AQtion AQN-107 10 GbE Network Interface Adapter

Introducing 10 GbE for Data Intensive PC and Workstation Applications

Product Overview

The Aquantia AQtion AQN-107 Network Interface Card (NIC) is based on the company's award-winning[1] AQtion Ethernet controller. It is designed to deliver Multi-Gig connectivity to individual users that was previously only available for high-end servers. The AQtion AQN-107 is game changer, enabling the evolution of Enterprise, gaming, and home networking beyond 1 Gbps up to 10 Gbps, 5 Gbps, and 2.5 Gbps rates. It is ideally suited for client PCs and workstations.

This groundbreaking Aquantia NIC supports 10GBASE-T Ethernet in compliance with the IEEE 802.3an standard, as well as 5 Gbps and 2.5 Gbps Ethernet speeds over standard Cat 5e and Cat 6 copper cables. Compliant to the IEEE 802.3bz standard ratified in September 2016, the AQtion AQN-107 NIC is also backwards-compatible with legacy 1000BASE-T Ethernet.

The AQtion AQN-107 is a single-chip, single-port, high-performance PCIe 3.0 Multi-Gig 10GBASE-T/5GBASE-T/2.5GBASE-T/ 1000BASE-T/100BASE-TX Ethernet adapter. It incorporates Aquantia's AQrate PHY technology to deliver 10 GbE, 5 GbE and 2.5 GbE network connectivity speeds over 100 m with zero change required for legacy cabling. Speeds ranging from 5 GbE to 100 M are supported by Cat 5e cabling while 10GbE requires a minimum of Cat6 with Cat 6a running up to 100 m.

AQtion's integrated AQrate PHY is compatible with both the IEEE 802.3an/bz standard and with the NBASE-T™ Alliance PHY specification. It performs all the physical layer functions required to implement 10GBASE-T/5GBASE-T/2.5GBASE-T/1000BASE-T/100BASE-TX transmission over 100 meters of twisted pair cabling. The AQtion AQN-107 NIC also features Energy Efficient Ethernet (EEE) and Precision Time Protocol (PTP)/1588v2.

Applications

Aquantia's AQtion AQN-107 is ideally suited for client PCs and workstations used for data intensive computing in numerous verticals including multimedia, education, medical, financial, industrial design and gaming applications.

Drivers: Windows® 10, 8.1, 8, 7 (32/64 bit), Linux 3.2, 3.10, 3.12, 4.2, and 4.4

Utilities: Production test tool, ROM programming and Windows Installer

Boot Options: UEFI and PXE

Power Management: Wake-on-LAN (WoL)

Features	Benefits
Single chip solution	Integrated PCIe, MAC, and PHY minimizes board space & power utilization
PCI Express Gen3 or Gen2	Supports line rates of 8.0 GT/s and 5.0 GT/s per lane
Bus width	Supports Gen3 x4
MSI, MSI-X, and legacy INTx PCIe interrupts	Improved CPU utilization and network performance
Two SMBus (Master/Slave + Slave)	Communication and management function

1 Tom's Hardware selected the Aquantia AQtion controller as the "Best New Motherboard Feature" for its CES 2017 Best in Show award

PHY Specific Features	Benefits
Integrated Aquantia AQrate PHY featuring NBASE-T technology	100 meters over Cat 6a at 10 G / 5 G / 2.5 G / 1 G / 100 M or Cat 5e at 5 G/ 2.5 G / 1 G / 100 M
Advanced cable diagnostics	On-chip high resolution cable analyzer
Audio Video Bridging (AVB) and 1588v2	Management of time-sensitive traffic packets
EEE support	PHY power savings mode

MAC Specific Features	Benefits
Large Send Offload (LSO), Receive-Side Scaling (RSS), Direct Cache Access (DCA) header checksum	Increased network performance and lower host CPU utilization
WoL power management	Supports lower power modes
On-chip CPU DASH	Desktop management
Quality of Service (QOS) support	Up to eight traffic classes and Data Center Bridging (DCB)
Jumbo frames (up to 9Kbytes)	Improved network performance with reduced CPU utilization
IPv4, IPv6/TCP and IPv6/UDP checksum offload	Offloading calculations and improved CPU usage

Board Specifications	
Ethernet Network Adapter	Aquantia AQtion PCIe x4 10 GbE/5 GbE/2.5 GbE NIC 1GbE and 100M
Ethernet Controller	AQC107
External Connector Type	RJ45
Cable Type	100 meters with Cat 5e for 5 GbE to 100 M and 100 m Cat 6a cabling for 10 GbE
Supported Data Rates	1 0G/5 G/2.5 G/1G/100 Mbps
Bus Width	PCIe Gen3 x4
Typical Power Consumption	6 W at 10 Gbps, 4W at 5 Gbps full length 100 m Cat6a
Operating Temperature	0°C to 55°C with no air flow
Standard compliance	IEEE 802.3bz – NBASE-T, IEEE 802.3x – flow control, IEEE 802.1P – quality of service, IEEE 802.1QAV – AVB
Safety standards	UL, VDE, CB
EMC standards	CE, FCC, ICES, ACA, BSMI, MIC/RRL, VCCI
OS Driver Support	Windows 10, 8.1, 8.0, and 7 (32-Bit/64-Bit), Linux 3.2, 3.10, 3.12, 4.2 and 4.4
Utilities Supported	Windows Diagnostics, Windows Installer Utilities
Management Supported	WOL, ACPI (Advanced Configuration and Power Interface)
Boot Options Supported	UEFI (Unified Extensible Firmware Interface) 2.3/2.5, PXE (Preboot Execution Environment) 2.0
Ordering Part number	AQN-107-104-SFA (Full-height bracket), AQN-107-104-SHA (Half-height bracket)
Board Dimensions	2.68 in. x 3.25 in. (without bracket)

NBASE-T
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