areca® At the Heart of Storage

ARC-1289-32I

(PCIe 5.0 x16 Base Switch Adapter)

ARC-1289-32I represents ARC-1389-32I using Base mode firmware. It is a high performance PCIe 5.0 x16 base switch adapter utilizing Broadcom's PEX89048 chip to facilitate advanced data interconnections. It supports diverse applications such as fanout configurations, and NVMe hot-plug functionality for seamless device management. The hardware features four MCIO ports with flexible lane reconfiguration, allowing users to adjust downstream widths from x1 to x16 via a graphical interface. Comprehensive management is available through out-of-band LAN or in-band Archttp utilities, offering web-based controls for monitoring system health, link status, and error logs. Additionally, the adapter includes robust reliability features like redundant flash images for firmware safety and automated intelligent cooling systems. These sources collectively serve as a technical guide for installing, configuring, and leveraging the switch in building high-bandwidth, low-latency, and scalable interconnections for ML/AI (Machine Learning/Artificial Intelligence), HPC (High-Performance Computing), and enterprise applications.

Highlights

- Flexible Port Reconfiguration: Users can reconfigure downstream station port widths (x1, x2, x4, x8, and x16) using a GUI interface.
- High Availability: It includes a redundant flash image, allowing the adapter to revert to a known good firmware version if a corruption occurs during an update.
- Hot-Plug Support: Supports "Surprise Add and Remove" (Hot-Plug) for PCIe devices without disrupting the rest of the system.
- Advanced Monitoring: The firmware logs events and transactions in NVRAM and can monitor slot link status, transaction errors, and attached device information.
- Intelligent Cooling: Features a super silent design that automatically adjusts cooling fan speeds based on environmental conditions.

Adapter Architecture

- PEX89048 Gen5 Switch/High-performance management engine
- PCIe Gen5 x16 lane 512GT/s in upstream
- PCIe Gen5 x32 1024GT/s in downstream
- Support 4x MCIO (PCIe Gen5 x8 per MCIO)
- PCIe Gen5 at 32GT/per lane
- Support SFF-9402 compliant connector side band pin-out

Firmware Features

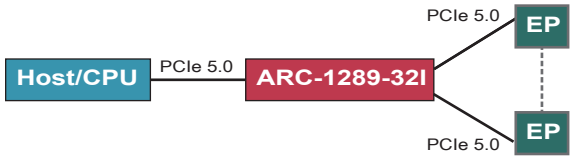
- SRIS and REFCLK support
- Surprise Add and Remove (Hot-Plug) support
- Redundant flash image for adapter availability
- NVRAM for switch adapter event & transaction log
- Flexible reconfiguration downstream station port widths on the fly via GUI: x1, x2, x4, x8, and x16
- Intelligent cooling and advanced slot control support

Monitors/Notification

- System status indication through alarm buzzer
- SMTP support for email notification
- SNMP support for remote manager
- Web based manager via on-board Lan port and In-band Archttp utility
- Support Areca push button and LCD display panel module

Topology 1: The Fanout Switch

In this configuration, the adapter acts as a simple connectivity system. It utilizes a wide upstream port (x16) to support multiple downstream ports of varying widths and speeds. This allows for flexible connections, such as endpoints configured at 32 GT/s even if the host is only at 16 GT/s, or vice-versa.



Topology 2: NVMe Surprise Hot Add/Remove

The adapter supports systems where PCIe devices, such as NVMe drives, can be added to or removed from empty slots in a server or host at any time. This "Surprise Add and Remove" functionality ensures that the rest of the PCIe tree remains undisrupted during the process.

Environmental Specifications

Operating Voltage	12V
Power Consumption	Worst Case: 23.7 Watts, Typical: 18 Watts
Temperature	Operating: 0˚c to 55˚c Storage: -20˚c to 80˚c
Humidity	Operating: 10-85%, relative humidity Non-operating: 5-90%, relative humidity
Compliance Certification	CE, FCC, RoHS, REACHE

areca® At the Heart of Storage
1F., No.9, Alley 2, Lane 35, Ji-Hu Rd., 114Taipei, 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