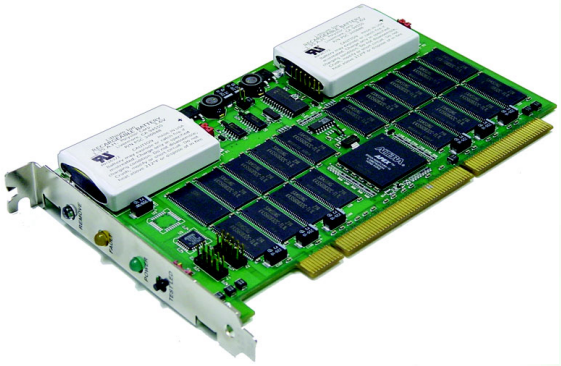
MM-5425CN

2GB 64-bit/66MHz Battery-Backed PCI NVRAM Card

Features

- Capacity: 256MB, 512MB, 1GB and 2GB
- Two on-board redundant lithium ion batteries
- Half length PCI card with 64-bit/66MHz PCI 2.2 interface
- Transfer Rate: Up to 533 MB/s
- Specialized Mailbox DMA for maximizing read and write transfers
- Error Detection and Correction
- Supports interrupts
- Device drivers for several operating systems available



Synchronous Reliability with Asynchronous Performance

The MM-5425CN is designed to improve response time and data reliability in server appliances.

Especially applicable to file servers and storage appliances that adhere to the NFS protocol or utilize journaling file systems, PCI NVRAM cards can enable these products to improve performance for I/O intensive applications and still comply with the industry standard benchmark, SPEC SFS.

SPEC SFS requires following the NFS protocol, which ensures reliability by making many operations synchronous. While this is an excellent method towards guaranteeing reliability, there is an associated performance penalty. This penalty is greatest when hard disk drive(s) are selected as the stable storage device. The MM-5425CN minimizes this performance penalty by replacing disk accesses with SDRAM memory accesses; SDRAM memory accesses are usually millions of times faster than disk accesses.

Unlike NVRAM that resides on a storage controller, PCI NVRAM can be completely controlled by the host that is also controlling the file system. In addition, PCI NVRAM provides superior performance to NVRAM on external storage controllers for synchronous writes because it is effectively accessed at the system level and only limited by bus speeds. NVRAM on external storage devices is accessed indirectly with SCSI commands and limited by the significant overhead of a cable interconnect.

Several journaling file systems now provide external journal mounts, so the journal log (metadata) can easily be placed on a separate device. Due to the nature of journal updates which often involve small, frequent writes where disk performance is at its lowest, a high speed PCI NVRAM card can be used as the device for the journal log.

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Some journaling file systems also have a mode in which all data is journaled, including metadata and actual file data. These systems provide an additional level of data protection, but this usually comes at the expense of increased disk operations. Using a PCI NVRAM device increases system performance and maintains or improves data reliability while providing protection of data as well as consistency of the file system.

In addition to providing burst transfer rates of up to 533 MB/s, the MM-5425CN's PCI interface and memory controller have been specifically designed to minimize latency for these applications. DMA chaining is supported and instead of just generating an interrupt after a transfer, the mailbox DMA can write a semaphore to the host memory when the transfer is complete so the host does not have to poll the status of the DMA.

Redundant, rechargeable lithium ion batteries are on-board to provide data retention in the event of a power loss. Status LED lights are software programmable and battery status registers in the CSR can be enabled to monitor battery voltages. These features and several others along with the battery failover circuitry are the result of supplying leading OEMs non-volatile memory cards based on open system buses since 1976.

Specifications

Parameter	Specification
Capacity	256MB, 512MB, 1GB, 2GB
Compatibility	PCI Local Bus Specification Rev. 2.2
Burst Mode Transfer Rate	Up to 533 MB/s
Bus Mastering	DMA Initiator and Target capabilities
Interrupts	Supports Interrupts
Data Integrity	Error detection and correction for all single-bit errors and detection for double-bit errors.
Batteries	Two 1.2 Amp/hr (each) lithium ion rechargeable
Battery Shelf Life	5 years
Charging Current Rate	1,000 mAh
Operating Temperature	0° to +70° C
Storage Temperature	-40° to +85° C
Relative Humidity	Up to 95% without condensation
Power Requirements	Standby: 675mA @ +5V, 350mA @ +3.3V Operate: 1.32A @ +5V, 350mA @ +3.3V (max) not including battery charge
Power Consumption	3.5A @ +5V (worst case, during a burst while battery is recharging)
Power Dissipation	8.82W (worst case)
Warranty	One Year Parts and Service

Contact

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