ATTO FastFrame™ Network Interface Card Installation and Operation Manual

FastFrame N422

10/25Gb Dual Port PCIe 3.0 Network Interface Card (SFP28 connector)

FastFrame N412

10/25/40/50/100Gb Dual Port PCIe 4.0 Network Interface Card (QSFP56 connector)

FastFrame N4S2

10Gb Dual Port PCIe 3.0 Network Interface Card (SFP+)

FastFrame N4T2

10Gb Dual Port PCIe 3.0 Network Interface Card (Copper RJ45)

ATTO
The Power Behind the Storage

155 CrossPoint Parkway
Amherst, NY 14068

P. +1.716.691.1999
atto.com

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PRMA-0506-000

ATTO FastFrame Ethernet Features & Overview

FastFrame Ethernet NICs provide flexible and scalable LAN connectivity.

Built on industry-leading silicon for universal usability, ATTO FastFrame SmartNICs lead in high performance I/O connectivity for macOS environments while offering broad support for Windows and Linux server and workstation operating systems. They provide easy-to-use, reliable, and fast access to shared storage over Ethernet.

Getting Started

In general, to install the FastFrame SmartNIC you must:

Ensure you have the equipment and software you need for the installation:
- FastFrame SmartNIC
- A computer with an available expansion slot

Note ***Install your FastFrame SmartNIC 10/25GbE into PCIe 3.0 x8 expansion slot for best performance (100GbE models should be inserted into x16 slot either PCIe 3.0 or PCIe 4.0)***

- Cables

http://www.atto.com/products/cable-finder/

Install drivers for your operating system. Refer to **Driver Installation**.

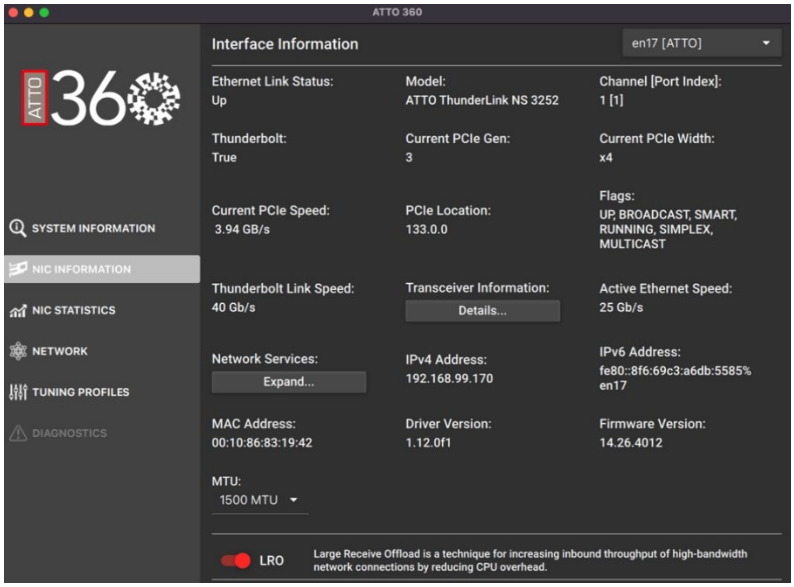
Install the FastFrame SmartNIC. Refer to **Hardware Installation**.

Attach your NIC to a switch or server using ATTO recommended cables and optics

ATTO360 Networking Software

ATTO FastFrame SmartNICs are supported by our ATTO360 management utility with custom tuning profiles and diagnostics as well as monitoring features. It's highly recommended using ATTO360 to get the most of your FastFrame SmartNIC.

You can download ATTO360 for Windows, macOS, and Linux via ATTO's website at https://www.atto.com/landing/atto360



FastFrame N422 SmartNIC (Dual Port 25GbE)

Technical specifications

- Dual-port pluggable media interface, which may be equipped with 25G SFP28, SKU's that end with -000 ship with SFP28 optics included
- Fully compliant with the SFF-8402 standard
- x8 PCI Express v3.0 compliant
- Advanced Data streaming
- Tunnel-aware stateless offloads

Supports Data Center Bridging; Priority-based Flow Control (PFC), Enhanced Transmission Selection (ETS) and DCB Exchange (DCBX) protocol
RDMA over converged Ethernet (RoCE)
SMBus 2.0
Large Send Offload (LSO)
Large Receive Offload (LRO)
TCP Segmentation Offload (TSO)
Receive-side Scaling (RSS)
Transmit-side Scaling (TSS)
Advanced Congestion Avoidance
Data rate per port: 10Gb/s, 25Gb/s
Port speed configurations supported are 1G/1G, 1G/10G, 1G/25G, 10G/10G, 25G/25G
Jumbo frame support up to 9,000 bytes
In NIC to NIC configurations, it is suggested that the link speed is forced to the desired speed
Tx/Rx IP, TCP & UDP checksum offloading
(IPv4, IPv6) capabilities
Transmission control protocol (TCP), User datagram protocol(UDP), Internet protocol (IP)

Host bus specifications

PCI Express 3.0 x8

Support for MSI-X mechanisms

Environmental & physical specifications

Length: 5.6 inches
Height: 2.71 inches
Operating temperature: 0 to 55° C (32 to 131° F)
Storage temperature: -40 to 70° C (-40 to 158° F)
Relative humidity: 90%
Power draw 12.9 W
RoHS compliant

External connectivity

Easy to install low profile connection bracket, ships with both half height and full height brackets
External LEDs indicate link and activity

Software specifications

macOS® - supports macOS® in Mac Pro and Thunderbolt 5 expansion chassis' only
Microsoft Windows®
Linux®
ATTO Ethernet Suite™
ATTO360™



FastFrame N412 SmartNIC (Dual Port 100GbE)

Technical specifications

Dual-port pluggable media interface, which is compatible with a QSFP56/QSFP28 optical transceiver or a copper direct-attach cable. SKU's ending with -000 ship with QSFP28 optics included
Fully compliant with the SFF-8402 standard
Advanced Data Streaming
Tunnel-aware stateless offloads
RDMA over Converged Ethernet (RoCE)
SMBus 2.0
Supports Data Center Bridging; Priority-based Flow Control (PFC), Enhanced Transmission Selection (ETS) and DCB Exchange (DCBX) protocol
Large send offload (LSO)
Large receive offload (LRO)
TCP segmentation offload (TSO)
Receive-side scaling (RSS)
Transmit-side scaling (TSS)
High-performance x16 PCIe 4.0 bus

Data rate per port: 100Gb/s, 50Gb/s, 40Gb/s, 25Gb/s, and 10Gb/s
Jumbo frame support up to 9,000 bytes
In NIC to NIC configurations, it is suggested that the link speed is forced to the desired speed

Tx/Rx IP, TCP & UDP checksum offloading
(IPv4, IPv6) capabilities, Transmission control protocol (TCP), User datagram protocol (UDP), Internet protocol (IP)

Host bus specifications

PCI Express 4.0 x16

Support for MSI-X mechanisms

Environmental & physical specifications

Length: 5.6 inches
Height: 2.71 inches
Operating temperature: 0 to 55° C (32 to 131° F)
Storage temperature: -40 to 70° C (-40 to 158° F)
Relative humidity: 90%
Power draw 12.9 W

RoHS compliant

External connectivity

Product ships with both full and half height brackets
External LEDs indicate link and activity

Software specifications

macOS®
Microsoft Windows®
Linux®
ATTO Ethernet Suite™
ATTO360™



FastFrame N4S2 SmartNIC (Dual Port 10GbE Optical)

Technical specifications

Dual-port pluggable media interface supporting 10GbE SFP+ optical interface, product ships with 2 optics included
Fully compliant to SFF-8402 standard
x8 PCI Express v3.0 compliant
Advanced Data Streaming
Tunnel-aware stateless offloads
RDMA over converged Ethernet (RoCE)
SMBus 2.0
Advanced Congestion Avoidance
TCP, UDP, and IP checksum offloads
Large Send Offload (LSO)
Large Receive Offload (LRO)
TCP Segmentation Offload (TSO)
Receive-side Scaling (RSS)
Transmit-side Scaling (TSS)
Data rate per port: 10Gb/s

Port speed configurations supported 1G/1G, 1G/10G, and 10G/10G
Jumbo frame support up to 9,000 bytes
In NIC to NIC configurations, it is suggested that the link speed is forced to the desired speed

Tx/Rx IP, TCP & UDP checksum offloading
(IPv4, IPv6) capabilities, Transmission control protocol (TCP), User datagram protocol (UDP), Internet protocol (IP)

Host bus specifications

PCI Express 3.0 x8
Support for MSI-X mechanisms

Environmental & physical specifications

Length: 5.6 inches
Height: 2.71 inches
Operating temperature: 0 to 55° C (32 to 131° F)
Storage temperature: -40 to 70° C (-40 to 158° F)
Relative humidity: 90%
Power draw 9.1 W
RoHS compliant

External connectivity

Ships with both full height and half height brackets
External LEDs indicate link and activity

Software specifications

macOS® - supports macOS® in Mac Pro and Thunderbolt 5 expansion chassis' only
Microsoft Windows®
Linux®
ATTO Ethernet Suite™
ATTO360™



FastFrame N4T2 SmartNIC (Dual Port 10GBase-T)

Technical specifications

Dual-port 10-Gigabit Ethernet:10GBASE-T IEEE 802.3an & 1000BASE-T IEEE 802.3ab
x8 PCI Express v3.0 compliant
Advanced Data Streaming
Tunnel-aware stateless offloads
Supports Data Center Bridging; PFC, ETS, QCN, DCBx
RDMA over Converged Ethernet (RoCE)
SMBus 2.0
Advanced Congestion Avoidance
Large Send Offload (LSO)
Large Receive Offload (LRO)
TCP Segmentation Offload (TSO)
Receive-side Scaling (RSS)
Transmit-side Scaling (TSS)

Data rate per port: 10Gb/s per port

- Port speed configurations supported 1G/1G, 1G/10G, and 10G/10G

Jumbo frame support up to 9,000 bytes
In NIC to NIC configurations, it is suggested that the link speed is forced to the desired speed

Tx/Rx IP, TCP & UDP checksum offloading
(IPv4, IPv6) capabilities, Transmission control protocol (TCP), User datagram protocol (UDP), Internet protocol (IP)

Host bus specifications

PCIe 3.0 x8
Support for MSI-X mechanism

Environmental & physical specifications

Length: 5.6 inches
Height: 2.71 inches
Operating temperature: 0 to 55° C (32 to 131° F)
Storage temperature: -40 to 70° C (-40 to 158° F)
Relative humidity: 90%
Power draw 7.69 W
RoHS compliant

External connectivity

Easy to install full height connection bracket;
External LEDs indicate link and activity

Software specifications

macOS® - supports macOS® in Mac Pro and Thunderbolt 5 expansion chassis' only
Microsoft Windows®
Linux®
ATTO Ethernet Suite™
ATTO360™



Selection guide: FastFrame SmartNIC

Product Features	FFRM-N422	FFRM-N412	FFRM-N4S2	FFRM-N4T2
Ports	2	2	2	2
Maximum Transfer Rate (Full Duplex)	25GB/s	100GB/s	10GB/s	10GB/s

Bus type	PCIe 3.0	PCIe 4.0	PCIe 3.0	PCIe 3.0
Bus characteristics	8 lane	16 lane	8 lane	8 lane
Optical/Copper interface	SFP28	QSFP28	SFP+	RJ45 Copper
Maximum cable length	See chart below	See chart below	See chart below	See chart below
ATTO360™, ATTOview™, Ethernet Suite	✓	✓	✓	✓
Low profile form factor	✓	✓	✓	✓
Advanced Data Streaming (ADS™) Technology	✓	✓	✓	✓
Windows® driver support	✓	✓	✓	✓
macOS® driver support				
Linux® driver support	✓	✓	✓	✓

Driver Installation

Before installing your FastFrame SmartNIC, you must configure your system to recognize it by installing drivers for your operating system.

Note ***If you already have one or more FastFrame SmartNICs installed and you are installing additional adapter(s), you do not need to perform any of these procedures unless you are updating a previously installed driver. We strongly recommend downloading the latest drivers, available at http://www.atto.com/downloads.php***

Windows

Note ***Windows may utilize a new User Account Control Feature. Because of this there may be additional confirmations that will need to be performed to properly install the driver. These confirmations normally consist of a dialog where the user has to give Windows permission to perform an action. If you do not have the correct privileges during this, you will be prompted for an actual user name and password. You may need to contact your system administrator if you do not have this information.***

1. Power on your system and log in as the administrator or a user with proper administrative privileges.

Go to https://www.attotech.com
Click on downloads
Register or log in if previously registered.
Click on Ethernet Adapters in the left dialog.
Navigate to your HBA model/family in the right dialog and click on it.
Scroll down to and click the desired driver depending on the operating system.
A download window appears. Choose Save File.
Double-click the downloaded file to extract and launch the driver setup program.
Follow the on-screen instructions to complete the driver installation.
Follow the on-screen instructions to complete the driver installation

Linux

Note ***These steps assume a basic knowledge of Linux terminal commands. You must also have the correct kernel header files for the appropriate kernel already installed.***

1. Power on your system and log in as the administrator or a user with proper administrative privileges.

Go to https://www.atto.com/
Click on downloads
Register or log in if previously registered.
Click on Ethernet Adapters in the left dialog.
Navigate to your HBA model/family in the right dialog and click on it.
Scroll down to and click the desired driver depending on the operating system.
A download window appears. Choose Save File.
After the download has completed, open the FastFrame volume on the desktop.
Open the Linux folder.
Open the Drivers folder.
Copy the .tgz file to a temporary folder.
Open a terminal window and change the location of the copied tgz.
Extract the file using the command tar -xfz <filename.tgz>.
Change to the directory created above then run the installer script ./ install_atto360_{VERSION}_{OS}.sh

macOS

1. Power on your system and log in as the administrator or a user with proper administrative privileges
2. Go to https://www.atto.com/
3. Click on downloads.
4. Register or log in if previously registered.

5. Click on Ethernet Adapters in the left dialog. 6 Navigate to your HBA model/family in the right dialog and click on it.
6. Scroll down to and click the desired driver depending on the operating system.
7. A download window appears. Choose Save File.
8. Launch the installer package.
9. Follow the on-screen instructions.

Note ***When installing into a Mac Pro (2019) chassis we recommend using expansion slots 2-4 for thermal efficiency, if you must install in slots 5-7 we strongly advise using our "fan speed utility" which can be found in the DMG folder of the FastFrame driver or ATTO360 utility. This utility will increase fan speeds in the chassis to prevent overheating.***

Hardware Installation

Install the ATTO FastFrame SmartNIC and attach your devices to it using the instructions below

CAUTION ***Back up your system data before changing or installing any hardware.***

System requirements

The FastFrame Ethernet Adapter package contains the following:

FastFrame Network Interface Adapter
Optical modules (SKUs that end in -000)
Half Height & Full Height brackets

Note ***If any of these items are missing, contact your ATTO authorized sales representative.***

To install and use FastFrame SmartNICs you will need:

A computer with an available PCI Express expansion slot

Note ***Install your FastFrame SmartNIC into a PCIe expansion slot***

MAC address

FastFrame NICs are configured with a unique MAC address designated by the Institute of Electrical and Electronic Engineers. This address, stored in flash memory, allows the system to recognize the FastFrame NIC as a unique part of your configuration. The address is clearly marked on the back of the adapter.

The MAC address assigned to an adapter is assigned to the 1st port of the adapter. If the adapter has more than one port then the MAC address is incremented by 1 and assigned to the 2nd port.

For example, for the N4XX series, the assignment will be as follows:

MAC address	
MAC address + 1	

Installation

CAUTION ***FastFrameSmart NICs contain components that are sensitive to electrostatic discharge (ESD). ESD can cause damage to the FastFrame host adapter. Please follow standard methods to avoid ESD.***

For bracket installation, please see the bracket installation guide included in your NIC product package.

1. Install the latest drivers. Refer to **Driver Installation**.

Power down the computer and unplug the computer from all power sources.
Open the case.
Remove the cover bracket from the PCI Express slot (v1.1a or later).
Install the FastFrame SmartNIC host adapter in any open PCI Express expansion slot. If you have questions about how to install an expansion card in your system, consult your computer's documentation.

Note ***The FastFrame SmartNICs fit into x8 or x16 mechanical PCI Express slots. 10/25GbE NICs are PCIe 3.0 x8 100GbE NICs are PCIe 4.0 x16***

Repeat step 4 through 5 for each adapter you want to install.
Close the case on the computer and power it up

ATTO360 Networking Software

ATTO FastFrame SmartNICs are supported by our ATTO360 management utility with custom tuning profiles and diagnostics as well as monitoring features. It's highly recommended using ATTO360 to get the most of your FastFrame SmartNIC.You can download ATTO360 for Windows, macOS, and Linux via ATTO's website at https://www.atto.com/landing/atto360

Bracket Details

Exhibit 1 FFRM-N422 Dual-Port Bracket/Half Height (low profile)

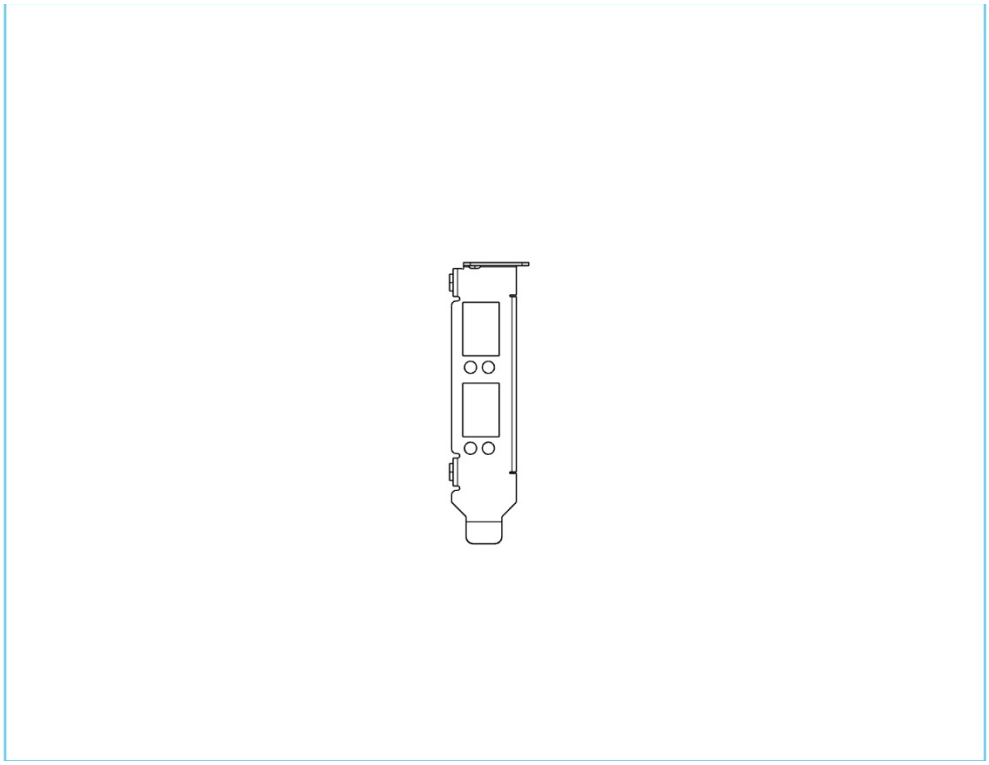


Exhibit 2 FFRM-N422 Dual-Port Bracket/Full Height

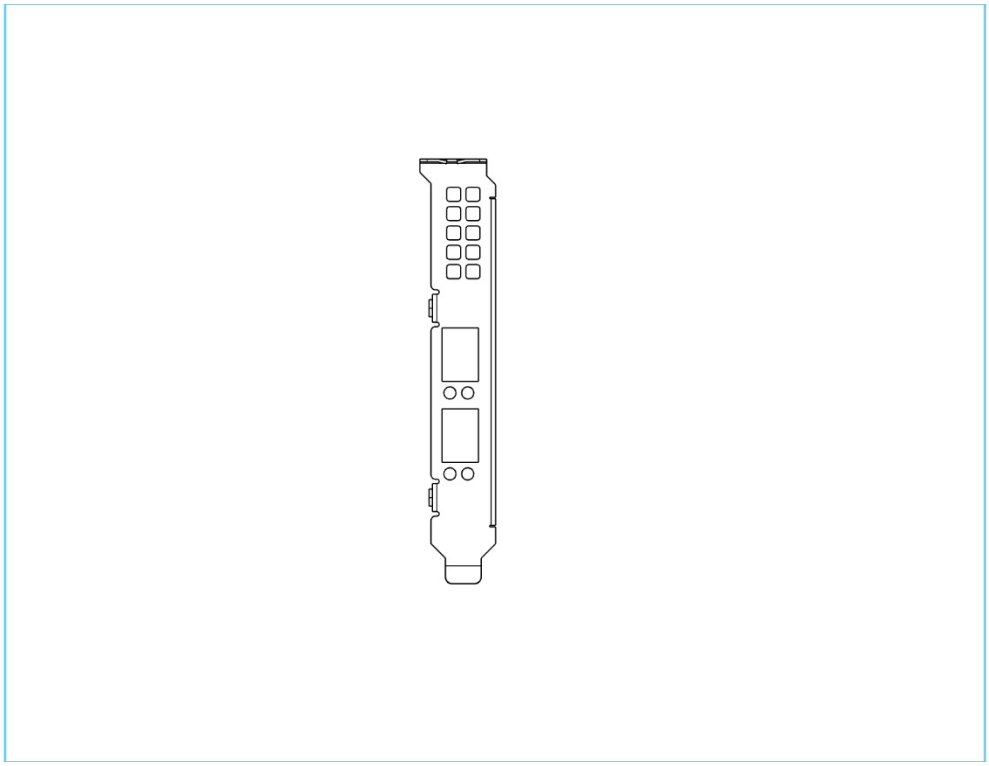


Exhibit 3 FFRM-N412 Dual-Port Bracket(half height/low profile)

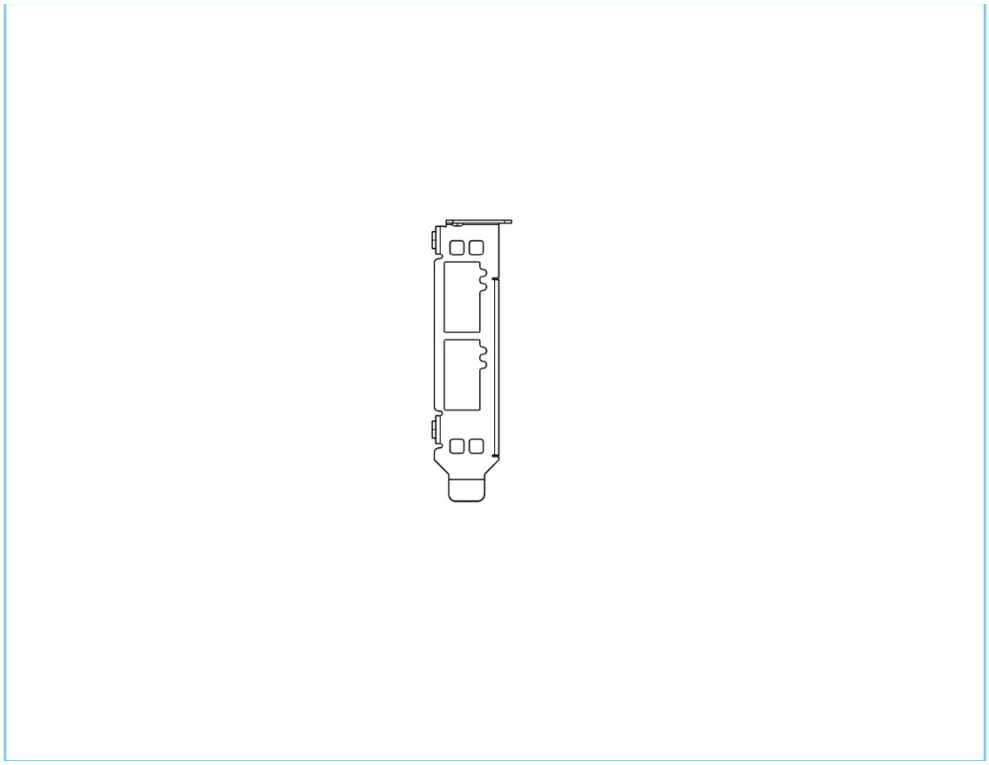


Exhibit 4 FFRM-N412 Dual-Port Bracket (full height)

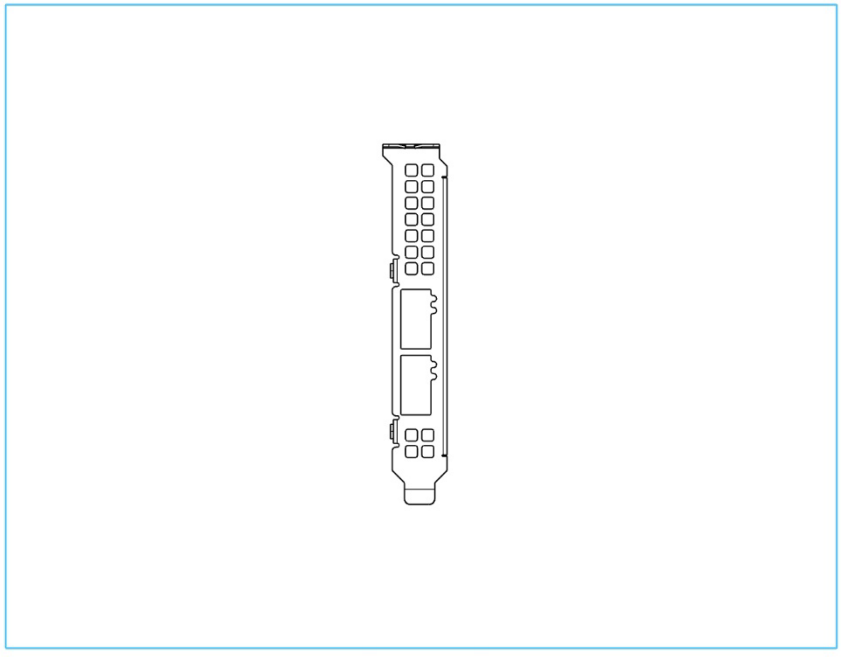


Exhibit 5 FFRM-N4S2 Dual-Port Bracket (half height/low profile)

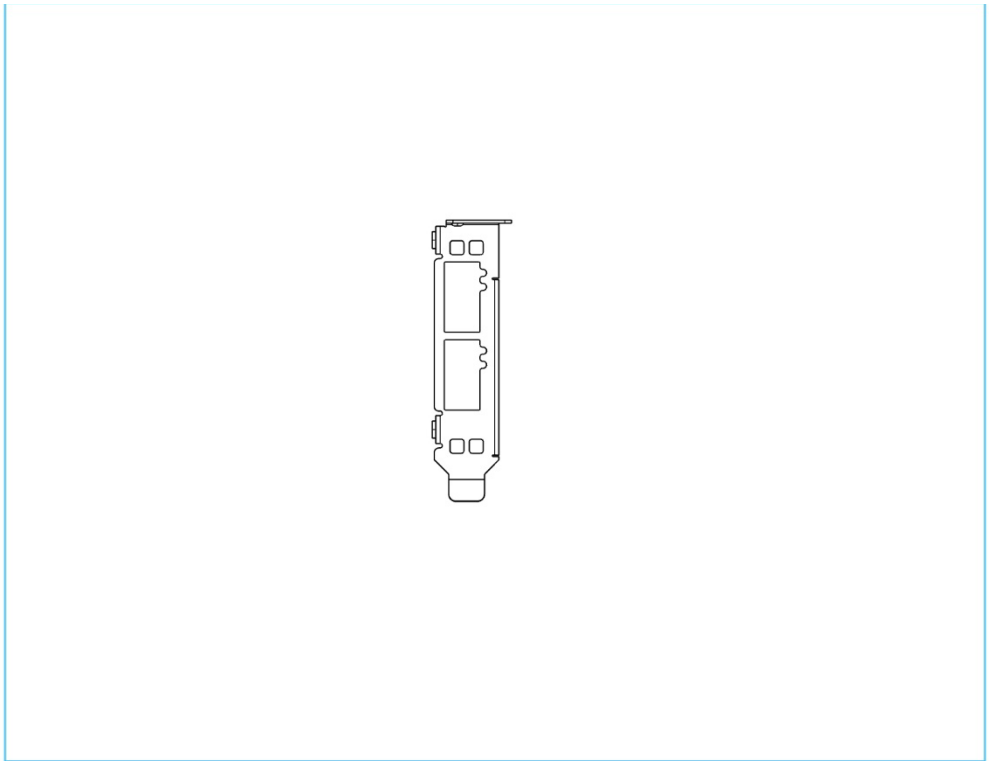


Exhibit 6 FFRM-N4S2 Dual-Port Bracket (full height)

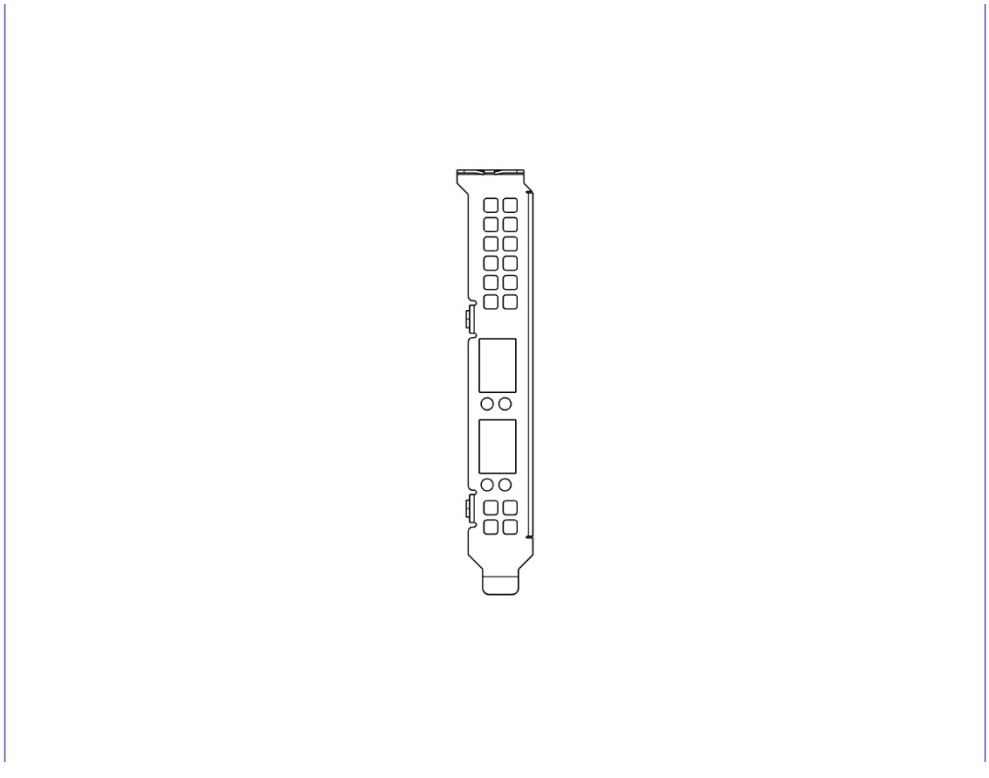


Exhibit 7 FFRM-N4T2 Dual-Port Bracket (half height/low profile)

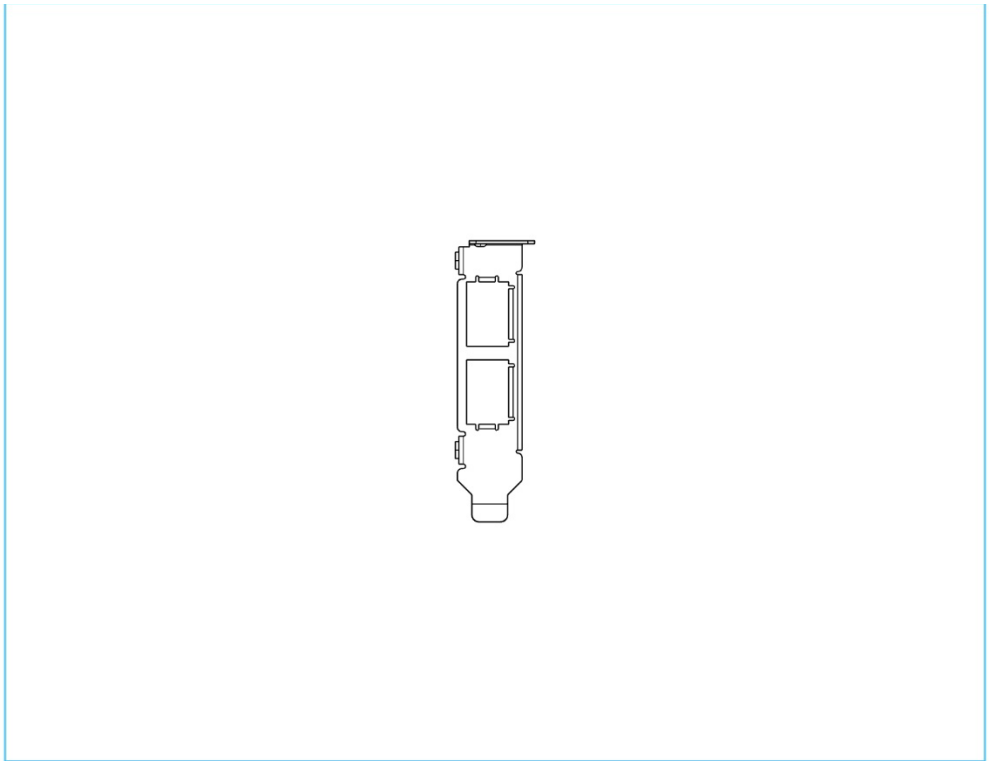
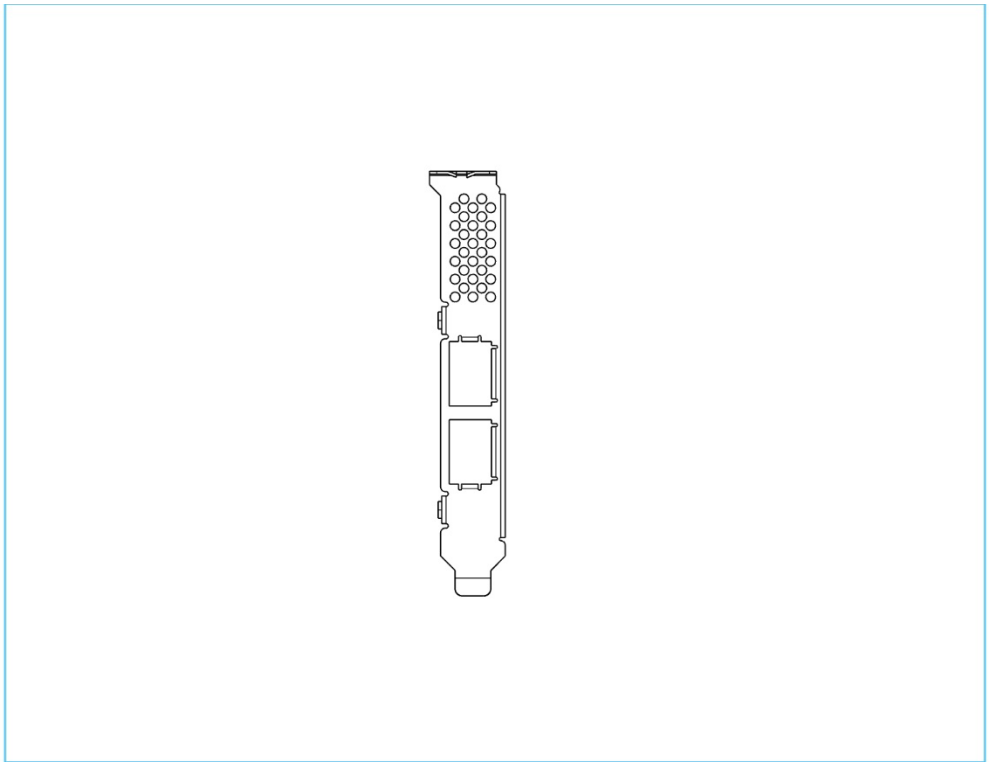


Exhibit 8 FFRM-N4T2 Dual-Port Bracket (full height)



Board Details

Exhibit 9 FFRM-N422 board

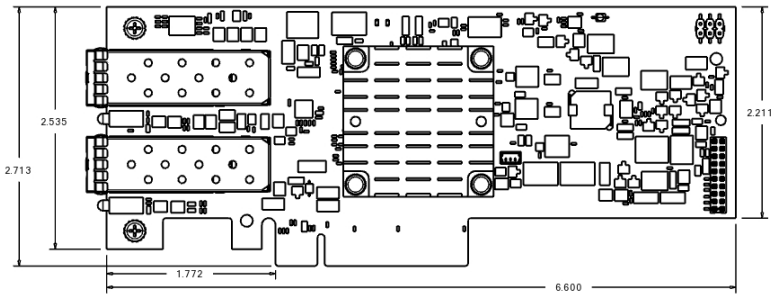


Exhibit 10 FFRM-N412 board

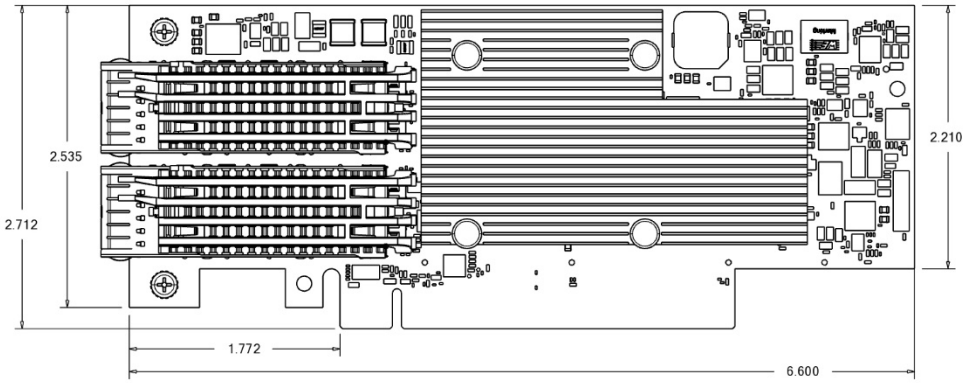


Exhibit 11 FFRM-N4S2 board

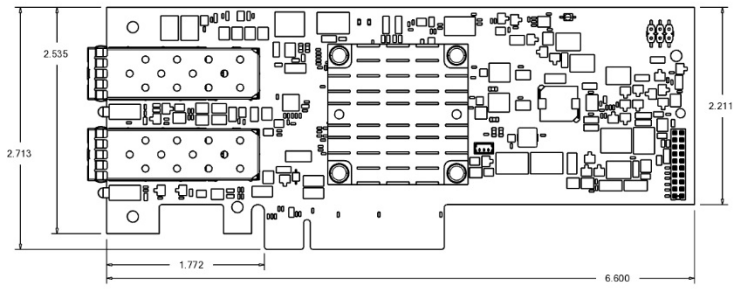
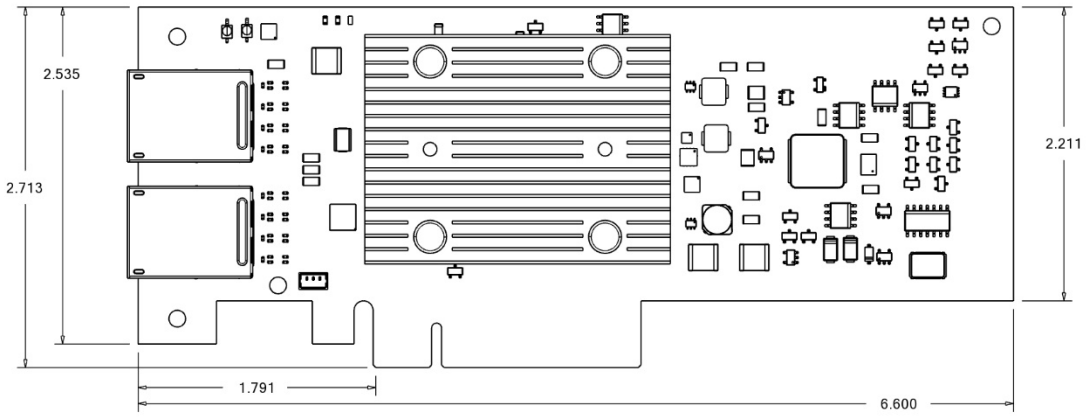


Exhibit 12 FFRM-N4T2 board



Troubleshooting

FastFrame SmartNICs are supported by ATTO360™ Networking Software. It's highly recommended to use this software to help with diagnosing and troubleshooting connectivity issues.

This chapter contains solutions for the most common problems you might encounter. If you need additional assistance, please refer to the ATTO Technology website, www.atto.com, or contact an authorized ATTO Technology representative.

General suggestions

Check each cable connection on every device.
Verify all cables are in proper working condition. Loose or broken cables are often the cause of errors or problems.

Check that connected devices are plugged into an AC outlet and are turned on before you add power to your computer.

Windows

If working properly the NIC should appear in the Device Manager.
If the FastFrame NIC does not appear under the Network Adapters:

1. Remove power from the PC.
2. Open the case.
3. Check that the FastFrame NIC adapter is properly seated in the PCI slot.
4. Replace the case and apply power.

If the adapter has been identified but there is an exclamation point (!) on the listing:

1. Right click on the listing and select Uninstall.
2. Reload the driver (see **Driver Installation**).
3. Reboot the system and repeat the installation process.

Note ***If problems persist, contact your authorized ATTO Technology representative.***

Linux

1. Verify the FastFrame driver is loaded with the lsmod command. If lsmod does not show the driver, refer to the installation instructions to install and load the driver in **Driver Installation**.

Check the system log with the command dmesg. The FastFrame driver creates status messages during initialization. Make sure that all installed cards are properly detected and initialized.

macOS

1. Open the ATTO ConfigTool by downloading it from the ATTO website. Refer to the ATTO Utilities Installation and Operations Manual for additional information.

If the adapter does not appear in the System Profiler, make sure the card is seated properly in the PCIe slot.

Shut down and remove power from the Mac.
Remove the side of the case.
Check the PCIe slot
Replace the side of the case.
Apply power

Note ***If the Fastframe adapter is properly seated and devices are still not accessible check the cable to verify the link light is illuminated. If not contact an authorized ATTO representative.***

Verify the driver is loaded.

a. Click on the adapter name in the Device Listing to view the Basic Info screen.
If the Driver Information section indicates Unknown: driver not loaded, reinstall the driver. Refer to **Driver Installation.**
If reinstalling the driver does not fix the problem, contact an authorized ATTO representative.

Reset the NVRAM for all channels to defaults and reboot. If the problem persists, contact an authorized ATTO representative.

Appendix A Glossary

Some terms used in the Fibre Channel industry are defined below. More information is available through the ATTO Technology website (www.atto.com), the Fibre Channel Industry Association (www.fibrechannel.com), Cern (www.cern.ch), the Storage Area Networking Industry Association ((www.snia.org), the Fibre Channel Consortium (www.iol.unh.edu/consortiums, click on FC) and the Ethernet Alliance (http://www.ethernetalliance.org/).

Term	Definition
ANSI	American National Standards Institute
BER	Bit Error Rate: a measure of transmission accuracy; the ratio of bits received in error to bits sent
bit	Smallest unit of data a computer can process: a single binary digit with a value of either 0 or 1
bus	A collection of unbroken signal lines used to transmit information from one part of a computer system to another; taps on the lines connect devices to the bus
byte	An ordered set of 8 bits
channel	A point-to-point link which transports data from one point to another
CPU	Central Processing Unit: the portion of the computer that actually performs computations
CRC	Cyclic Redundancy Check: an error-correcting code which calculates a numeric value for received and transmitted data; if no error has occurred during transmission, the CRC for both received and transmitted data should be the same
device driver	A program that allows a microprocessor to direct the operation of a peripheral device
DMA	Direct Memory Access: a way to move data from a storage device directly to RAM without using the CPU's resources
DMA bus master	Allows a peripheral to control the flow of data to and from system memory by block as opposed to allowing the processor to control the data by bytes (PIO or programmed I/O)
fabric	A Fibre Channel switch of two or more Fibre Channel switches interconnected to physically transmit data between any two N Ports on the switch or switches
FC	Fibre Channel
FCF	Fibre Channel Forwarder
FCoE	Fibre Channel over Ethernet
frame	An indivisible unit for transfer of information in Fibre Channel
frame header	The first field in the frame containing the address and other control information about the frame
full-duplex	A communication protocol which allows transmission in both directions at the same time
half duplex	A communication protocol which allows transmission in both directions, but only one direction at a time

host	A processor, usually a CPU and memory, which communicates with devices over an interface
initiator device	A component which originates a command
LED	Light-emitting diode: a type of diode that emits light when current passes through it; visible LEDs are used as indicator lights on all sorts of electronic devices
LUN	Logical Unit Number: an identifier for a logical unit (0-7)
MAC	Media Access Controller
MAC Address	A unique address assigned to an ethernet device
multi-mode fiber	An optical fiber which can carry several beams of light at once
N_port	A port attached to a node used with point to point or fabric configurations
originator	An initiating device; a component which originates a command
parity checking	A method which verifies the accuracy of data transmitted over the SCSI bus by adding one bit in the transfer to make the sum of all the bits either odd or even (for odd or even parity); an error message occurs if the sum is not correct
PCI	Peripheral Component Interconnect. Allows peripherals to be connected directly to computer memory, bypassing the slower ISA and EISA busses
point-to-point	A topology where two ports communicate
port	An access point in a device: see N_port, NL_port, etc.
port address	Also port number; the address, assigned by the PCI bus, through which commands are sent to a host adapter board
port number	See port address
receiver	The ultimate destination of data transmission; a terminal device
RDMA	Remote Direct Memory Access
ROCE	RDMA over converged Ethernet
scatter/gather	A device driver feature which allows the host adapter to modify a transfer data pointer so that a single host adapter can access many segments of memory, minimizing interrupts and transfer overhead
SAS	Serial Attached SCSI: a serial SCSI bus technlogy anod point to point architecture for connecting host bus adapters to storage devices
SATA	Serial AT Attachment: a serial ATA bus technology and point to point architecture for connecting host bus adapters to storage devices
scatter/gather	A device driver feature which allows the host adapter to modify a transfer data pointer so that a single host adapter can access many segments of memory, minimizing interrupts and transfer overhead

SCSI	Small Computer Systems Interface: a processor-independent standard for system-level interface between a computer and intelligent devices including hard disks, floppy disks, CD-ROM, printers, scanners, etc.
single-mode fiber	An optical fiber with a small core which supports one wavelength (ray of light); the core radius is nearly equal to the wavelength of the source
SNMP	Simple Network Management Protocol: a standard for monitoring network-attached devices
topology	Logical layout of the parts of a computer system or network and their interconnections
transceiver	A transmitter/receiver module
transfer rate	The rate at which bytes or bits are transferred, as in megabytes or gigabits per second

Appendix B Standards and Compliances

FCC standards: radio and television interference

This equipment has been tested and found to comply with the limits for a Class B digital device (NQ41 and NQ42 are Class A), pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Canadian standards

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

European standards

Declaration of Conformity

This following statement applies to the FastFrame CNA host adapter.

This device has been tested in the basic operating configuration and found to be compliant with the following European Union standards: Application of Council Directive: 2004/108/EC Standard(s) to which conformity is declared: EN55024:1998 +A1:2001 +A2:2003; EN55022:2006 +A1:2007 CLASS B.

This Declaration will only be valid when this product is used in conjunction with other CE approved devices and when the entire system is tested to the applicable CE standards and found to be compliant

Japanese standards

この装置は、クラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。 VCCI－B

Voluntary Control Council for Interference by Information Technology Equipment (VCCI, Japan)

This is a Class B product based on the standard of the Voluntary Control Council for Interference from Information Technology Equipment (VCCI). If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

Compliances



ATTO FastFrame cards comply with Directive 2011/65/EU on the Restriction of the Use of Hazardous Substances in Electrical and Electronic Equipment (RoHS). Contact your ATTO representative regarding RoHS compliant products.

The FastFrame family of adapters take the following RoHS exemptions:

7(a) - Lead in high melting temperature type solders (i.e. lead based alloys containing 85% by weight or more lead).

7(c)-I - Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, (e.g. piezoelectronic devices, or in a glass or ceramic matrix compound).

13(a) - Lead in white glasses used for optical applications.

15 - Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages.

Appendix C Safety, Warranty

All ATTO host adapter products have been tested to meet applicable safety standards when operated in proper electrical and thermal environments.

Safety

Please review the specifications for your specific host adapter before installing and operating it in any computer system to ensure compatibility.

Installation

Before installing an ATTO host adapter product into your computer system, unplug the computer from its electrical power source and allow adequate time for electrical discharge and the internal components to cool down before removing the computer system cover. This will decrease the risk of personal injury from electrical shock or touching the hot surface of an electrical component. Once an ATTO host adapter is installed in a computer system, the computer cover must be reinstalled properly before turning the computer system back on.

Operation

ATTO host adapters require adequate cooling to function properly. If you have any questions as to the airflow provided by your computer system, please refer to your computer system manual or contact your computer system manufacturer.

To facilitate proper air circulation, ATTO host adapters should never be operated in a computer system without the cover installed or with an inoperable fan as this may cause safety or thermal problems which could damage the ATTO host adapter and void the warranty.

ATTO Technology, Inc. Limited Warranty

ATTO Technology, Inc. (“ATTO”) warrants to the original purchaser of this product (“Product”) that the Product is free from defects in material and workmanship for the term described for this specific Product on ATTO's website (www.attotech.com). ATTO's liability shall be limited to replacing or repairing any defective product at ATTO's option. There is no charge for parts or labor if ATTO determines that this product is defective.

PRODUCTS WHICH HAVE BEEN SUBJECT TO ABUSE, MISUSE, ALTERATION, NEGLECT, OR THOSE PRODUCTS THAT HAVE BEEN SERVICED, REPAIRED OR INSTALLED BY UNAUTHORIZED PERSONNEL WILL NOT BE COVERED UNDER THIS WARRANTY. DAMAGE RESULTING FROM INCORRECT CONNECTION OR AN INAPPROPRIATE APPLICATION OF THIS PRODUCT SHALL NOT BE THE RESPONSIBILITY OF ATTO. LIABILITY UNDER THIS LIMITED WARRANTY IS LIMITED TO ATTO PRODUCT(S). DAMAGE TO OTHER EQUIPMENT CONNECTED TO ATTO PRODUCT(S) IS THE CUSTOMER'S RESPONSIBILITY. THIS LIMITED WARRANTY IS MADE IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED. ATTO DISCLAIMS ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. TO THE EXTENT IMPLIED WARRANTIES CANNOT BE EXCLUDED, SUCH IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE EXPRESS WARRANTY PERIOD APPLICABLE TO THE PRODUCT. BECAUSE SOME STATES OR JURISDICTIONS DO NOT ALLOW LIMITATIONS ON THE DURATION OF IMPLIED WARRANTIES, THE ABOVE MAY NOT BE APPLICABLE. ATTO'S RESPONSIBILITY TO REPAIR OR REPLACE A DEFECTIVE PRODUCT IS THE SOLE AND EXCLUSIVE REMEDY PROVIDED TO THE CUSTOMER FOR BREACH OF THIS WARRANTY.

ATTO IS NOT RESPONSIBLE FOR DAMAGE TO OR LOSS OF ANY DATA, PROGRAMS OR ANY MEDIA. THE PRODUCTS ARE NOT INTENDED FOR USE IN: (I) MEDICAL DEVICES OR THE MEDICAL FIELD; OR (II) USE IN RUGGED APPLICATIONS.ATTO IS NOT LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, IRRESPECTIVE OF WHETHER ATTO HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. NO ATTO DEALER, AGENT OR EMPLOYEE IS AUTHORIZED TO MAKE ANY MODIFICATION, EXTENSION OR ADDITION TO THIS WARRANTY.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.