

# Marvell® AQtion AQN-108 5 GbE/2.5 GbE Network Interface Adapter

Enabling New Levels of Multi-Gigabit Connectivity for High-Performance PCs and Professional Workstations

## Overview

The Marvell® AQtion AQN-108 Network Interface Card (NIC) is based on the company's award-winning AQtion Ethernet controller. It delivers Multi-Gig connectivity for PCs and workstations that was previously only available for high-end servers. The AQtion AQN-108 is ideally suited for PCs and workstations used for Enterprise, gaming, and home networks requiring rates beyond 1 Gbps up to, 5 Gbps, and 2.5 Gbps.

This innovative Marvell NIC supports 5Gbps and 2.5Gbps Ethernet speeds over standard Cat 5e copper cables. Compliant to the IEEE 802.3bz standard ratified in September 2016, The AQtion AQN-108 NIC is also backwards-compatible with legacy 1000BASE-T Ethernet.

The Marvell AQN-108 is a single-chip, single-port, high-performance PCIe 3.0 multi-gigabit 5GBASE-T/2.5GBASE-T/1000BASE-T/100BASE-TX Ethernet adapter. It supports line-rate performance up to 5 GbE Ethernet links and incorporates Marvell's AQrate technology to deliver 5 GbE and 2.5 GbE network connectivity speed through 100 meters of Cat 5e cabling and also enables higher data rates over legacy cabling.

The AQtion NIC's integrated AQrate PHY is compatible with the IEEE 802.3an/bz standard to perform all the physical layer functions required to implement 5GBASE-T/2.5GBASE-T/1000BASE-T/100BASE-TX transmission over 100 meters of twisted pair cabling. The AQrate PHY family integrates 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 and power utilization</li> </ul>
PCI Express Gen3	<ul style="list-style-type: none"> <li>Supports line rates of 8.0 GT/s</li> </ul>
Bus width	<ul style="list-style-type: none"> <li>Supports Gen3 x1</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 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 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 x1 5 GbE/2.5 GbE NIC</li> </ul>
Ethernet Controller	<ul style="list-style-type: none"> <li>AQC108</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 cabling</li> </ul>
Supported Data Rates	<ul style="list-style-type: none"> <li>10G/5G/2.5G/1G/100 Mbps</li> </ul>
Bus Width	<ul style="list-style-type: none"> <li>PCIe Gen3 x1</li> </ul>
Typical Power Consumption	<ul style="list-style-type: none"> <li>4W at 5 Gbps with full length 100 M Cat5e</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), 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-108-101-SFA (Full-height bracket)</li> <li>AQN-108-101-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 AQN-108 is a game changer that allows enterprise, gaming, and home networking to evolve beyond 1 Gbps up to the 5 Gbps, and 2.5 Gbps rates. The AQN-108 is ideally suited for client PCs and workstations.

**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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