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Modular 5.25" Full-height Ultra SCSI CMD Viper-II™ RAID Controller



CMD's CRD-5500 Ultra SCSI to Ultra SCSI RAID controller is the industry's best solution

for building high performance, high availability, fault-tolerant Ultra SCSI disk array subsystems.

CMD's years of experience as an industry leader in high

performance,

advanced technology RAID controllers and SCSI host adapters for UNIX, midrange and PC systems has given CMD unmatched insight in designing a second-generation disk array controller solution that allows OEMs, resellers, and systems integrators to build the best fault-tolerant RAID subsystems available today.

Key Benefits

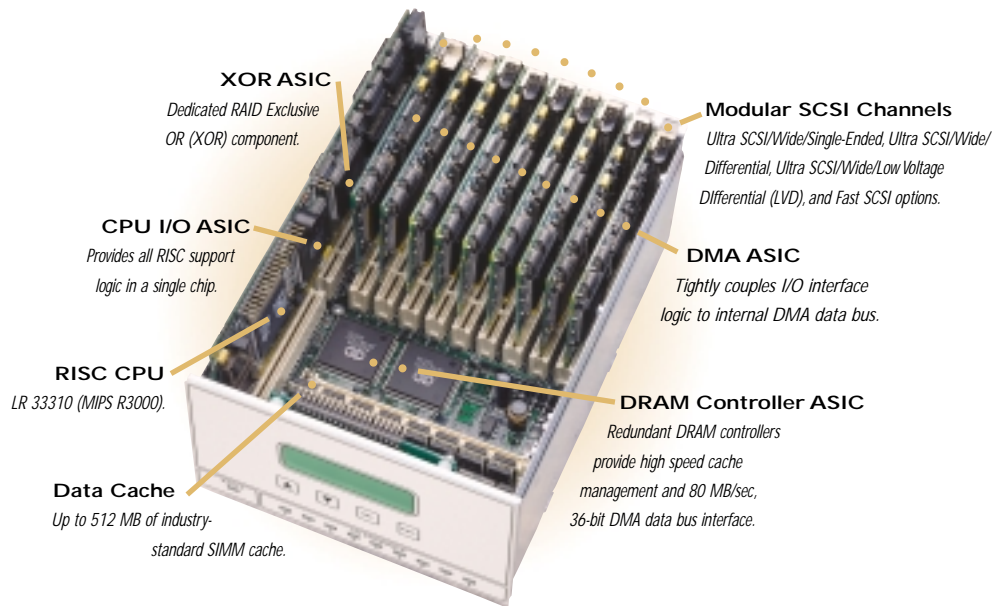
The CRD-5500 was designed to satisfy the most demanding requirements of today's sophisticated RAID user. By giving you high performance in every application, there is no need to compromise reliability or data integrity. The keys to the CRD-5500's outstanding performance are

CMD designed proprietary ASIC components, as well as innovative caching and RAID algorithms. In addition, the CRD-5500's modular design allows you to quickly and easily configure an optimal RAID subsystem simply by installing individual Ultra SCSI/ Wide/Single-Ended, Ultra SCSI/Wide/Low Voltage Differential (LVD), Ultra SCSI/Wide/Differential, or Fast SCSI interface modules and up to 512 MB of data cache using industry-standard SIMM modules. CMD's active/active failover capability provides unmatched levels of fault-tolerance and I/O load balancing.

Advanced Features

- 40 MHz, 32-bit LR33310 RISC CPU (MIPS R3000 core)
- Proprietary CMD RAID ASICs for advanced features and highest performance
- Up to 512 MB of data cache using four industry-standard, 72-pin SIMM modules
- RAID Levels 0, 1, 0+1, 4, and 5
- Modular, scaleable design
- Up to eight Ultra SCSI/Wide/Single-Ended, Ultra SCSI/Wide/LVD, Ultra SCSI/Wide/Differential, or Fast SCSI disk channels
- Up to four Ultra SCSI/Wide/Single-Ended, Ultra SCSI/Wide/LVD or Ultra SCSI/Wide/Differential host channels
- Supports active/active and active/passive redundant configurations

The Ultimate In Scalable Performance & Configurability



The CRD-5500's scalable architecture provides the ultimate in configuration flexibility and performance, allowing you to easily upgrade or enhance the capabilities of your RAID peripheral investment!

CMD's Flexible RAID Architecture

Scalable Performance, Features, & Configuration

CMD designed the CRD-5500 with the OEM and reseller in mind. The CRD-5500's scalable architecture was designed to allow you to configure a RAID storage solution for every application, from entry-level imaging workstations to fully fault-tolerant, high capacity OLTP and video-on-demand servers. Unlike other RAID controllers, CMD's unique and modular design uses individual SCSI interface modules that allow the user to increase performance and expand subsystem capabilities by simply adding modules. A total of up to nine SCSI modules may be installed, with up to four configured for host and up to eight configured for disk use. CMD offers Fast SCSI/Single-Ended (CRD-5530), Ultra SCSI/Wide/Low Voltage Differential (LVD) (CRD-5580), Ultra SCSI/Wide/Single-Ended (CRD-5540), and Ultra SCSI/Wide/Differential (CRD-5560) SCSI option modules, which can be used as host or drive channels (CRD-5530 is for disk use only). Only CMD allows you to easily add new interfaces or more powerful modules as they become available, protecting your valuable storage investment!

Unmatched Performance & Reliability

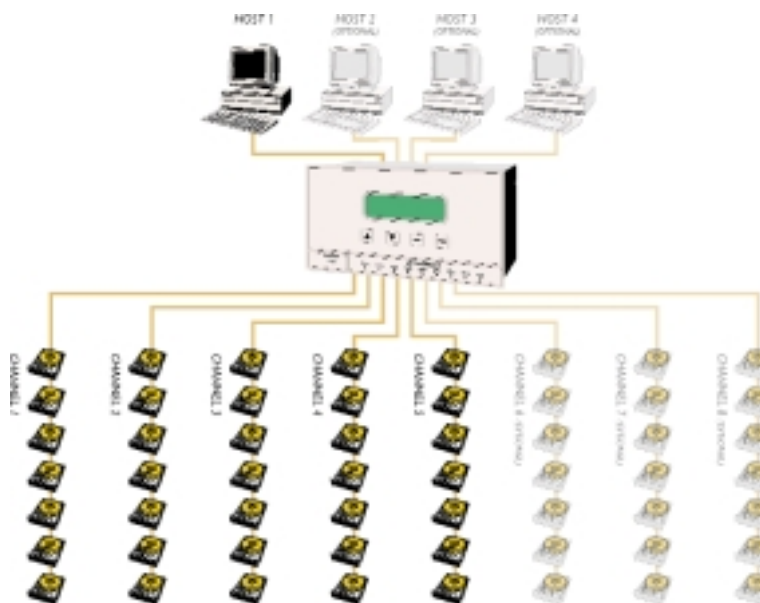
CMD's CRD-5500 provides unequalled performance! To meet the performance requirements of tomorrow's high speed serial interfaces, CMD designed the CRD-5500 to use the MIPS R3000 family of 32-bit RISC processors and proprietary CMD custom ASIC logic components. Each 5500 includes separate ASICs for RAID (Exclusive OR), DRAM management (fast page mode DRAM control), CPU-I/O (CPU support logic), and DMA (high speed data path management). An internal 80 MB/sec, 36-bit (32 data and 4 parity) data bus allows for ultimate performance.

Install up to four industry-standard, 72-pin SIMM modules to provide a total of up to 512 MB of (user-selectable) write-back or write-through cache. To provide guaranteed data integrity, the CRD-5500 includes a built-in battery charger and monitoring circuit that supports an external 6.6VDC sealed lead-acid type battery (not included) for cache power back-up and a UPS status input that allows the CRD-5500 to switch from write-back to write-through data caching should the UPS's primary power fail. In either case, the CRD-5500's intelligent power management circuitry assures cached data integrity during extended power blackouts or enclosure power supply failure.



CMD's proprietary RAID chipset is the key to the CRD-5500's advanced features and incredible performance. Four separate ASICs for RAID (Exclusive OR), cache control, CPU-I/O (CPU support logic), and DMA (high speed internal data bus) functions support the industry's most advanced architecture.

The Maximum In Performance & Data Availability



CMD provides almost unlimited configuration options! Up to nine SCSI modules can be installed for host (up to four) or disk (up to eight) use, supporting up to 120 disk drives and 32 logical devices (LUNs). RAID sets may be configured in any orientation and freely moved within the CRD-5500's SCSI disk channels.

Unlimited Configuration Flexibility

The CRD-5500 allows almost unlimited configuration flexibility! Each CRD-5500 supports up to 32 logical devices (RAID sets or JBOD disks) as separate SCSI Logical Unit Numbers (LUNs). Logical devices can be mapped to individual host channels as shared or non-shared, with a LUN number unique to a specific host bus. RAID sets can be configured in any orientation and can consist of one to 56 drives, depending on RAID level and other options selected. Partitioning is supported on a per-LUN basis (up to 16 per RAID set), as well as write-through or write-back caching. Global (floating) spare disks and stand-alone (JBOD) disk drives are also supported. In addition, the CRD-5500's dynamic reconfiguration capability allows individual disk drives and RAID sets to be removed and re-installed in any location. High performance, fault tolerant RAID subsystems can be configured using two CRD-5500s in a redundant configuration (depending on host platform and operating system capabilities).

Choose RAID 0, 1, 0+1, 4, or 5

To Optimize Your Performance & Data Availability

The CRD-5500 gives you the option of selecting the RAID level that best suits your application's unique requirements. Each RAID set can be formatted as RAID 0 (for high throughput without data protection), RAID 1 (disk mirroring for small capacity applications), RAID 0+1 (mirrored RAID 0 arrays), RAID 4 (for large file size, high throughput applications) or RAID 5 (for small file applications, such as OLTP or database servers). Regardless of the RAID level you choose, the CRD-5500's exclusive RPM (RAID Performance Monitor) algorithms provide information on cache hit rate, stripe size, and I/Os per second that allow you to fine-tune your RAID subsystem for maximum performance.

Other CRD-5500 Key Features Include:

- Global spare disk with dynamic rebuild. Multiple disks can be configured as hot or warm
- Supports mixed disk drive vendors and capacities, even within the same RAID set
- Front panel LCD display, I/O channel LEDs and audible alarm for reporting critical failures
- Comprehensive statistics and debug utility (via terminal) for optimizing subsystem performance
- Redundant controller support option for building true Fault Tolerant subsystem configurations
- RS-232 serial terminal interface for configuration and monitoring
- Remote Terminal Services' (RTS) interface option
- Separate termination power input for SCSI disk drives

GENERAL

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|--------------------------------|--|
| System Architecture | LR33310 32-bit RISC CPU — Internal 80 MB/sec, 36-bit DMA data path and XOR using CMD's custom ASIC RAID chipset |
| Host Bus Interface | Up to four, 40 MB/sec Ultra SCSI/Wide/Single-Ended, Ultra SCSI/Wide/Low Voltage Differential (LVD), or 40 MB/sec Ultra SCSI/Wide/Differential* |
| Disk Bus Interface | Up to eight — 10 MB/sec Fast SCSI/Single-Ended, 40 MB/sec Ultra SCSI/Wide/Single-Ended, Ultra SCSI/Wide/Low Voltage Differential (LVD), or 40 MB/sec Ultra SCSI/Wide/Differential (Up to 120 SCSI Disk Drives per CRD-5500)* |
| Command Queuing | 32 commands per active SCSI host port |
| Cache | Up to 512 MB using four, industry-standard, 72-pin, 60 ns SIMM modules |
| Operating System Compatibility | Most O/S supporting standard SCSI with block size of 512 bytes and SCSI LUNs for non-redundant operation |

* Combined total of 9 SCSI channels

ENVIRONMENTAL

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|-------------------|---|
| Temperature | 5°C to 45°C operating, -40°C to +60°C non-operating |
| Relative Humidity | 10% to 85% non-condensing (operating), 5% to 90% non-condensing (non-operating) |

PHYSICAL

| | |
|-----------------|---|
| Controller Size | 8.1" deep, 5.75" wide, 3.25" high (full height 5.25" form factor) 8 lbs. maximum weight |
| Power Required | 5VDC @ 6 amps peak, not including disk termination power requirements — 12VDC @ 1 amp peak (includes battery charge current requirements) |
| Warranty | Three years return to factory (for original purchaser) |

Specifications subject to change without notice.

Ordering Information

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|----------------|---|
| CRD-005500-101 | Base CRD-5500 with no host or disk channel modules |
| CRD-005530-000 | Fast SCSI/Single-Ended disk channel module |
| CRD-005540-002 | Ultra SCSI/Wide/Single-Ended channel module |
| CRD-005560-002 | Ultra SCSI/Wide/Differential channel module |
| CRD-005580-002 | Ultra SCSI/Wide/Low Voltage Differential (LVD) channel module |
| AAK-005500-000 | Redundant controller cable kit |

Note: Requirements and specifications for SIMMs used in the CMD products are available upon request, or



Storage/RAID, Cluster/RAID



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