10 Gigabit Ethernet Network Interface Cards

FastFrame™ NS14
FastFrame™ NS12
FastFrame™ NS11

ATTO’s FastFrame™ 10 Gigabit Ethernet Network Interface Cards provide maximum throughput for high bandwidth network connectivity for demanding IT and media and entertainment applications.

Industry Proven Technology
FastFrame 10GbE Network Interface Cards are built on an industry standard, Ethernet technology from Intel. The FastFrame NS14, NS12 and NS11 simplify networking administration, integrate seamlessly into existing environments and reduce the total cost of ownership by improving connection bandwidth and eliminating redundant network infrastructure components.

Flexible Connectivity Solutions
FastFrame 10GbE Network Interface Cards provide the most flexible and scalable connectivity for today’s data center environments. By leveraging Data Center Bridging and support for software iSCSI initiators FastFrame network adapters offer the ability to support both local and storage area networks. With broad operating system support NS14, NS12 and NS11 offer optimized connectivity for high bandwidth environments.

Performance Engineered
FastFrame cards, with support for link aggregation and failover, offer redundancy and high availability for critical network applications. The FastFrame NICs provide industry-leading throughput and latency management with minimal CPU utilization and power consumption. With 10Gb/s data transfer rates and multiple offloads (IPsec, TCP, IPv4, UDP), FastFrame adapters are the premier connectivity choice for bandwidth-intensive applications such as data back-up and restoration, clustered computing, IP content delivery, medical imaging, and video rendering. With multi-core processors driving the need for higher bandwidth, FastFrame 10GbE network adapters deliver superior throughput to meet that need.

Advanced Network Management
FastFrame 10GbE Network Interface Cards provide a common foundation for both Ethernet and storage networks. The FastFrame Ethernet adapters leverage unified network investments and eliminate the need for multiple adapters and switches, while reducing power and cooling expenses. By providing multi-protocol support and leveraging 10Gb Converged Enhanced Ethernet links, FastFrame Network Interface Cards dramatically reduce the cost and complexity of a data center’s cabling infrastructure.

Technical Features
- Quad, dual and single port configurations
- Up to 10Gb/s throughput per port
- High-performance x8 PCIe 2.0 bus
- Low profile (single and dual channel) or full height form factor
- Support for Data Center Bridging and software iSCSI initiators
- Driver support for Windows®, Linux and Mac® operating systems
- TCP, UDP and IPv4 checksum offloading, IPsec offloading and Tx/TCP segmentation offloading
- Load-balancing on multiple CPUs
- Minimized interrupts for low latency
- Industry’s lowest power consumption
- 3-year standard product warranty
## Technical Specifications

### Applications
FastFrame™ 10GbE Network Interface Cards combine the unparalleled performance of 10 Gigabit Ethernet, the lossless benefits of Enhanced Ethernet and robustness of software iSCSI initiators, to meet the performance and economic needs of today’s growing data centers. The FastFrame NS14, NS12 and NS11 are ideal for applications that require low latency, high bandwidth data transfers, such as data back-up and restoration, video-on-demand and video streaming, medical imaging, and clustered databases.

### General Features
- Intel Ethernet Controller #82599
- Data rate per port: 10GbE
- TCP, UDP and IPv4 checksum offloading
- TX/TCP segmentation offload (Large Send Offload—LSO)
- IPsec offload
- Low latency interrupts
- MSI-X support Multiple Independent Queues (16 queues per port)
- Interrupt moderation
- Data Center Bridging (DCB) support
  - Priority-Based Flow Control 802.1Qaz rev.0
  - Enhanced Transmission Selection (ETS) 802.1Qaz rev.0
- Data Center Bridging (DCBx) 802.1Qaz rev.0 protocol
- Header splits and Replication in Receive
- Receive Side Scaling for multiple Rx queues
- Direct Cache Access (DCA) eliminates cache misses and reduces CPU load
- Interrupt levels INTA, MSI, MSI-X
- Plug and play specification support
- Time Sync for networked Ethernet equipment (IEEE 1588, 802.1as)
- VMX and next-generation VMXq QoS features
- IEEE 802.3 2005 flow control support
- Advanced Packet Filtering
- VLAN support with tag insertion and stripping
- PCI-SIG SR-IOV Implementation (64 virtual functions per port)

### Advanced Software Features
- Adaptive load balancing
- Teaming support
- IEEE802.3ad (link aggregation control protocol)
- PCIe Hot Plug/Active peripheral interconnect
- IEEE 802.1Q VLANs
- Multiple offloads for lower processor usage and increased throughput
- Reduced power, cooling and cabling costs
- Low total cost of ownership (TCO) with high bandwidth over a single link
- Watchdog Timer for chip/driver status monitoring
- Easy system monitoring with Simple Network Monitoring Protocol (SNMP) and Remote Network Monitoring (RMON) Statistic Counters
- DCBX Protocol
- Supports 10 G SFP + Cu for Direct Attach
- 2 LED indicators per port
- LED Indicators: LINK (solid), ACTIVITY (blinking), LINK SPEED (green = 10Gb, yellow = 1Gb)

### Hardware Certifications and Network Standards
- IEEE802.3ae: 10GBASE-SR, 10GBASE-LR
- 802.1 Qaz: Enhanced Transmission Selection (ETS) 802.1Qaz rev.0
- 802.1 Qbb: Priority Flow Control
- 802.1 Qaz Enhanced Transmission
- DCBX Protocol

### Bus Specifications
- x8 PCI Express 2.0
- Supports PCI Express Base 2.0 and CEM Spec 2.0

### Operating System Support
- Windows® Server 2003, 2008,
- Windows XP, Vista, 7
- Red Hat (RHEL) and SUSE (SLES) Linux
- Mac® OS X® 10.6, 10.7

### Power Consumption
- FFRM-NS11: 4.7W
- FFRM-NS12: 5.9W
- FFRM-NS14: 15.7W

### Environmental and Physical Specifications
- Operating environment: 0°C to 55°C (-40°F to 131°F)
- Non operating environment: -40°C to 70°C (-40°F to 157°F)
- Airflow required: 100 lfm
- Humidity: 5% to 95% non-condensing
- Power Consumption
  - FFRM-NS14: 15.7W
  - FFRM-NS12: 5.9W
  - FFRM-NS11: 4.7W

### Warranty
- 3 Year

**Ordering Information**
Phone: 716-691-1999

Quad Port: FFRM-NS14-000
Dual Port: FFRM-NS12-000
Single Port: FFRM-NS11-000

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### ATTO FastFrame NS14
- **Ports**: Quad Port
- **Bus Characteristics**: x8 PCIe 2.0
- **Connector**: LC Fiber Optic
- **Form Factor**: Full Height
- **Transfer Rate**: 8GB/s (full-duplex)
- **Part Number**: FFRM-NS14-000

### ATTO FastFrame NS12
- **Ports**: Dual Port
- **Bus Characteristics**: x8 PCIe 2.0
- **Connector**: LC Fiber Optic
- **Form Factor**: Low Profile
- **Transfer Rate**: 5GB/s (full-duplex)
- **Part Number**: FFRM-NS12-000

### ATTO FastFrame NS11
- **Ports**: Single Port
- **Bus Characteristics**: x8 PCIe 2.0
- **Connector**: LC Fiber Optic
- **Form Factor**: Low Profile
- **Transfer Rate**: 2.5GB/s (full-duplex)
- **Part Number**: FFRM-NS11-000

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