TECH SPEC



FastFrame N412

Technical Features

- Fourth-generation improved silicon
- Five unique models supporting high-speed Ethernet standards from 10GbE to 100GbE
- High-performance x8 PCIe 3.0 or x16 PCIe 4.0
- ATTO360™ Networking
- Supports up to 100Gb/s throughput
- RDMA over Converged Ethernet (RoCE) enables industry-leading low-latency and decreases CPU utilization on Linux and Windows
- End-to-end Quality of Service and congestion control
- Models support SFP+/RJ45(10GbE), SFP28 (25GbE), QSFP+(40GbE), and QSFP28 (50GbE/100GbE)
- TCP/UDP/IP hardware based stateless offloads
- Advanced HW/SW offloads including LRO, LSO, TSO, RSS, and TSS
- Supports Data Center Bridging; Priority-based Flow Control (PFC), Enhanced Transmission Selection (ETS) and DCB Exchange (DCBX) protocol
- SR-IOV technology dedicates adapter resources for virtual machines within servers
- Hardware-based I/O virtualization
- Advanced Congestion Avoidance
- Low profile form factor
- Includes full and half height bracket

10/25/40/50/100GbE FastFrame™ SmartNICs

Fourth Generation of Smart Ethernet Network Interfaces

ATTO FastFrame SmartNICs fourth generation of Ethernet connectivity products provide unmatched performance, industry-lowest latency and the versatility needed to support the most demanding and complex ecosystems. Supporting line speeds of up to 100GbE and latency as low as 1µs, ATTO SmartNICs can be used across the data center from the core to the edge.

As Ethernet networks are being enhanced to manage large unstructured data they can depend on the company that customers have trusted for over 30 years to move and protect their data. FastFrame adapters are suitable for media & entertainment applications such as video post-production, finishing, imaging, archiving and workgroup file sharing, as well as IT applications such as data analytics, high-performance computing (HPC) clusters, hyperconverged servers, AI/ML/DL, and unstructured data solutions.

ATTO360™ Networking

ATTO simplifies the installation and configuration of our world-class SmartNICs via our ATTO360 management utility. This software offers easy-to-use tuning profiles for performance optimization including partner-specific storage profiles that get the most out of your adapter and Ethernet storage. This application also includes ATTOview monitoring that analyzes thousands of metrics in both real-time and point-in-time via a time series database. An advanced diagnostics engine points users to potential bottlenecks offering instant advice to solve connection issues.

Optimized for Data Center Applications

ATTO uses the latest controller technology to accelerate data I/O and deliver industry-leading performance. With end-to-end Quality of Service algorithms built into the product, network congestion is greatly reduced, RDMA support as well as built-in hardware and software offload engines accelerate data and reduce CPU overhead.

ATTO Ethernet Suite for Windows and Linux

Our groundbreaking custom installer, Ethernet Suite, loads relevant drivers, ATTO360 management utility, and all dependencies needed to transport data via RDMA if needed. Other options require you to load drivers, utilities, and dependencies separately and consume valuable time, ATTO Ethernet Suite has everything you need in a single convenient package designed to have ATTO users up and running quickly without frustration.

Performance Engineered for 4K/8K Digital Video

Bandwidth reductions caused by transmission control protocol overhead make many competing NICs incapable of supporting 8K video. Our SmartNICs, in contrast, utilize RoCE to free up the full pipeline, providing sufficient bandwidth for multiple streams of raw 8K and 4K video.

About ATTO

For over 35 years ATTO Technology, Inc. has been a global leader specializing in network and storage connectivity and infrastructure solutions for the most data-intensive computing environments. ATTO works closely with its partners to create the world's best end-to-end data delivery, management and storage solutions.

Applications

ATTO FastFrame™ 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) Linux® and Windows®
- End-to-end Quality of Service and congestion control
- Erasure Coding offload
- Advanced storage capabilities including NVMe over Fabric offloads
- Hardware offloads for NVGRE and VXLAN encapsulated traffic
- Hardware-based I/O virtualization
- 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

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

- ATTO360 Networking
- ATTOview Time Series Database
- ATTO Ethernet Suite custom installer

Operating System Support

- Windows
- Windows Server®
- macOS
- Linux

External Connectivity

- QSFP28 (50/100GbE) N412
- SFP28 (25GbE) N422 and N424
- QSFP+ (40GbE) N412 optional support
- SFP+ (10GbE) N4S2
- RJ45 (Base-T) N4T2
- 2 LED indicators per port

Network Standards

- IEEE 802.3by (25 Gigabit Ethernet)
- IEEE 802.3ba (40 Gigabit Ethernet)
- IEEE 802.3cd (50 Gigabit Ethernet)
- IEEEE 802.3z (100 Gigabit Ethernet)
- IEEE 802.3az (Energy Efficient Ethernet)
- IEEE 802.1p (Priority Encoding)
- IEEE 802.3ad (Link aggregation)
- IEEE 802.1qbb (Priority flow control)

Environmental

Operating Temperature

- Temperature: 0-55° C
- Max Junction Temp to 110° C
- N4T2 - 55C Ambient, 24 LFM with 10G BaseT
- N4S2 - 55C Ambient, 100 LFM
- N422 - 55C Ambient, 50 LFM DAC, 150 LFM optics
- N412 - 55C Ambient, 225 LFM DAC, 420 LFM optics
- 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 (3) Years

ATTO FastFrame	N422	N424	N412	N4S2	N4T2
Max Transfer Rate	25Gb/s	25Gb/s	100Gb/s	10Gb/s	10Gb/s
Ports	Dual	Quad	Dual	Dual	Dual
Bus Characteristics	x8 PCIe 3.0	x16 PCIe 4.0	x16 PCIe 4.0	x8 PCIe 3.0	x8 PCIe 3.0
Connector	SFP28	SFP28	QSFP28	SFP+	RJ45
Form Factor	Low Profile	Low Profile	Low Profile	Low Profile	Low Profile
OS Support	macOS*/Windows/Linux	macOS/Windows/Linux	macOS/Windows/Linux	macOS*/Windows/Linux	macOS*/Windows/Linux
Direct Attach SKU	FFRM-N422-DA0	FFRM-N424-DA0	FFRM-N412-DA0	FFRM-N4S2-000	FFRM-N4T2-000
SKU w/Optics	FFRM-N422-000	FFRM-N424-000	FFRM-N412-000	FFRM-N4S2-000	FFRM-N4T2-000

*N422, N4S2, and N4T2 models support macOS in Mac Pro and 3rd-Party Thunderbolt 5 chassis only.