Aries PCIe®/CXL® Smart Cable Modules

Benefits and Features

- Purpose-built in multiple form factors for a flexible supply chain
- Supports various copper cable gauges up to 7 meters in length for PCIe 5.0 and up to 6 meters for PCIe 6.x
- Compatible with PCIe 6.x, including backwards compatibility with previous PCIe generations
- 64 GT/s, 32 GT/s, 8 GT/s, 5 GT/s, and 2.5 GT/s data rates with automatic link equalization
- Flexible link bifurcation including 1x16, 2x8, 4x4, 8x2, and others
- Automatic orientation detection for symmetric cable design and operation
- Supports SRIS and SRNS clock topologies
- Supports hot plug and hot un-plug
- Supports lane margining at the Receiver (both timing and voltage) and protocol loopback
- Supports systems with lane reversal and implements automatic polarity correction
- Low-power advanced CMOS process
- Supports L1.0 low-power modes
- COnnectivity System Management and Optimization Software (COSMOS) suite for extensive link management, fleet management and RAS features
- Full featured C and Python SDKs for rapid integration of advanced diagnostics features
- Non-disruptive module firmware update capability

Applications

- Server-to-JBOG External PCIe Cabling
- JBOG-to-JBOG External PCIe Cabling
- Switch to JBOG External PCIe Cabling

Product Family Information

| Part #	PCIe Gen	Lanes	Status
PM20-5xx	PCIe 5.0	Various	Production
PM30-6xx	PCIe 6.x	Various	Sampling

Description

The Aries Smart Cable Module is a highly integrated system consisting of the Aries PCIe/CXL Smart DSP Retimer integrated circuit (IC) and peripheral components assembled on multiple form factors. The paddle card module is designed to be integrated into active electrical cable (AEC) assemblies supporting a variety of applications, such as straight cables and breakout cables.

Rack infrastructure in hyperscale data centers requires cost-effective interconnects which are thin, bendable, and 1-7 meters or more in length. Large AI clusters require interconnecting AI training hardware within and across racks. The Aries Smart Cable Modules make these architectures possible by enabling PCIe 6.0 x16 connectivity over thin-gauge copper cables.

Fleet management and diagnostics are just as important as cable reach, cable bulk, and interconnect cost. Astera Labs' COSMOS suite enables system baseboard/system management controllers (BMCs/SMCs) to utilize an array of customizable diagnostics and telemetry features to enable continuous monitoring of critical server-to-JBOG, JBOG-to-JBOG, and Switch-to-JBOG links. Parameters such as eye opening, equalization levels, junction temperature, and more are monitored, and interrupts to the host can be enabled whenever configurable limits are crossed. A full set of self-test features – host-side and line-side loopback, pseudo-random bit sequence (PRBS) generation and checking, etc. – enable rapid troubleshooting to minimize link down time and accelerate fault isolation.
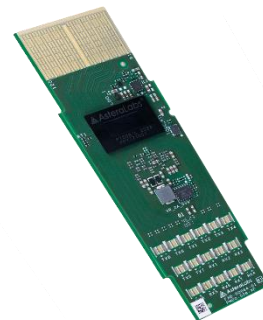
Purpose-Built Connectivity Solutions for AI and Cloud Infrastructure
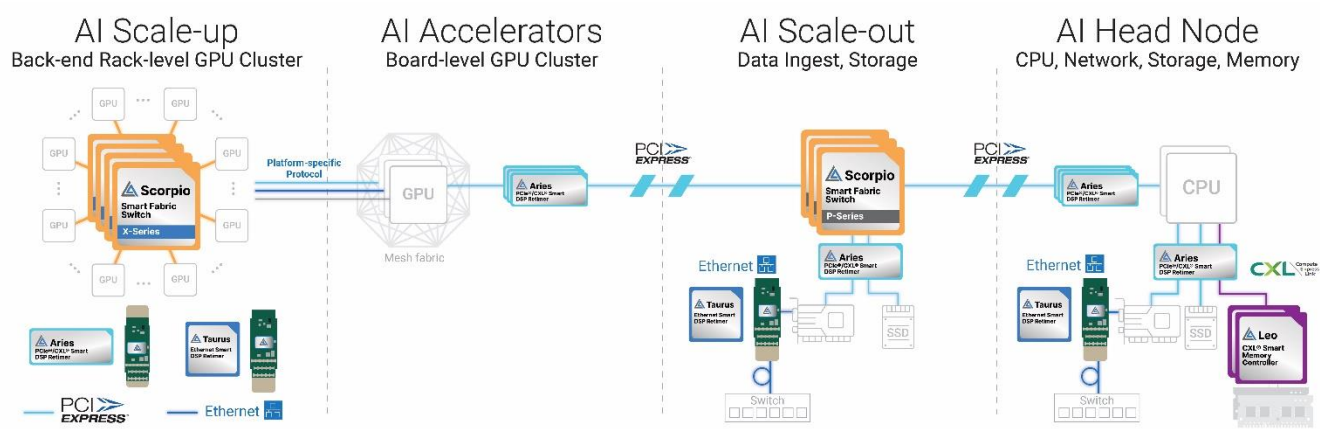
Astera Labs' Intelligent Connectivity Platform

The rapid growth in AI and the accelerated pace of AI platform design cycles is driving the need for exponential compute at cloud-scale, and purpose-built connectivity solutions are required to unlock the full potential of AI and cloud infrastructure.

Driven by the growth of AI workloads at scale, Astera Labs devised the innovative concept of the Intelligent Connectivity Platform, allowing holistic design with monitoring and tracking capabilities for long-term 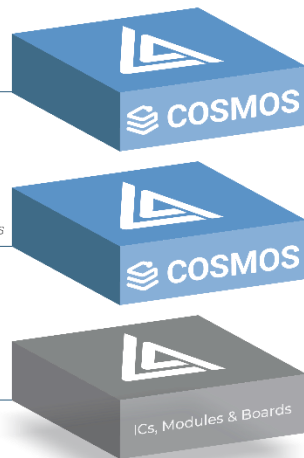health and performance of connectivity infrastructure.