



## TECHNICAL FEATURES

- Single- and dual-port configurations
- QSFP+ connectors (QSFP modules included with -000 models)
- Up to 40Gb/s throughput per port
- High-performance x8 PCIe 3.0 bus
- Low profile form factor
- Driver support for Windows®, Linux® and macOS® operating systems
- RDMA over Converged Ethernet (RoCE) enables industry-leading low-latency (1us MPI ping latency) and decreases CPU utilization
- TCP/UDP/IP hardware-based stateless offloads
- SR-IOV technology dedicates adapter resources for virtual machines within servers
- Guaranteed bandwidth and low-latency services
- Energy efficient Ethernet enables lowest power draw on the market for a 40GbE NIC
- Hardware-based I/O virtualization

# ATTO FastFrame™ 40Gb Ethernet NICs

## 40GbE TO PCIe 3.0 NETWORK INTERFACE CARDS

ATTO Technology Inc.'s FastFrame™ 40 GbE network interface cards (NICs) are designed to enable full-utilization of 40GbE bandwidth with low-latency remote direct memory access (RDMA) over converged ethernet support. FastFrame NICs use less power than other 40GbE NICs, providing a higher ROI by transferring more data per dollar spent on power than the competition.

## OPTIMIZED FOR DATA CENTER APPLICATIONS

With full support for TCP/IP, UDP, iSCSI, Fibre Channel over Ethernet plus RDMA over Converged Ethernet (RoCE), ATTO FastFrame 40GbE NICs deliver the bandwidth needed at the core of today's data centers. While most TCP-based 40GbE NICs only achieve a maximum 23Gb/s bandwidth, the RoCE feature on FastFrame 40GbE NICs enables near line-rate performance via direct memory transfers over Layer 2 Ethernet.

Best-in-class energy efficiency and single route input/output virtualization technology for enhanced virtualization support make ATTO's Fast Frame 40GbE NICs ideal for a wide variety of data center use cases. In addition, their industry-leading low latency powers optimal performance for applications such as high performance computing clusters while simultaneously minimizing CPU utilization.

## PERFORMANCE ENGINEERED FOR HIGH-RESOLUTION DIGITAL VIDEO (4K/8K)

Bandwidth reductions caused by transmission control protocol overhead make many competing 40GbE NICs incapable of supporting 8K video. ATTO's Fast Frame 40GbE NICs, in contrast, utilize RoCE to free up the full 40GbE pipeline, providing sufficient bandwidth for a single uncompressed 8K stream or for multiple 4K video streams.

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## 40GbE TO PCIe 3.0 NETWORK INTERFACE CARDS

### APPLICATIONS

ATTO's FastFrame™ 40GbE NICs combine 40GbE technology with the lossless benefits of Enhanced Ethernet and robust software iSCSI initiators to meet the performance and efficiency needs of today's growing data centers. FastFrame 40GbE NICs are specifically built for applications that require low-latency, high-bandwidth data transfers, including HPC clusters, cloud environments, rackmount servers in data centers and high-resolution 4K and 8K video.

### GENERAL FEATURES

- Remote Direct Memory Access (RDMA) Support via RDMA over Converged Ethernet (RoCE)
- Tx/TCP segmentation offload (Large Send Offload—LSO)
- Low latency interrupts
- PCI-SIG SR-IOV support
- Interrupt levels INTA, MSI, MSI-X
- Direct Cache Access (DCA) eliminates cache misses and reduces CPU load
- Plug and play specification support
- Advanced packet filtering
- VLAN support with tag filtering, insertion and stripping

### USER BENEFITS

- Multiple offloads reduce CPU utilization and increase throughput
- Low power draw reduces power and cooling costs
- Low total cost of ownership (TCO) with high bandwidth over a single link
- Single adapter solution ideal for numerous applications across IT and M&E markets

### MANAGEMENT TOOLS

- Easy system monitoring with Simple Network Management Protocol (SNMP) and Remote Network Monitoring (RMON) Statistic Counters

### OPERATING SYSTEM SUPPORT

- Windows®
- Windows Server®
- Linux®
- macOS®

### EXTERNAL CONNECTIVITY

- QSFP+
- 2 LED indicators per port

### NETWORK STANDARDS

- IEEE 802.3ba (40 Gigabit Ethernet)
- IEEE 802.3az (Energy Efficient Ethernet)
- IEEE 802.1p (Priority Encoding)
- IEEE 802.1q (VLAN tagging)
- IEEE 802.3ad (Link aggregation)
- IEEE 802.1qbb (Priority flow control)
- IEEE 802.1qaz (Enhanced Transmission)
- IEEE 8023.AD (Load-balancing, failover)
- 802.1 Qaz: Enhanced Transmission

### ENVIRONMENTAL

#### OPERATING TEMPERATURE :

- Temperature: 0-55° C
- Airflow required: 100 lf/m
- Humidity: 10-90% non-condensing

#### STORAGE TEMPERATURE :

- Temperature: -40 C to 70° C
- Humidity: 5-95% non-condensing

### AGENCY APPROVALS

- FCC Part 15 Subpart B, Class A
- EN55022: 2010, Class A
- EN55024: 2010

### COMPLIANCE

- EN60950-1
- EN60825-1
- EN60825-2
- RoHS

### WARRANTY

- Three Years

### ORDERING INFORMATION

- Phone: 716-691-1999 ext. 241

#### QSFP MODULE INCLUDED:

- Dual-port: FFRM-NQ42-000
- Single-port: FFRM-NQ41-000

#### DIRECT ATTACHED MODELS (NO QSFP INCLUDED)

- Dual-port: FFRM-NQ42-DA0
- Single-port: FFRM-NQ41-DA0



ATTO FastFrame	NQ41	NQ42
<b>Ports</b>	Single	Dual
<b>Bus Characteristics</b>	x8 PCIe 3.0	x8 PCIe 3.0
<b>Connector</b>	QSFP+	QSFP+
<b>Form Factor</b>	Low Profile	Low Profile
<b>Max Transfer Rate</b>	5 GB/s	10GB/s
<b>Optical SKU</b>	FFRM-NQ41-000	FFRM-NQ42-000
<b>Direct Attach SKU</b>	FFRM-NQ41-DA0	FFRM-NQ42-DA0