



## 10GBASE-T Network Interface Cards

### FastFrame™ NT12, NT11

50% faster than Fibre Channel\* over existing structured Cat6a cabling. Power consumption 30% lower than competitors. Built on the latest Intel technology. Reliable, inexpensive, fast access to block storage via iSCSI at no additional cost. Lossless Ethernet (CEE) and Data Center Bridging (DCB) for improved iSCSI quality of service.

#### Fast Network & Storage Connectivity, Simplified

iSCSI support with Lossless Ethernet, provided at a premium by competitors, is available free of charge with ATTO FastFrame NICs. Lossless Ethernet (CEE)/Data Center Bridging (DCB) is a collection of enhancements to the Ethernet standard that make Ethernet, a "lossy" protocol, suitable for use in SANs, VoIP, and other applications with stringent performance requirements. Before the introduction of the CEE/DCB enhancements, customers were leery of entrusting their storage needs to Ethernet. However, with CEE/DCB, a correctly configured iSCSI SAN can approach FCoE reliability, while remaining affordable and allowing for routable traffic over long distances. While Lossless Ethernet provides improved iSCSI quality of service for reliable block storage access, RJ45 connectivity allows use of affordable structured Cat6a cabling. Cat6a cabling spares users the cost and compatibility concerns associated with optics and twin-ax direct attach cabling, and is already widely deployed in many environments.

#### ATTO's High-Bandwidth/Low-latency Leadership on Intel's Next-Generation, Industry-leading Ethernet Platform

FastFrame NICs are among the first built on Intel's next-generation Ethernet platform - the industry's first single-chip 10GBASE-T controller. With FastFrame, single-chip integration results in lower power utilization with a low-profile form factor, in single- and dual-port configurations. ATTO engineers FastFrame NICs for stable, near-line-speed data rates across a broad range of file sizes for predictable network performance, while minimizing CPU utilization.

#### Low Power Utilization for Lower Cost and Less Heat

FastFrame draws up to 30% less power than competing solutions. A lower power rating means lower energy costs, lower data center maintenance fees, and less heat to dissipate.

#### Mac OS® X, Windows®, and Linux Support

Long committed to the Apple® market, ATTO leads in high performance I/O connectivity for Mac OS X environments. ATTO also offers Xtend SAN, an iSCSI initiator for OS X, to complete the solution. Acquire your NICs for multiple-OS environments from a single source – one familiar with the data intensive demands of content editing.

#### Technical Features

- Dual and single port configurations
- 10GBASE-T, RJ45 connectivity
- High-performance x8 PCIe 2.0 bus
- Low profile and standard height brackets
- Up to 10Gb/s throughput per port
- Auto negotiation at 10GBASE-T, 1000Base-T, and 100Base-TX speeds for backwards compatibility. Supports phased upgrade to 10Gb Ethernet.
- Use Cat6a or Cat7 Ethernet cable for 10GBASE-T connections up to 100 meters
- Supports Data Center Bridging for improved iSCSI quality of service
- ATTO Xtend SAN iSCSI initiator for Mac OS X provides a complete solution
- Driver support for Windows®, Linux and Mac OS® X operating systems
- TCP, UDP IPv4 and IPv6 checksum offloading, IPsec offloading and Tx/TCP segmentation offloading
- Load-balancing on multiple CPUs
- Minimized interrupts for low latency

## Technical Specifications

### Applications

FastFrame's enhanced Ethernet and included iSCSI support makes it the ideal solution for:

- 1) Wiring closet/data center installations where the customer prefers to use Ethernet rather than Fibre Channel to access storage
- 2) Adding network access to block data to an existing NAS-dominated network.
- 3) Remote offices, to support IP routing over longer distances and ease installation and management for local IT admins
- 4) Data-intensive environments for which GigE's performance has proven insufficient, and consistent, predictable network performance is required.

### General Features

- Intel X540 10GBASE-T Ethernet Controller
- Data rate per port: 10GbE
- TCP, UDP, IPv4 and IPv6 checksum offloading
- Tx/TCP segmentation offload (Large Send Offload—LSO)
- Low latency interrupts
- Interrupt Coalescing/Moderation
- Data Center Bridging (DCB) support
- Header splits and Replication in Receive
- Direct Cache Access (DCA) eliminates cache misses and reduces CPU load
- Interrupt levels INTA, MSI, MSI-X
- 802.1p - Priority Encoding
- 802.1q - VLAN Tagging
- Priority flow control(802.1Qbb)
- DCBX protocol (802.1Qaz)
- 802.3ad - Link Aggregation
- Override MAC Address
- Plug and play specification support
- Advanced Packet Filtering
- VLAN support with tag insertion and stripping

### Cable Lengths & Type

- Ethernet 10GBASE-T connectors
- Cat6a and Cat7 Ethernet cable for 10GBASE-T connections up to 100 meters
- Cat6 Ethernet cable for 10GBASE-T connections up to 55 meters.
- Cat5e Ethernet cable for 1000Base-T and 100Base-TX connections up to 100 meters

### External Connectivity

- Dual speed 10Gb/s, 1Gb/s, 100Mb/s two or one RJ-45 connectors
- Easy-to-install full height and low profile connection bracket for the single and dual port cards
- 2 LED indicators per port
- LED Indicators: LINK (solid), ACTIVITY (blinking), LINK SPEED (green = 10GBASE-T, yellow = 1000BASE-T, off = 100BASE-Tx)

### Theoretical Max Performance

- Interface Transfer Rate/Port = 10Gb/sec
- Max Throughput/Port = 1000 MB/sec
- Max Adapter Throughput: NT12 = 2000 MB/sec, NT11=1000 MB/sec

### Advanced Software Features

- Adaptive load balancing
- Teaming support
- PCIe Hot Plug/Active peripheral interconnect

### Management Tools

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

### Network Standards

- IEEE802.3ae, IEEE802.1p, IEEE802.1Q, IEEE802.3, IEEE802.3ae, IEEE802.3x
- 802.1 Qaz: Enhanced Transmission Selection

### Bus Specifications

- x8 PCI Express 2.0
- Supports PCI Express Base 2.0 and CEM Spec 2.0

### Operating System Support

- Windows® Server
- Windows
- Mac OS® X
- SUSE Linux® Enterprise Server (SLES)
- Red Hat Enterprise Linux (RHEL)

### Environmental and Physical Specifications

- Operating environment: 0°C to 55°C (32°F to 131°F)
- Non operating environment: -40°C to 70°C (-40°F to 157°F)
- Airflow required: 200 lf/m at 55°C or 100 lf/m at 40°C
- Humidity: 5% to 95% non-condensing
- Typical Power Consumption  
FFRM-NT12/CT12: <13.6W  
FFRM-NT11/CT11: <8.8W

### Calculated Reliability (MTBF)

- NT12 = 536,000 hrs
- NT11 = 578,000 hrs

### Compliance

- EN60950-1: 2001, IEC 60950-1: 2001
- RoHS

### Warranty

- 3 Years

### Ordering Information

Phone: 716-691-1999

Dual Port: FFRM-NT12-000

Single Port: FFRM-NT11-000

ATTO FastFrame NT12	
Ports	Dual Port
Max Transfer Rate	2.5GB/s
Bus Characteristics	PCIe 2.0 x8
Connector	RJ45
Form Factor	Full Height, Low Profile
Warranty	3 Years
Part Number	FFRM-NT12-000

ATTO FastFrame NT11	
Ports	Single Port
Max Transfer Rate	1.25GB/s
Bus Characteristics	PCIe 2.0 x8
Connector	RJ-45
Form Factor	Full Height, Low Profile
Warranty	3 Years
Part Number	FFRM-NT11-000

