

# ARC-8028 SAS Expander Module

ARC-8028 supports DataBolt™ Bandwidth Optimizer to buffer 6Gb/s data and then transfer it out to the host at 12Gb/s speeds in order to match the bandwidth between faster hosts and slower SAS or SATA devices. It also supports failover function for improving system reliability for today's data center and storage subsystems.



## Highlight

- Flexible 24-port or 32-port SAS expander module
- DataBolt™ Bandwidth Optimizer for balance faster hosts and slower SAS or SATA devices.
- Integrated ARM enclosure processor for SAS SMP functions and SES support
- Supports narrow and wide port configurations
- UART interface for system monitoring and debugging support
- SFF-8485 compliant Serial GPIO (SGPIO) interface on internal SFF-8643 connector
- Support autonomous chassis management
- Dual expander module option support
- LCD Control Panel for easy interactive with module

## Overview

The 12Gb/s SAS ARC-8028 expander module is designed with an integrated ARM Cortex-R4 processor for topology management functions such as discovery, enclosure and drive management, and LED management. The ARC-8028 expander module features three or four 12Gb/s SAS SFF-8644 ports. It is designed to fit into a stand-alone box and can be installed in a 5.25" mounting shell. The ARC-8028 is ideal for enclosure customers that want to support up to 24/32 channels 12Gb/s SAS or 6Gb/s and 3Gb/s SAS/SATA JBOD function units using SFF-8643 SAS cables. The ARC-8028 firmware has been included the failover to utilize the most up-to-date technology available, providing your system with reliable, high-quality performance. User can configure ARC-8028 redundant mode with multiple expander module using either RAID controllers or HBAs to achieve failover protection.

## Unparalleled Performance

The ARC-8028 series expanders include 24/32 internal plus 12/16 external 12Gb/s SAS ports connection for host and easy expansion. High performance architecture sets new boundaries of industry performance expectations: 12Gb/s SAS or 6.0Gb/s and 3Gb/s SAS/SATA. The ARC-8028 incorporates the latest enhancements in SAS along with new LSI DataBolt bandwidth optimizer technology. This is designed to help facilitate the industry transition to 12Gb/s SAS-enabled systems by allowing users to take advantage of 12Gb/s speeds while utilizing existing 6Gb/s drives and backplanes. Using DataBolt, the ARC-8028 buffers 6Gb/s data and then transfers it out to the host at 12Gb/s speeds in order to match the bandwidth between faster hosts and slower SAS or SATA devices.

## Easy Management

The expander box contains an embedded expander manager that can access via in-band SES-2 over SMP protocol and out-of band RS-232 port. An out-of-band serial port is available for managing the configuration and monitoring the expander. The Areca expander firmware and EPLD has implemented the SES-2 protocol and disk activity map to SGPIO based indicator LEDs. For backplane without SGPIO supporting, the expander box also provides two kinds of alternative LED cable header to support the individual fault/activity status indicator for those backplanes. In addition to meet different enclosure, ARC-8028 expander box has implemented autonomous chassis management of two power supplies status connectors, four fan monitor/speed control connectors through the SES-2 protocol. Firmware and configuration data including vendor identification strings can be customized or tuned for each customer.

## Maximum Interoperability

Areca presents its ultra-high performance and high reliability 12Gb/s SAS expander module for a cost-effective and enterprise-class JBOD storage enclosure. A 12Gb/s SAS expander module literally expands the number of end devices that you can connect together. Expander devices, typically embedded into an expander module to connect system backplane, support large configurations of SAS end devices, including SAS host/RAID adapters and SAS and SATA disk drives. The SAS protocol defines a mechanism that has been implemented in the SAS expanders to guarantee fair access between drives in a domain. With ARC-8028 SAS expander, you can build large and complex storage topologies.

## Box Controller Modules

- Expander Board: 1 modules
- Sensors: 1 sensor on expander board

## Controller External Connectors

### SAS Connectors

- 3/4 SFF-8644 Min SAS HD connectors
  - 1 SAS "IN" connector for connection to the host
  - 2/3 SAS "OUT" connector for expansion to next JBOD enclosure

## Drives

### SAS Hot-Plug Hard Drives

- Up to 24/32 12.0 Gb/s, 6.0Gb/s or 3Gb/s SAS hard drives at speed of 10K or 15K rpm

### SATA Hot-Plug Hard Drives

- Up to 24/32 6.0 Gb/s or 3Gb/s SATA hard drives at speeds of 7.2K or 10K rpm

## Internal Connectors

- 6/8 x SFF-8643 Min SAS HD connectors
- 1 x 6-pin PCI-E power connector
- 4 x 3-pin fan connector
- 2 x 2-pin power status connector
- 1 x 6-pin LCD connector
- 1 x 7-pin dual expander module heartbeat connector

## Serial Connector (per Expander Board)

- 1 x 6-pin UART RJ-11 connector (for expander box manager only)
- 1 x RJ-45 LAN connector (for manufacture manager only)

## Physical

41(H) x 145(W) x 200(D) mm

## LED Indicators

### Internal fault/activity header

- 24/32 2.54mm activity and fault header

## External SAS Port LED Indicators

- Two one-color LED status indicators for each SAS host port, one for SAS port link and one for the activity status
- Two one-color LED status indicators for each SAS expansion port, one for SAS port link and one for the activity status

## Monitors/Indicators

- LCD Control Panel for setup, alarm mute and configuration
- System status indication through LCD, LED (link status and activity) and alarm buzzer
- Enclosure management (protocols SES-2 over SAS ports) ready

## Management

- In-band SAS port
- Out-of-band RS232 serial port
- CLI through RS232 serial port

## Environmental

### Temperature


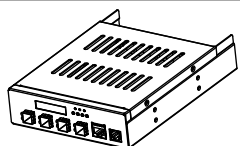
Operating	10° to 40°C
Storage	-40° to 70°C

## Relative Humidity

Operating	10% to 80% (non-condensing)
Storage	5% to 95% (non-condensing)

## Electrical

- Power Dissipation (+12V) 22.8W

Model Name	Interface	External SAS Ports	External SAS Port Type	Internal SAS Ports	Internal SAS Port Type	Product View
ARC-8028-24	12Gb/s SAS	3	SFF-8644	24	SFF-8643	
ARC-8028-32	12Gb/s SAS	4	SFF-8644	32	SFF-8643	



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