



FastFrame N322

## Technical Features

- Single- and dual-port configurations
- Supports up to 100Gb/s throughput
- High-performance x8 or x16 PCIe 3.0 bus
- Low profile form factor
- Driver support for Windows®, macOS® and Linux® operating systems
- 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
- Supports QSFP28 connectors for 40/50/100GbE connectivity
- Supports SFP28 for 25GbE connectivity
- 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
- Hardware offloads for NVGRE and VXLAN encapsulated traffic

## ATTO 10/25/40/50/100GbE Ethernet NICs ATTO FastFrame™ 3 PCIe 3.0 Network Interface Cards

ATTO FastFrame™ 3 NICs – ATTO’s 3rd 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, FastFrame 3 NICs can be used across the data center – from the core to the edges.

As Ethernet networks are being enhanced to handle large block storage, depend on the company that customers have trusted for over 30 years to move and protect their data. FastFrame 3 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, and large databases analysis.

### Optimized for Data Center Applications

With full support for TCP/IP, UDP, iSCSI, plus RDMA over Converged Ethernet (RoCE), ATTO FastFrame 3 NICs deliver the bandwidth needed at the core of today’s data centers.

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, even over long distances, ensuring that the fabric runs efficiently and unimpeded by the large amount of storage data that clogs less-reliable networks. Additionally, FastFrame 3 NICs have built-in hardware offload engines, including CPU transport layer offload and NVMe over Fabric target offload to accelerate data and reduce server overhead.

FastFrame 3 NICs are able to negotiate speeds from general-purpose 25GbE all the way up to 100GbE core fabric applications – simply select the cable with integrated QSFP28 that’s right for your job. No need to manage inventory and vendor configurations – with ATTO FastFrame 3, one card really does work across your data center.

### Performance Engineered for 4K/8K Digital Video

Bandwidth reductions caused by transmission control protocol overhead make many competing NICs incapable of supporting 8K video. FastFrame 3 NICs, 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 30 years, ATTO Technology, has been a global leader across the IT and media & entertainment markets, specializing in network and storage connectivity and infrastructure solutions for the most data-intensive computing environments. ATTO works with partners to deliver end-to-end solutions to better store, manage and deliver data.

## Applications

ATTO FastFrame™ 3 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
- T10-DIF Signature Handover
- 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

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

## Operating System Support

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

## External Connectivity

- QSFP28
- SFP28 via adapter
- 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)
- IEEE 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)

## Operating Temperature

### Operating Temperature

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

### Storage Temperature

- Temperature: -40°-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 Year

ATTO FastFrame	N351	N352
Ports	Single	Dual
Bus Characteristics	x8 PCIe 3.0	x8 PCIe 3.0
Connector	QSFP28	QSFP28
Form Factor	Low Profile	Low Profile
Max Transfer Rate	50 GB/s	50 GB/s
Direct Attach SKU	FFRM-N351-DA0	FFRM-N352-DA0

ATTO FastFrame	N311	N312
Ports	Single	Dual
Bus Characteristics	x16 PCIe 3.0	x16 PCIe 3.0
Connector	QSFP28	QSFP28
Form Factor	Low Profile	Low Profile
Max Transfer Rate	100 GB/s	100 GB/s
Direct Attach SKU	FFRM-N351-DA0	FFRM-N352-DA0

ATTO FastFrame™	N322
Ports	Dual
Bus Characteristics	x8 PCIe 3.0
Connector	SFP28
Form Factor	Low Profile
Max Transfer Rate	25 GB/s
Direct Attach SKU	FFRM-N322-DA0



FastFrame N351



FastFrame N352



FastFrame N311



FastFrame N312