Aries PCI Express® 4.0 and 5.0 Smart Retimer Add-in-Card

1 Introduction

The Astera Labs Aries PCI Express® 4.0 add-in-card (ECLIPSE-REVA) and Aries PCI Express® 5.0 add-in-card (EQUINOX-REVA), are intended for in-system evaluation of the Aries PCIe 4.0 and 5.0 x16 Smart Retimer. The low-profile active add-in card has a x16 PCIe CEM-compliant edge finger to be plugged into a Gen-4/Gen-5 system, and features a x16 CEM connector on top to install an endpoint add-in card. It is configured for plug-and-play operation, meaning no retimer configuration is required and the Root Complex (e.g. CPU) and Endpoint (e.g. NIC) will automatically form a Link through the Aries Smart Retimer on power-up and de-assertion of PERST#. A Python SDK is available to read out various diagnostics information gathered by the Aries Smart Retimer through the I2C interface to a PC.

2 Technical Information

Feature	Specification
Form Factor	Standard half-height, half-length, single slot width PCIe AIC
Card Physical Dimension	147 mm (L) x 72 mm (H) PCIe AIC standard PCB thickness 0.063” +/- 0.008” (1.6 mm +/- 0.2 mm)
Retimer	Aries PCIe 4.0/Aries PCIe 5.0 Smart Retimer
Connectors	PCIe 4.0/5.0 x16 edge finger, PCIe 4.0/5.0 x16 CEM top slot
LED Indicators	Red: Retimer reset, PCIe fundamental reset Orange: EEPROM load done, retimer heartbeat, link status
Port Bifurcation Options	1x16, 2x8, 4x4, 8x2, others available via firmware
Debug Headers	1.8 V SMBus (retimer), 1.8 V SMBus (EEPROM)

3 Applications

- Evaluation of Aries PCIe x16 Smart Retimer for server, storage, JBOG, and other PCIe-based systems
- Production-ready retimer add-in card to extend PCIe signal reach for rapid system deployment. For example, easy plug-and-play implementation for GPU accelerated servers, NIC extension, switches, and other topologies that can utilize a standard CEM slot.

Contact info@AsteraLabs.com for the ECLIPSE/EQUINOX-REVA User’s Guide and SDK.

Figure 1: EQUINOX-REVA top side