



## Product Brief A8S20816-MMC

### 16-Port SAS I/O Processor on a Module

The Astek A8S20816-MMC is a complete storage I/O Processor (IOP) for embedded system development. Based on the industry leading LSISAS2116 device. Astek provides the IOP Module with a complete Linux based runtime environment supporting the integrated Serial Attached SCSI (SAS) host controller.

### Gen2 SAS

The integrated SAS controller supports 16 lanes of 6Gbps Gen2 SAS, which can be configured in any mix of initiator or target ports for applications from DAS and NAS, to SAN. With available SAS expanders, the A8S20816 can communicate with multiple host systems, and up to 200+ target disks for capacities exceeding 10TBy.

### Flexible I/O

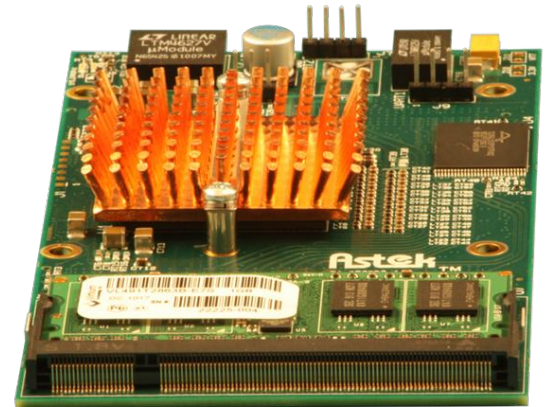
To maximize options for system developers, the A8S20816-MMC card is designed to attach to a carrier platform. Astek provides multiple carrier designs with SFF-8087 and SFF-8088 connectors, GPIO, and system instrumentation (thermal and voltage). Complete reference schematics for the carrier can be provided, or a custom carrier developed with a small minimum volume requirement. Optional external PCIe devices that can be connected include 1Gb or 10Gb Ethernet, USB, IEEE-1394, and FibreChannel, Infiniband or an FPGA device for full-customization.

### Linux Runtime

The MMC is provided with a complete boot-loader and Linux 2.6 runtime booting from local flash, no external network required. Drivers and *Buildroot* build environment are provided for managing the on-board peripherals. Additional options include support for hardware RAID5/6 XOR acceleration, hardware AES 128/256 acceleration, hashing and checksumming. Within the runtime environment the PLI2SAS driver is 100% compatible with standard PCIe Host Bus Adapter (HBA) devices, any code that runs on a standalone HBA will run on the Astek platform, including full support for Linux VFS, MD-RAID, LVM and raw block device access for custom filesystems.

### Availability

The A8S20816 board is available now, and is pending agency certification.



### KEY APPLICATIONS

- Embedded RAID Controllers
- Storage Encryption
- Network Storage Appliances

### PRODUCT FEATURES

- Industry leading LSISAS2116 Gen2 SAS Controller
  - PowerPC 440g5 processor core at 800Mhz
  - 16 lanes of 6Gbps SAS
  - Initiator and target on all SAS ports
  - PCI-Express Gen2 x8
  - Root-Complex or endpoint-device
- SDRAM Interface
  - DDR2-400 64-bit + ECC memory SODIMM
  - Certified with 1GByte SODIMM
  - Supports up to 4GByte SODIMM
- NOR FLASH boot memory
  - 512MBit (64MByte) device
  - U-Boot boot-loader pre-installed
- Buildroot runtime environment
  - Linux 2.6.26+ kernel
  - Complete development tool-chain
    - Menu driven build system
    - Cross-compiler for any Linux environment
    - Runtime image builder targeting ramdisk
  - Completely customizable
    - Full source and GPL/BSD licensed for runtime system
    - Portions are binary licensed (PLI2LIB)
  - SAS HBA emulation layer
    - 100% compatible with standard Linux SCSI
      - VFS
      - MD-RAID (hardware acceleration optional)
      - LVM
      - raw block device usage model
    - Optional SCSI target support (additional license)

### A8S20816-MMC Ordering Information

A8S20816 -MMC- **mmm** - **er** - **bb** - **vvv**

1G8 : 1GByte total DDR2-400 registered memory

E : AES Encryption accelerator  
R : RAID5/6 XOR accelerator

L : Linux Board Support PackageE  
N : Ethernet Support

05 : 5VDC input  
12 : 12VDC input  
12e : 12VDC to 28VDC input



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### Technical Specifications

<b>CPU Bus Type</b>	PCI Express x8 (Generation 2 supported)	
<b>PCIe Data Transfer</b>	2.5Gb/s (PCI-Express x1 Gen1) 5Gb/s (PCI-Express x1 Gen2) 5Gb/s (PCI-Express x2 Gen1) 10Gb/s (PCI-Express x2 Gen2) 10Gb/s (PCI-Express x4, Gen1) 20Gb/s (PCI-Express x4, Gen2) 20Gb/s (PCI-Express x8, Gen1) 40Gb/s (PCI-Express x8, Gen2)	
<b>SAS Bus Type</b>	ANSI T10 SAS2 r15	
<b>Operating Voltage</b>	Standard +12VDC +/- 5% Extended +12VDC to +28VDC	
<b>Operating Power</b>	16 Watts ( <i>pending</i> )	
<b>Form Factor</b>	2750 mils x 4600 mils with Samtec Searay high-speed mezzanine connectors	
<b>Agency Approval</b>	<i>(Pending)</i>	
<b>Environments</b>	<b>Operating</b>	<b>Storage</b>
<b>Temperature</b>	0° to 55° C	-40° to +85° C
<b>Relative Humidity</b>	5 to 90% non-condensing	5 to 90% non-condensing

### Software Support

<b>OS Support</b>	<b>Versions</b>
<b>Linux 2.6</b>	Buildroot runtime, custom kernel

### WARRANTY

Astek host adapters are assembled and tested in world-class facilities to assure superior product reliability and performance. Astek's AMC products carry a one-year limited warranty.

### About Astek Corporation

Astek manufactures storage products for embedded markets including medical, telecommunications and military applications. In addition to Host Bus Adapters, Astek also supplies Serial Attached SCSI solutions including edge and fan-out expanders. Astek is an executive member of the PCI Industrial Computer Manufacturers Group (PICMG) [www.picmg.org](http://www.picmg.org)

For more information please visit the Astek web site at:

[www.astekcorp.com](http://www.astekcorp.com)

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