

SAS DISK ARRAYS Adapter

ARC-1680 series/ARC-1681 (8 Ports PCIe/PCI-X to SAS RAID Adapters)

Areca high-performance PCIe/PCI-X to SAS RAID host adapter can provide up to (128) SAS/SATA II peripheral devices using SAS expanders. The adapters are based on the same RAID kernel of field-proven external RAID adapter. Applications that benefit most features from these controllers include NAS, server RAID solutions, web servers, supercomputing, near-line backup, security systems and streaming applications.



SAS for Maximum Scalability

SAS builds on parallel SCSI by providing higher performance, improving data availability, and simplifying system design. The SAS interface supports both SAS disk drives for data-intensive applications, and Serial ATA (SATA) drives for low-cost bulk storage of reference data. The ARC-1680 adapter supports a configurable eight SAS ports via two internal Min SAS 4i connectors, and one external Min SAS 4x connectors for easy expansion. When Areca SAS RAID adapter used with SAS expanders, the adapter can provide up to (128) devices through one or more SAS JBODs, making it an ideal solution for enterprise-class storage applications that call for maximum configuration flexibility.

Unparalleled Performance

The SAS RAID adapters raise the standard to higher performance levels with several enhancements including Intel New high-performance I/O Processor, a DDR2-533 memory architecture and high performance x8 Link PCIe host interface bus interconnection. ARC-1680/ARC-1681 includes one DIMM socket with default 512MB of ECC DDR2-533 SDRAM with optional battery backup module, upgrade to 2GB. The ARC-1680LP/1680i/1680x low profile boards default support 256MB on-board memory. The test result is against overall performance compared to other SAS RAID adapters. The powerful Intel IOP348 processors integrated 8-port SAS I/O ports on chip delivers high performance for servers and workstations.

Unsurpassed Data Availability

The RAID 6 can offer fault tolerance greater than RAID 1 or RAID 5 but only consumes the capacity of 2 disk drives for distributed parity data. The SAS RAID adapters with extreme performance RAID 6 engine installed provide the highest RAID 6 feature to meet this requirement. The SAS RAID adapters can also provide RAID levels 0, 1, 1E, 3, 5, 6, 10, 30, 50, 60 or JBOD for maximum configuration flexibility. Its high data

availability and protection derives from the following capabilities: Online RAID Capacity Expansion, Array Roaming, Online RAID Level / Stripe Size Migration, Global Online Spare, Automatic Drive Failure Detection, Automatic Failed Drive Rebuilding, Disk Hot-Swap, Online Background Rebuilding, Instant Availability/Background Initialization, Auto Reassign Sector, Redundant Flash Image and Battery Backup Module. Greater than 2 TB support allows for very large volume set application in 64-bit environment such as data-mining and managing large databases.

Maximum Interoperability

The SAS RAID adapter supports broad operating system including Vista/Server2003/XP/2000, Linux (Open Source), FreeBSD (Open Source), Solaris, Mac and more, along with key system monitoring features such as enclosure management (SES2 & SGPIO) and SNMP function. Our products and technology are based on extensive testing and validation process; leverage Areca SATA II RAID adapter field-proven compatibility with operating systems, motherboards, applications and drives.

Easy RAID Management

The adapters contain an embedded McBIOS RAID manager that can access via hot key at BIOS boot-up screen. This pre-boot RAID manager can use to simplify the setup and management of RAID adapter. The adapter firmware also contains a browser-based McRAID storage manager which can be accessed through the Ethernet port or Http Proxy server in Windows, Linux, FreeBSD and more environments. The McRAID manager allows local and remote to create and modify RAID set, volume set, and monitor RAID status from standard web browser. The Single Admin Portal (SAP) monitor utility can support one application to scan multiple RAID units in the network. The Disk Stress Test (DST) utility kicks out disks meeting marginal spec before the RAID unit is actually put on-line for real business.

HIGHLIGHTS

- Supports up to (128) SAS or SATA II drives using SAS expanders
- 3Gb/s throughput at each drive ports
- Support up to 2GB DDR2-533 Cache (ARC-1680/1681)
- Automatic detect eight internal SAS ports or four internal & four external SAS ports for easy expansion
- Intel RAID engine to support highest speed RAID 6
- Online Capacity expansion, RAID level/stripe size migration
- Online Volume set growth
- Redundant flash image for adapter availability
- Support Greater than 2TB per Volume set and battery backup module (BBM)
- SES2 and SGPIO enclosure management
- Broad operating support including Windows, Linux (open source), FreeBSD (open source) and more systems



Intel Server & Storage Innovation Award

ARECA SAS DISK ARRAYS Adapter

Adapter Architecture

- Intel 800 MHz IOP348 I/O processor with SAS controller
- PCI-X 64bit/133MHz or PCI-Express x8 bus
- PCIe x8 Link host interface
- 256MB on-board DDR2-533 SDRAM with ECC protection (ARC-1680LP/1680i/1680x)
- One 240-pin DDR2-533 DIMM socket with default 512MB of SDRAM with ECC protection, upgrade to 2GB (ARC-1680/1681)
- Write-through or write-back cache support
- Support up to 8 SAS ports
- Multi-adapter support for large storage requirements
- BIOS boot support for greater fault tolerance
- BIOS PnP (plug and play) and BBS (BIOS boot specification) support
- Intel RAID engine support extreme performance RAID 6 function
- NVRAM for RAID configuration & transaction log
- Redundant flash image for adapter availability
- Battery Backup Module ready (Option)
- RoHS Compliant

RAID Features

- RAID level 0, 1, 1E, 3, 5, 6, 10, 30, 50, 60 or JBOD
- Multiple RAID selection
- Array roaming
- Online RAID level/stripe size migration
- Online capacity expansion and RAID level migration simultaneously
- Online Volume set growth
- Instant availability and background initialization
- Automatic drive insertion / removal detection and rebuilding
- Greater than 2TB per volume set (64-bit LBA support)
- Disk Scrubbing/ Array verify scheduling for automatic repair of all configured raid sets
- Support spin down drives when not in use to extend service life (MAID)
- Support NTP protocol synchronize RAID controller clock over the on board Ethernet port

Disk Bus Interface

- Automatic detect eight internal ports or four internal & four external ports (ARC-1680/1681)
- Up to (128) SAS or 3Gb/s SATA II drives using SAS expanders
- Up to 3Gb/s per port

Environmental /Physical

| Mechanical | |
|---------------------|---|
| Dimension | ARC-1680/1681 98.4(H) x 217(L) mm ARC-1680LP/ARC-1680i/ARC-1680x 62(H) x 168(L) mm |
| SAS Interface | ARC-1680/1681 2 x SFF-8087, 1 x SFF-8088 ARC-1680LP 1 x SFF-8087, 1 x SFF-8088 ARC-1680i 2 x SFF-8087 ARC-1680x 2 x SFF-8088 |
| I/O Interface | (2x4) header for individual fault LED connector (2x2) header for global Activity/Fault LED connector (2x4) header for LCD & enclosure management connector (2x6) header for Battery Backup Module (BBM) connector (1xRJ45) for Ethernet port connector (ARC-1680/1681/1680LP/1680i) (2x5) header for Ethernet daughter board (ARC-1680x) |
| Environment | |
| Operating | Temperature : +5 C to +50 C Humidity : 15-80%, non-condensing |
| Storage Temperature | Temperature : -40 C to 70 C Humidity : 5-90%, non-condensing |
| Electrical | |
| Power Requirements | 1.10W max. +3.3V 10.92W max. +12V |

Host Connectivity

- PCIe x8 lane width host interface
- PCI-X 64bit/133MHz

Monitors/Notification

- System status indication through Global HDD activity/fault connector, Individual fault connector, LCD/I2C connector and alarm buzzer
- SMTP support for email notification
- SNMP support for remote Manager
- Enclosure management (SES2 and SGPIO) ready

RAID Management

- Field-upgradeable firmware in flash ROM

In-Band Manager

- Hot key "boot-up" McBIOS RAID manager via BIOS
- Web browser-based McRAID Storage manager via Http Proxy Server for all operating systems
- Support Command Line Interface (CLI)
- API library for customer to write monitor utility
- Single Admin Portal (SAP) monitor utility
- Disk Stress Test (DST) utility for production

Out-of-Band Manager

- Firmware-embedded Web browser-based McRAID Storage manager, SMTP manager and SNMP agent and Telnet function via Ethernet port
- API library for customer to write monitor utility
- Support Push Button and LCD display panel

Operating System

- Windows 2000/XP/Server 2003/Vista
- Linux
- FreeBSD
- Novell Netware 6.5
- Solaris 10 x86/x86_64
- SCO Unixware 7.x.x
- Mac OS x(no_bootable)

For latest supported OS listing visit: www.areca.com.tw

| PCI RAID Card | | |
|--------------------|--------------------------------|--------------------------------|
| Module name | ARC-1680 | ARC-1681 |
| Host Bus Type | PCIe X8 | PCI-X |
| RAID 6 support | Yes | Yes |
| Cache Memory | One DDR2 DIMM (Upgrade to 2GB) | One DDR2 DIMM (Upgrade to 2GB) |
| Internal Connector | 2 X SFF-8087 | 2 X SFF-8087 |
| External Connector | 1 X SFF-8088 | 1 X SFF-8088 |
| Form Factor | Full High | Full High |

| Low Profile PCI RAID Card | | | |
|---------------------------|--------------|--------------|--------------|
| Module name | ARC-1680LP | ARC-1680i | ARC-1680x |
| Host Bus Type | PCIe X8 | PCIe X8 | PCIe X8 |
| RAID 6 support | Yes | Yes | Yes |
| Cache Memory | 256MB | 256MB | 256MB |
| Internal Connector | 1 X SFF-8087 | 2 X SFF-8087 | N/A |
| External Connector | 1 X SFF-8088 | N/A | 2 X SFF-8088 |
| Form Factor | Low Profile | Low Profile | Low Profile |



At the heart of storage



8F., No. 22, Lane 35, Ji-Hu Rd, Nei-Hu., Taipei 114, Taiwan, R. O. C.

Tel: 886-2-87974060 Fax: 886-2-87975970 <http://www.areca.com.tw>

Technical Support: support@areca.com.tw Sales Information: sales@areca.com.tw

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