



## Ultra160 SCSI to IDE Disk Array Subsystem

### Overview

The NS-IS 6 is an Ultra160 SCSI-to-IDE disk array subsystem powered by a sophisticated RAID controller. With advanced firm-ware functions as well as 64-bit hardware architecture, data can be easily distributed and processed at razing speed. This enclosure houses 6 IDE drives in hot-swappable disk trays. The RAID array can be configured in levels 0, 1 (0+1), 3, or 5. The system allows one HDD failure without impact on the existing data. Failed drive rebuild is transparent to host's running programs and accessing data. System operation is protected by redundant cooling fans and redundant power supplies. Environmental information is accessible either via control panel or through the RAID Guide Manager. The Raptor 6 is a cost-effective disk array system with completely integrated high performance and data-protection functions.

### High Performance

The IS 6's high performance comes from the 64-bit Power PC CPU and proprietary ASIC. For higher efficiency and more throughput than most small to medium sized servers or workstations, the bandwidth of the 64-bit bus runs at 66 MHz between the SDRAM and the CPU. Data is distributed through a high speed 64-bit path at a burst rate of 533MB/second. The system's overall performance reaches up to 109MB/second and 5480 IO/second nearly equaling the combined performance of all the drives. The dual independent PCI bus design eliminates bandwidth bottlenecks for IO traffic. The balanced bus loading and highly scalable design make the IS 6's an optimal RAID solution for a wide range of SCSI based PC's, single user workstations, NT, Linux and Unix based servers.

### High Data Availability

The system provides RAID levels 0, 1 (0+1), 3 and 5. RAID configurations that can be managed either through the LCD control panel or by the system-embedded configuration utilities. Its high data availability and protection derives from the following capabilities: automatic drive failure detection, automatic failed drive rebuilding, hot spare and background rebuild, disk hot swap, and online background rebuilding.

### Redundant Power Supplies

Two hot-swappable redundant power supplies provide zero down time and fault tolerant power. With two power supplies installed, both will share the current power needs of the whole system. If one should fail, an alarm will sound and the remaining power supply will take over the full load until the faulty unit is replaced. The hot-swap feature ensures that the system remains operational while replacement is taking place.



### KEY FEATURES

- Ultra160 SCSI host interface  
160Mbyte/sec transfer rate
- Up to 6 EIDE ATA/UDMA-100 hard disk drives (ATA/UDMA-100 compatible)
- Supports 3.5" x 1" high EIDE drives
- RAID levels: 0, 1 (0+1), 3, 5
- Smooth hot-swappable drive tray mechanism
- User-friendly RAID Guide Manager
- Convenient front LCD control panel
- Redundant and hot-swappable power supplies
- Redundant cooling fans
- Compact enclosure design





**Controls / Indicators**

- Front LCD control panel for setup and configuration
- 3 drive LED indicators: power, busy, attention
- Power and drive failure indication through LCD
- Built-in alarm

**Management Software**

- RAID Guide manager software for Windows 2000 / NT via inband SCSI
- Firmware embedded manager via RS-232C (platform independent)

**Physical / Electrical**

**Interfaces** One 68-pin, single-ended or differential SCSI connector DB-9 RS-232C serial port (38400, n, 8, 1) for terminal connection

**Power Supply** 2 redundant hot-swappable power supplies 90 to 265VAC, 47 to 63 Hz @12V (14A max.), 5V (16A max.), 250Watts

**Cooling Fans** 2 cooling fans in two separate modules, ball bearing, 12V, 0.3A, 2850rpm, 34dbA

**Operating Temperature** 5° to 40° C

**Relative Humidity** 10-95%, non-condensing

**Altitude** Sea level to 10,000 ft

**Dimensions** 13.8H x 6.8W x 12.9D inches

**Redundant Cooling Fans**

Two cooling fans are integrated for redundancy. Failures are displayed by the RAID Guide manager software. The system's ventilation is from front to back. Specially designed airflow passages dissipate heat from the hard disks and the controller. Power-supply modules are equipped with their own independent cooling fans.

**Setup and Status Monitoring**

The system will automatically initialize based on the number of disk drives installed at start up. Manual configuration and monitoring can be done through the LCD control panel. The firmware contains an embedded management program that can be accessed using a terminal connected to the RS-232C port.

**RAID Guide Manager**

RAID Guide, an advanced and user-friendly GUI management program is also available to communicate between the host and the array through a proprietary in-band SCSI protocol. RAID Guide is a complete management interface to the disk array. Users may view the status of all the connected drives, enclosure components, and controller board at a glance. The GUI design makes maintenance of the enclosure a simple matter of point and click.

**Controller**

- PowerPC-603e 100MHz RISC processor
- Standard 32MB cache memory on one
- SODIMM SDRAM; Other available cache sizes:
- 64/128/256MB
- 2 independent 33MHz 32/64-bit PCI buses
- Firmware in Flash ROM for easy upgrades

**RAID Operation**

- RAID level 0, 1 (0+1), 3 and 5
- Hot spare drive operation
- Drive hot-swapping
- Automatic background rebuild
- Online drive expansion

**Drive Interface**

- EIDE ATA-66/UDMA-66 (ATA-/UDMA-100 compatible; and fully backward compatible with earlier ATA and UDMA standard drives)
- 6 hot-swap drive bays and trays
- Supports 1-inch height form factor

**Host Interface**

- Ultra160-Wide LVD SCSI
- Transfer rate up to 160Mbps/
- Concurrent I/O command
- Tagged Command Queuing
- Automatic bad-sector reassignment
- Up to 12m cable length

