

# Marvell® AQtion AQN-107 10 GbE Network Interface Adapter

Introducing 10 GbE for Data Intensive PC and Workstation Applications

## Overview

The Marvell® AQtion AQN-107 Network Interface Card (NIC) is based on the company's award-winning 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 Marvell 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/5GBASET/2.5GBASE-T/ 1000BASE-T/ 100BASE-TX Ethernet adapter. It incorporates Marvell'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. 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.

## Key Features

Features	Benefits
Single-chip solution	<ul style="list-style-type: none"> <li>Integrated PCIe, MAC, and PHY minimizes board space &amp; power utilization</li> </ul>
PCI Express Gen3 or Gen2	<ul style="list-style-type: none"> <li>Supports line rates of 8.0 GT/s and 5.0 GT/s per lane</li> </ul>
Bus width	<ul style="list-style-type: none"> <li>Supports Gen3 x4</li> </ul>
MSI, MSI-X, and legacy INTx PCIe interrupts	<ul style="list-style-type: none"> <li>Improved CPU utilization and network performance</li> </ul>
Two SMBus (Master/Slave + Slave)	<ul style="list-style-type: none"> <li>Communication and management function</li> </ul>
PHY Specific Features	Benefits
Integrated Marvell AQrate PHY featuring NBASE-T technology	<ul style="list-style-type: none"> <li>100 meters over Cat 6a at 10G/5G/2.5G/1G/100M or Cat 5e at 5G/2.5G/1G/100M</li> </ul>
Advanced cable diagnostics	<ul style="list-style-type: none"> <li>On-chip high resolution cable analyzer</li> </ul>
Audio Video Bridging (AVB) and PTP/1588v2	<ul style="list-style-type: none"> <li>Management of time-sensitive traffic packets</li> </ul>
EEE support	<ul style="list-style-type: none"> <li>PHY power savings mode</li> </ul>

MAC Specific Features	Benefits
<ul style="list-style-type: none"> <li>Large Send Offload (LSO)</li> <li>Receive Side Scaling (RSS)</li> <li>Direct Cache Access (DCA)</li> <li>Header checksum</li> </ul>	<ul style="list-style-type: none"> <li>Increased network performance and lower host CPU utilization</li> </ul>
Wake-on-LAN (WoL) power management	<ul style="list-style-type: none"> <li>Supports lower power modes</li> </ul>
On-chip CPU DASH	<ul style="list-style-type: none"> <li>Desktop management</li> </ul>
Quality of Service (QoS) support	<ul style="list-style-type: none"> <li>Up to eight traffic classes and Data Center Bridging (DCB)</li> </ul>
Jumbo frames (up to 9Kbytes)	<ul style="list-style-type: none"> <li>Improved network performance with reduced CPU utilization</li> </ul>
IPv4, IPv6/TCP and IPv6/UDP checksum offload	<ul style="list-style-type: none"> <li>Offloading calculations and improved CPU usage</li> </ul>
Board Specifications	
Ethernet Network Adapter	<ul style="list-style-type: none"> <li>Marvell AQtion PCIe x4 10 GbE/5 GbE/2.5 GbE NIC 1GbE and 100M</li> </ul>
Ethernet Controller	<ul style="list-style-type: none"> <li>AQC107</li> </ul>
External Connector Type	<ul style="list-style-type: none"> <li>RJ45</li> </ul>
Cable Type	<ul style="list-style-type: none"> <li>100 meters with Cat 5e for 5 GbE to 100 M and 100 m Cat 6a cabling for 10 GbE</li> </ul>
Supported Data Rates	<ul style="list-style-type: none"> <li>10G/5 G/2.5 G/1G/100 Mbps</li> </ul>
Bus Width	<ul style="list-style-type: none"> <li>PCIe Gen3 x4</li> </ul>
Typical Power Consumption	<ul style="list-style-type: none"> <li>6 W at 10 Gbps, 4W at 5 Gbps full length 100 m Cat6a</li> </ul>
Operating Temperature	<ul style="list-style-type: none"> <li>0°C to 55°C with no air flow</li> </ul>
Standard compliance	<ul style="list-style-type: none"> <li>IEEE 802.3bz – NBASE-T, IEEE 802.3x – flow control</li> <li>IEEE 802.1P – quality of service, IEEE 802.1QAV – AVB</li> </ul>
Safety standards	<ul style="list-style-type: none"> <li>UL, VDE, CB</li> </ul>
EMC standards	<ul style="list-style-type: none"> <li>CE, FCC, ICES, ACA, BSMI, MIC/RRL, VCCI</li> </ul>
OS Driver SupUtilities Supported	<ul style="list-style-type: none"> <li>Windows 10, 8.1, 8.0, and 7 (32-Bit/64-Bit)</li> <li>Linux 3.2, 3.10, 3.12, 4.2 and 4.4</li> </ul>
Utilities Supported	<ul style="list-style-type: none"> <li>Windows Diagnostics, Windows Installer Utilities</li> </ul>
Management Supported	<ul style="list-style-type: none"> <li>WOL, ACPI (Advanced Configuration and Power Interface)</li> </ul>
Boot Options Supported	<ul style="list-style-type: none"> <li>UEFI (Unified Extensible Firmware Interface) 2.3/2.5,</li> <li>PXE (Preboot Execution Environment) 2.0</li> </ul>
Ordering Part number	<ul style="list-style-type: none"> <li>AQN-107-104-SFA (Full-height bracket)</li> <li>AQN-107-104-SHA (Half-height bracket)</li> </ul>
Board Dimensions	<ul style="list-style-type: none"> <li>2.68 in. x 3.25 in. (without bracket)</li> </ul>

## Target Applications

Marvell'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)



Marvell first revolutionized the digital storage industry by moving information at speeds never thought possible. Today, that same breakthrough innovation remains at the heart of the company's storage, networking and connectivity solutions. With leading intellectual property and deep system-level knowledge, Marvell semiconductor solutions continue to transform the enterprise, cloud, automotive, industrial, and consumer markets. For more information, visit [www.marvell.com](http://www.marvell.com).

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**Marvell\_AQN107\_PB Revised: 04/20**