ARC-1680P

(8 Ports SAS/SATA RAID Ruggedized PMC/XMC)

Highlights

- Intel dual core 1200MHz IOP348 I/O processor

- One PMC/XMC sites supporting PCI-X or PCIe x8

- Dual SFF-8470 front panel connectors

- Front panel LEDs for global fault and activity

- Support up to 8 external SAS ports

- 3Gb/s throughput at each port

- Support up tp (128) SAS/SATA ll using SAS expanders

- 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

- SES2 and SMP enclosure management

- Broad operating support including Windows, Linux (open source), FreeBSD(open source), Soaris(open source) and more systems

Product Overview

The ARC-1680P is a high performance reconfigu-rable PMC/XMC (PCI Mezzanine Card) that is ideal for ruggedized systems requiring high bandwidth storage. It is based on the Intel IOP348 controller, equipped with 8 ports of either SAS or SATA connectivity at 3.0 Gb/s per ports. Features include high performance dual core IOP348 I/O processor, 512MB DDR2-533 memory and high speed PCI-X or PCIe x8 interface. A heat-sink is provided adequate cooling for the Intel IOP348 I/O controller and conducts heat to front bracket. ARC-1680P can be used on Video/IR systems and Signal Intelligence, etc. Application areas can be found in markets such as medical, military, aerospace and automation.

Since the ARC-1680P is offered as a hybrid PMC/XMC, it can be used with the carrier boards that have PMC sites on-board, as well as newer carrier boards which offer XMC sites. Designed as a plug-and-play solution, the ARC-1680P mezzanine board automatically selects the data bus according to whether the signals are present on the latest high-speed functionality P15 connector in the XMC form factor. Otherwise, it switches to PCI-X on the PMC connectors. An integrated micro DIP switch allows the PMC connection to be used in lower-performance 3.3 V PCI busses with reduced throughput capability. This integrated micro DIP switch also allows for manual override of the host bus selection.

Unsurpassed Data Availability

The SAS RAID controllers can also provide RAID levels 0, 1, 1E, 3, 5, 6,10, 30, 50, 60, Single Disk or JBOD for maximum configuration flexibility. The RAID 6 can offer fault tolerance greater that RAID 1 or RAID 5 but only consumes the capacity of 2 disk drives for distributed parity data. The SAS RAID controllers with extreme performance RAID 6 engine installed provide the highest RAID 6 feature to meet this requirement. Its high data availability and protection derives from the following capabili-ties: 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.

SAS for Maximum Scalability

SAS builds on parallel SCSI by providing higher performance, improving data availability. 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-1680P includes 8 external SAS ports for easy expansion. When ARC-1680P SAS RAID controller used with SAS expanders, the adapter can provide up to (128) devices through one or more SAS JBODs, making two SFF-8470 connec-tors at the PMC front bezel are used for connectiv-ity. Each connector combines four SAS/SATA ports into a single jack-screw style locked connection for operation in rugged environments.

Maximum Interoperability

The SAS RAID controller supports broad operating system including Windows 2008/Vista/2003/XP/ 2000, Linux (Open Source), FreeBSD (Open Source), Solaris (Open Source), Mac and more, along with key system monitoring features such as enclosure management(SES2 and SMP) and SNMP function.

Easy RAID Management

A set of 8 green LEDs and 8 red LEDs are provided on the backside of the board to transport activity/fault status for each of the 8 attached devices. The global state of these activity/fault indicators is also presented on the front panel using a single green and a single red LED. The controller contains 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 controller. The adapter firmware also contains a browser-based McRAID storage manager which can be accessed through the ArcHttp proxy server. The McRAID storage 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.

Adapter Architecture

- Intel Dual Core 1200 MHz IOP348 I/O processor for RAID core and SAS microcode
- 512MB on-board DDR2-533 SDRAM with ECC protection
- Support write-through or write-back cache
- Multi-adapter support for large storage requirements
- BIOS boot support for greater fault tolerance
- BIOS PnP (plug and play) and BBS (BIOS boot specification)
- NVRAM for RAID event & 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, Single Disk or JBOD
- Multiple RAID selection
- Online array roaming/offline RAID set
- 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 intelligent power management to save energy and extend service life

Host Connectivity

- PCIe x8 Lane XMC or PCI-X/PCI PMC (5V PCI not supported)
- For use on single slot VME bus, compact PCI and Multibus II XMC/PMC application.

Disk Bus Interface

- Dual SFF-8470 connectors support 8 SAS ports
- Up to (128) SAS or SATA II drives using SAS expanders
- Up to 3Gb/s per port

Monitors/Notification

- 8 sets individual fault connector, and alarm buzzer
- A set of on -board 8 LEDs for each activity and fault.
- 2 global activity/fault LED
- Serial bus output for activity/fault LED
- SMTP support for email notification
- SNMP support for remote manager
- Enclosure management (SES2 and SMP) ready

RAID Management

- Hot key "boot-up" McBIOS RAID manager via M/B BIOS
- Web browser-based McRAID storage manager via ArcHttp proxy server utility
- 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
- Field-upgradeable firmware in flash ROM

Operating System

- Windows 10/8/Server2012/7/2008/Vista/Server 2003/XP
- Linux
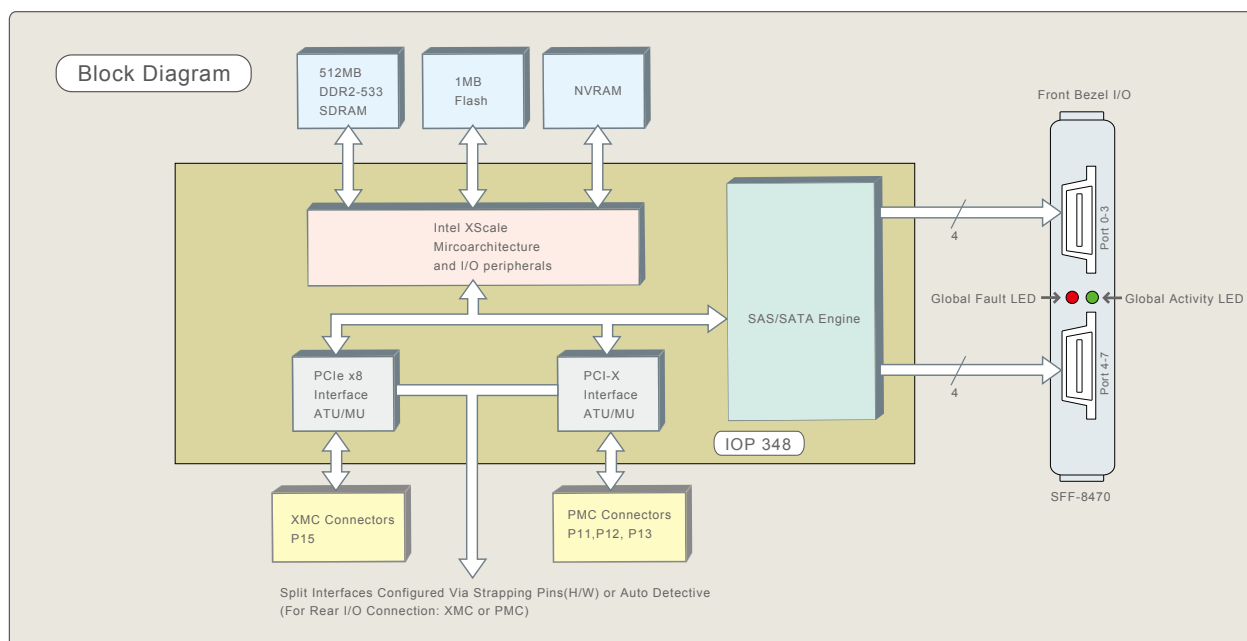- FreeBSD
- Solaris 10 x86/x86_64
- SCO Unixware 7.x.x

For more information & latest supported OS listing visit **www.areca.com.tw**

・Mechanical

Power Requirements	1.10W max. +3.3V
	10.92W max. +12V
Dimension	149 x 74 mm

・Environmental

Operating	Temperature: 0℃ to +50℃ Humidity: 15-80%, non-condensing
Storage Temperature	Temperature: -40℃ to 85℃ Humidity: 5-90%, non-condensing

Block Diagram

512MB DDR2-533 SDRAM | 1MB Flash | NVRAM

Intel XScale Mircoarchitecture and I/O peripherals

SAS/SATA Engine

PCIe x8 Interface ATU/MU | PCI-X Interface ATU/MU

IOP 348

XMC Connectors P15 | PMC Connectors P11,P12, P13

Split Interfaces Configured Via Strapping Pins(H/W) or Auto Detective
(For Rear I/O Connection: XMC or PMC)

Front Bezel I/O

Port 0-3

Global Fault LED — Global Activity LED

Port 4-7

SFF-8470

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