

AQLOUD™ ETHERNET PHYS

10GBASE-T/1000BASE-T/100BASE-TX Ethernet PHYs

Product Overview

The Aquantia® Aqloud PHYs are low-power, high-performance 10GBASE-T/1000BASE-T/100BASE-TX transceivers used in cloud and corporate data center high-density switches and servers. These devices are compliant with the IEEE® 802.3an standard, and perform all of the physical layer functions required to implement 10GBASE-T transmission over 100 meters of twisted pair cabling.

The Aquantia Aqloud PHYs integrate such features as Energy Efficient Ethernet (EEE), 1588v2 and MACsec. The architecture features advanced mixed-signal Radio Frequency Interference (RFI) cancellation techniques and integrated MDI filtering ensuring robustness in data center environments and reduced board area and cost.

Quad

AQ2402 is housed in a 25 mm flip-chip BGA package. The AQ2402 provides backward compatibility with Aquantia's 40 nm quad allowing customers to migrate their existing designs to the lower power 28 nm version.

Dual

Network Interface Card (NIC) and LAN-on-Motherboard (LOM) applications leverage the low power of AQ2203 to create passively cooled solutions for the volume server market. Its 19 mm flip-chip BGA package features flexible system interfaces including high-performance full KR (with auto-negotiation)/XF1/RXAUI/XAUI/SGMII.

Single

The 19 mm AQ2104 is pin compatible with AQ2203, and provides the option for single- or dual-port NIC and LOM solutions with minimal design edits. The AQ2104 features flexible system interfaces including high-performance full KR (with auto-negotiation)/XF1/RXAUI/XAUI/SGMII.

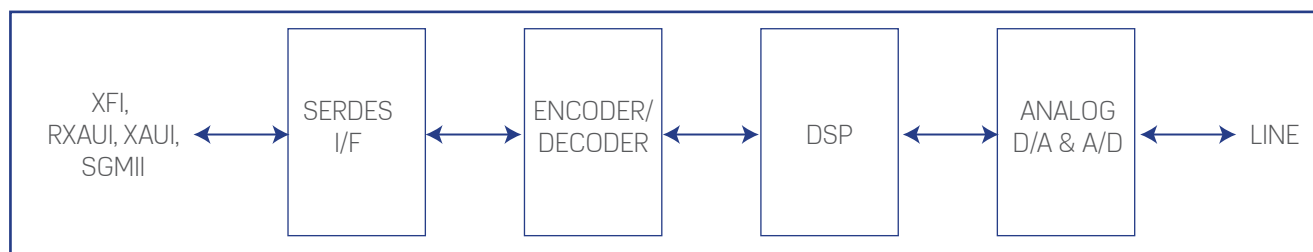
Features

- **Multi-rate Connectivity**
 - Supports 10GBASE-T/1000BASE-T/100BASE-TX
- **Integrated MACsec, 1588v2, EEE support**
 - Full support for AES-256 and stand-alone operation
- **Integrated Wake-On-LAN Support**
 - Compliant to Microsoft Network Device Class specification
- **Advanced Cable Diagnostics**
 - On-chip high-resolution cable analyzer
- **Built-in Thermal Management**
 - On-chip thermal sensor with alarm and warning thresholds
- **High-Performance Interfaces**
 - Full KR (with auto-negotiation)/XF1/RXAUI/XAUI/SGMII

Summary of Benefits

- **Full-spec 10GBASE-T Performance**
 - 100 meters over Cat 6A and Cat 7
 - 55 meters over Cat 6 and best effort over Cat 5e
- **MACsec, 1588v2, EEE**
 - Enables refresh of legacy switches without ASIC re-spin
- **Robust RFI Performance**
 - Resilient operation when exposed to RFI
- **Comprehensive Interface Support**
 - Supports legacy and next-generation MACs/switches/processor interfaces

Aquantia AQLoud PHY Block Diagram (Per-Port)



Applications

Aquantia's AQLoud low power, compact 10GBASE-T PHYs enable the mass transition from GE to 10GE. Dual- and single-port devices are ideally suited for server NIC and LOM applications, and the quad-port device permits efficient high-port density switch design.

Switching

- High-density Top-of-Rack switch and modular switch line card

Servers

- LOM, NIC, and Network Daughter Card

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