- Redundant ultra-quiet fans
- EMI shielded, gaskets and line filter
- Front and rear serviceable dust filters

#### Performance

- Embedded hardware RAID controller
- High speed hardware ASIC parity engine
- 1 Ultra320 SCSI host channel, 320 MB/s
- 5 SATA drive channels, 300 MB/s each
- Up to 24,000 disk I/Os per second
- 128 MB cache with ECC

#### Capacity

- Five disks per enclosure
- 500 GB, 750 GB, 1 TB per disk drive
- Up to 5 TB with 1 TB disk drives
- On-line automatic capacity expansion
- Cascade two systems scalable to 10 TB

#### Reliability

- Hot-swap disk drives
- RAID 1, 3, 5, 6, 1+0, 15 protection
- Hot-spare on-line drive rebuild
- Remote diagnostic capability
- Individual drive thumbscrews and IDs
- Failure alarm -- visual/audible/remote
- 1.2 million hour MTBF drives
- 24x7 call center

#### Compatibility

- Any host with Ultra320 SCSI port
- Windows, Vista, Mac OS X, Linux
- No software drivers required on host

### Ruggedization

RU5 is designed to meet MIL-STD-810-E for environmental compliance and MIL-STD-461-D for Electromagnetic Interference (EMI). The solid seam welded sturdy aluminum construction throughout is designed to withstand very vigorous handling. The hinged front door is secured with two thumbscrews and provides easy access to the "hot-swap" drive carriers.

Individual drive lockdown thumbscrews secure each drive to the chassis to minimize vibration avoiding potential read/write errors. With this sturdy protection, RU5 has been deployed by the military at hundreds of installations worldwide with field proven reliability and performance.

### RAID Data Protection

RU5 is typically configured as a RAID 5 array with single parity, RAID 6 array with dual parity or as RAID 1+0 arrays (striped mirror sets). The high speed hardware ASIC parity engine automatically rebuilds data on a "hot-spare" disk or when a drive is replaced.

### Ease of Use

The RU5 is "plug and play" with any Ultra320 SCSI host adapter, using any operating system with no host software to load. It incorporates best practices in military design storage, emissions, and environmental. Storage is managed securely from the RU5 Web GUI via the LAN port, the front LCD console or from the RS232 port with error reporting in easy-to-understand terms.



*The RU5 is 8" x 9" x 14" in size and weighs only 23 pounds making it easily transportable with the folding rubber grip handle.*



*Ruggedized unit holds up to five drives secured with unique lockdown thumbscrews to minimize shock and vibration. The RU5 provides up to 5 TB of storage with 1 TB SATA disk drives.*



*The RU5 can be cascaded two high to expand capacity to 10 TB for one or two hosts.*

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## Overall Performance

Max. sustained I/O rate 24,000 read/write operations per second  
Host data transfer rate 1 Ultra320 SCSI channel @ 320 MB/sec.

## Tabletop

Max. drives/Max. capacity 5 drives / 5 TB  
Removable drive trays Hot-swap all-metal carriers, drive lockdown thumb-screws, drive ID  
Power supply 200W Hi-rel, UL, MIL-STD compliant  
Fans Redundant 65 cfm fans, thermal-controlled

## SATA Disk Drives

Capacity per drive 500 GB, 750 GB, 1 TB; 7,200 rpm  
Access time 8.5 msec.  
Disk MTBF 1.2 million hours

## Controller

RAID levels supported 1, 3, 5, 6, 1+0, 15, 16  
On-line capacity expansion Automatically adds new drives to existing array  
Cache algorithms Intelligent multi-threaded, write-back and write-through caching algorithms with dynamic read lookahead for multi-user/multi-tasking servers  
Cache memory capacity 128 MB with ECC  
Max. logical units 5; flexible binding/partitioning of physical disks  
Host and disk channels 1 Ultra320 SCSI for host, 5 SATA for drives  
Max. external cable length 80 ft. LVD SCSI cable  
LCD front panel 2x16 character display, push button controls  
Operating consoles Web GUI over LAN, LCD front panel, local terminal  
Operating console functions View and edit logical RAID/physical drives, setup hot-spare drives, map hosts, check parity, enable write-back cache, rebuild failed drive, view logs...  
Performance monitoring Display cache and disk read/write statistics

## Compatibility

Operating systems supported Any OS that supports Ultra320 SCSI  
(No software drivers required)

## Platforms supported

Cluster supported Any host that supports Ultra320 SCSI  
Remote monitoring ports Any cluster  
SCSI compliance Ethernet and RS-232  
ANSI standard SCSI-1, SCSI-2, SCSI-3

## General

AC power 90 - 260 VAC, auto-ranging, 6 amps peak  
Dimensions 8"h x 9"w x 14"d  
Weight 23 lbs.  
Standard warranty One year, next day on-site and "800-Hotline" in U.S.  
Installation and service On-site installation, 24x7 service available in U.S.



The RU5 ships in a ruggedized Stormcase\* wheeled transport case with telescopic handle.

winsys.com

## APPROVALS PENDING

### Environmental Specifications MIL-STD-810E

### Vibration

Transport in wheeled and tracked vehicles

### Altitude

Operating: 15,000 ft

Non-Operating: 40,000 ft

### Temperature

Operating: 0° F to 120° F

Non-Operating: -25° F to 150° F

### Temperature Shock

0° F to 70° F and 120° F to 70° F

in 10 minutes

### Rain Test

Operates in conditions of blown precipitation and spillage

### Humidity

10% to 95% (mist and fog)

### Inclination

30° on any axis

### Bench Handling

30° rotation drop from each bottom edge

### Electromagnetic Compliance

#### MIL-STD-461-D

CE102, CS101, CS114, RE102, RE103

### HEMP

#### MIL-STD-2169B

### Human Factor Engineering

#### MIL-STD-1472F

Meets all general human engineering design criteria for military subsystems, such as grips, thumbscrews, door, weight, etc.

## RU5 Rear View



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