

NM2-GXE-2230-xx-01

M.2 Gigabit Ethernet Fiber Network Interface Card



Install Guide

- 1 Gigabit Ethernet Fiber NIC
- Supports PCI Express M.2 specification
- Installs in Dell OptiPlex™ 7040 and 7050 Micro PCs and the Wyse 7000 Series thin clients

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Introduction

The Transition Networks NM2-GXE-2230-xx-01 and 01-D are 1 Gigabit Ethernet Fiber NICs supporting the PCI Express M.2 specification. They are designed to install in the Dell OptiPlex 7040 and 7050 Micro PCs and the Wyse 7000 Series thin clients.

M.2 is known as the “next generation form factor” and is a specification for internally mounted computer expansion cards and associated connectors. Desktop PCs are being replaced by smaller computing devices (such as Thin Clients, Micro PCs, Ultrabooks, and Tablets) which typically have internal M.2 interfaces but do not have PCI or PCIe slots. Many users still need fiber Ethernet access, and without the external PCIe slot, there is no standard fiber interface on these devices.

See the Dell *OptiPlex 7040M Owner's Manual* for important notes, cautions, and warnings. Read the section “*Before working inside your computer*” before proceeding.

Ordering Information

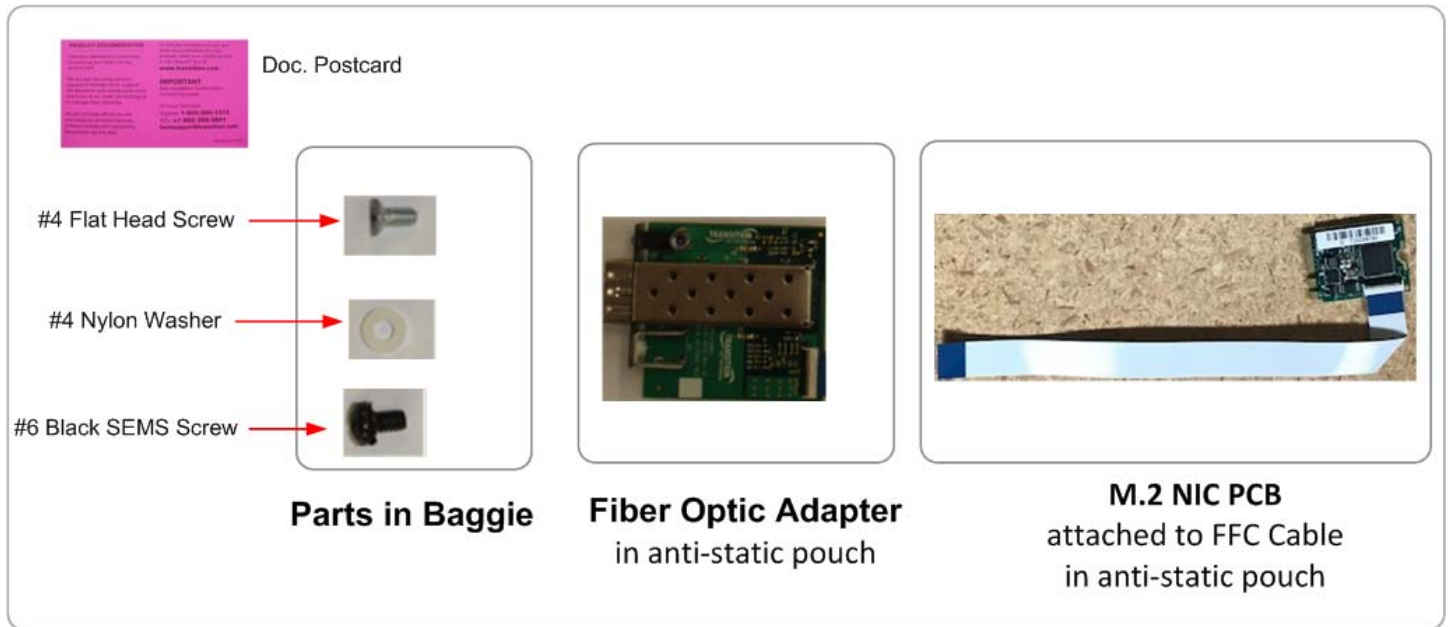
SKU	Description
NM2-GXE-2230-LC-01	One Gb Ethernet Fiber NIC supporting PCI Express M.2 specification (fixed LC).
NM2-GXE-2230-SFP-01	One Gb Ethernet Fiber NIC supporting PCI Express M.2 specification (open SFP slot).
NM2-GXE-2230-LC-01-D	One Gb Ethernet Fiber NIC supporting PCI Express M.2 specification (fixed LC).
NM2-GXE-2230-SFP-01-D	One Gb Ethernet Fiber NIC supporting PCI Express M.2 specification (open SFP slot).

Transition Networks M.2 Gigabit Ethernet Fiber Network Interface Card (NIC) provides a fiber optic interface for the Dell OptiPlex™ 7040 and 7050 Micro PCs and the Wyse 7000 Series thin clients. The NM2-GXE-2230-xx-01 or NM2-GXE-2230-xx-01-D consist of a M.2 NIC that installs into the OptiPlex Micro PC’s M.2 “E key” interface, a fiber optic adapter that installs into the OptiPlex Micro PC’s Option port, and a 20-pin Flat Flex Cable (FFC) with right-angle bend that connects the NIC to the fiber adapter. The fiber optic adapter is available with either a 1000Base-SX LC optic or open SFP (SFP module sold separately).

Package Contents

Verify that you have received the following items. Contact your sales representative if any item is missing. Please save the packaging for possible future use.

- One Fiber Optic Adapter (LC or open SFP slot) in anti-static pouch.
- One M.2 NIC PCB attached to FFC Cable in anti-static pouch.
- Parts in a 4x6 baggie (1 each): #4 Flat Head Screw, #4 Nylon Washer, #6 Black SEMS Screw.
- One Documentation Postcard.



Specifications

M.2 module naming per specification: 2230-D4-A-E. Key IDs: A and E.

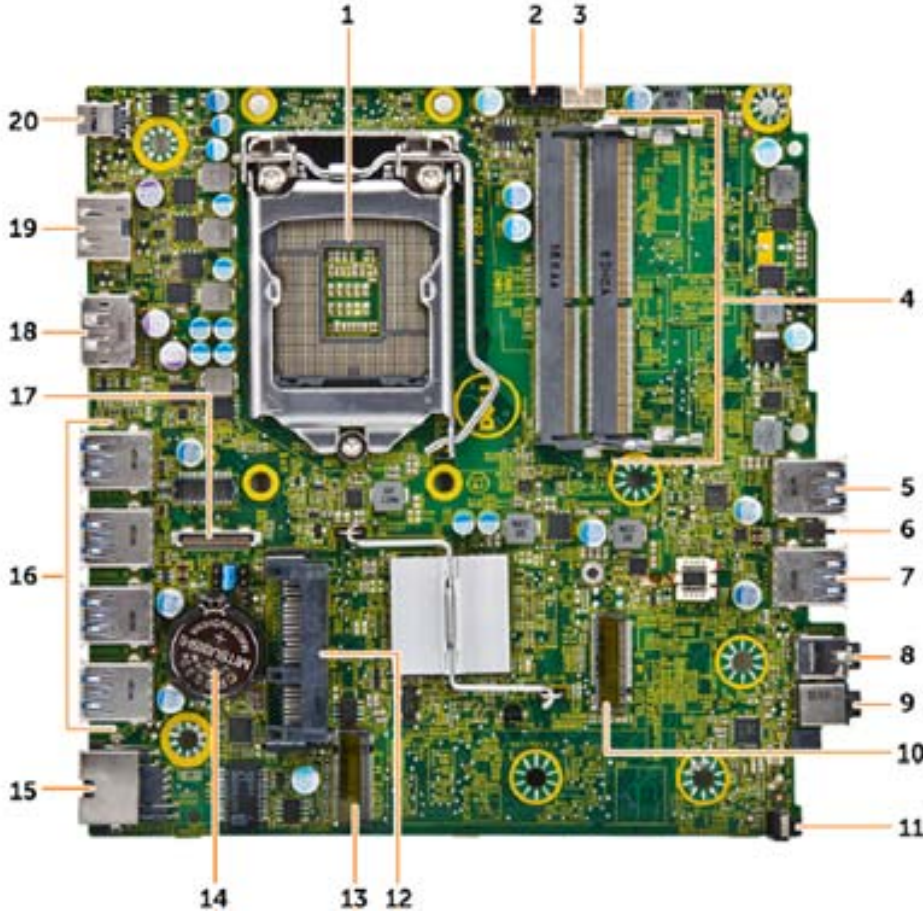
Jumbo frame support: 9014 bytes. PXE boot loader image pre-loaded. Uses standard i210 PROSet drivers from Intel.

Operating system support: Windows 10 32/64-bit; Windows 8 and 8.1 32/64-bit; Windows 7 32/64-bit; Linux.

Standards	IEEE 802.3-2012
Bus Slot	M.2 - 2230-D4-A-E, Key IDs: A and E
Data Rate	1000 Mbps (FDX only)
Max Frame Size	9014 bytes
Status LEDs	One Link/Activity LED. LINK/ACT (ON = Link; Flashing = Activity)
Dimensions:	
M.2 NIC:	Width: 0.87" [22 mm] x Depth: 1.19" [30 mm]] x Height: 0.12" [3.08 mm]
Fiber Optic Adapter:	Width: 1.65" [42 mm] x Depth: 2.05" [52 mm] x Height: 0.51" [13 mm]
FFC Cable:	Length: 6" (15.3cm) without right-angle bend; 5.5" (14 CM) with right-angle bend
Power Consumption (-LC)	250mA @ 3.3V (0.8 Watts typical)
Power Consumption (-SFP)	120mA @ 3.3V (0.4 Watts typical without SFP module)
Power Source	M.2 interface connector; 3.3V (refer to Table 41 of M.2 specification)
Operating Temp.	0°C to +45°C (+32°F to +113°F)
Storage Temp.	-40°C to +85°C
Humidity	5% to 95% (non-condensing)
Altitude	0 – 10,000 ft.
Weight	0.1 lbs. [0.05 kg]
Compliance	CE Mark; Emissions: EN55032, FCC Part 15; Class A; Immunity: EN55024
Data Speed:	Fixed or SFP optic at 1000Mbs, full duplex only
Fiber Port (-SFP):	1000Base-X open SFP slot
Fiber Port (-LC):	1000Base-SX 850nm multimode (LC); [62.5/125 μm fiber: 220 m/722 ft.]; [50/125 μm fiber: 550 m/1804 ft.]; Link Budget: 8.0 dB
DIP Switches / Jumpers:	None
Warranty	Lifetime

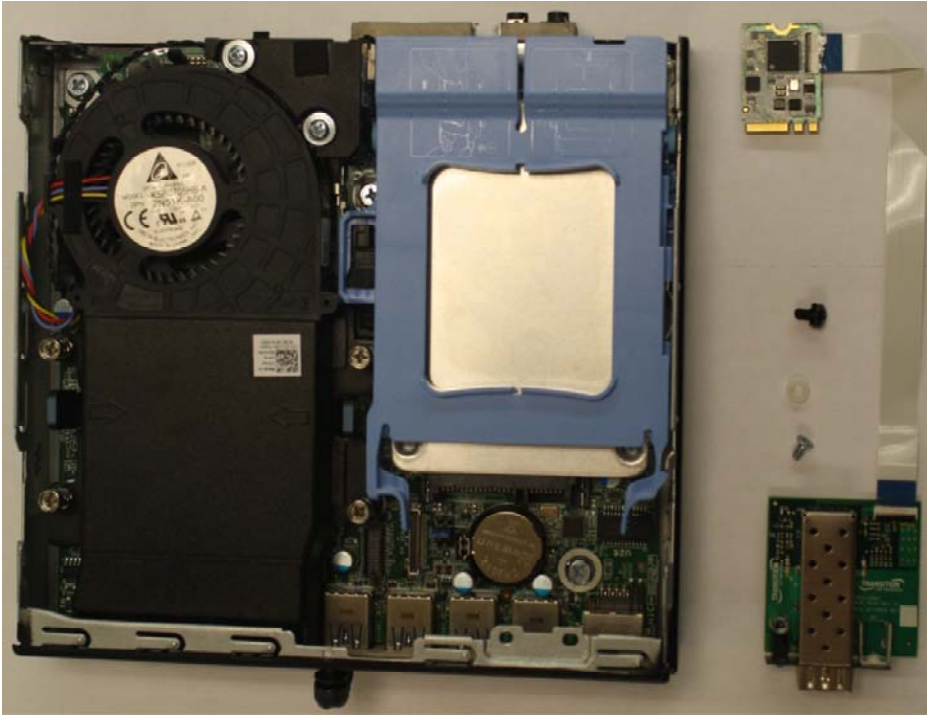
System Board Layout

The OptiPlex 7040 Micro has two M.2 expansion slots: one 22x30 slot (#10 in below diagram) and one 22x80 slot (#13 in below diagram). The NM2-GXE-2230-xx-01 or NM2-GXE-2230-xx-01-D installs in the 22x30 slot (#10 in below diagram). See the *Dell OptiPlex 7040M Owner's Manual* for details.

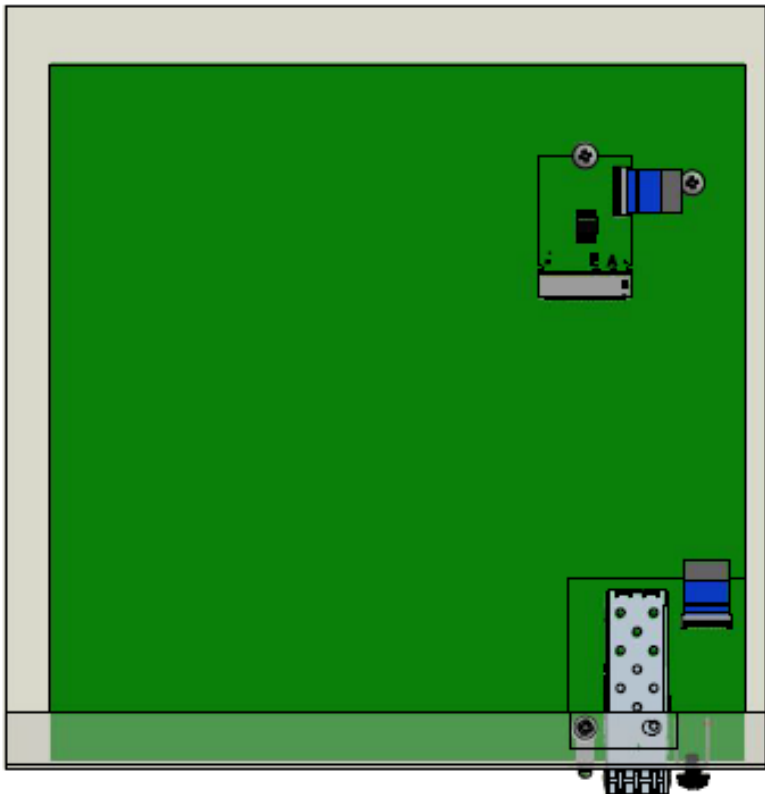


1. Processor	11. Power switch
2. CPU fan connector	12. Hard drive connector
3. Internal speaker connector	13. M.2 socket3 connector
4. Memory module connectors	14. Coin cell battery
5. USB 3.0 connector	15. RJ-45 Ethernet connector
6. Intrusion switch	16. USB 3.0 connector
7. USB 3.0 connector	17. DP/VGA daughter board connector
8. Line out connector	18. DisplayPort connector
9. Universal audio jack	19. HDMI connector
10. M.2 socket1 connector	20. DC-in jack

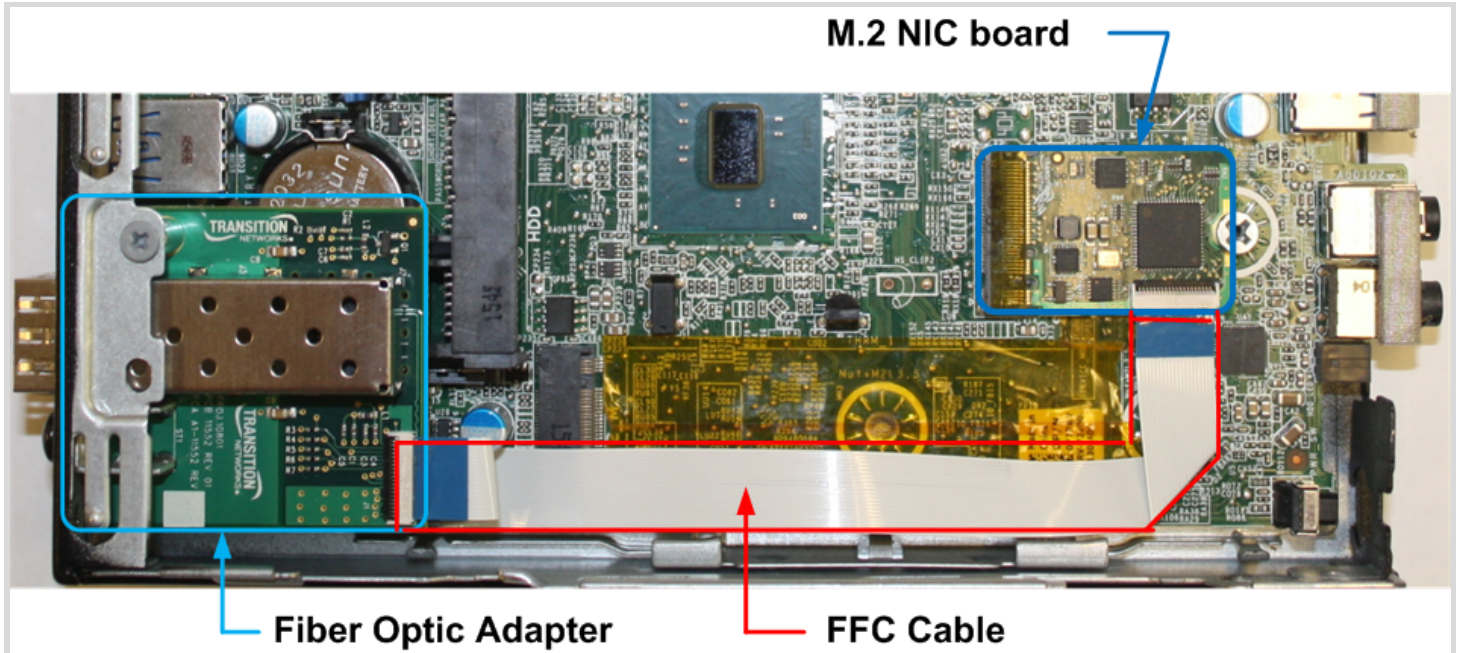
NIC Hardware Installation Overview



NIC Hardware Location



Components Overview



Reference Views





CAUTION: Only qualified persons should install the NIC. Failure to observe this caution could result in poor performance or damage to the equipment. Before installing the NIC, review the Pre-Installation Checklist and Safety Precautions below.

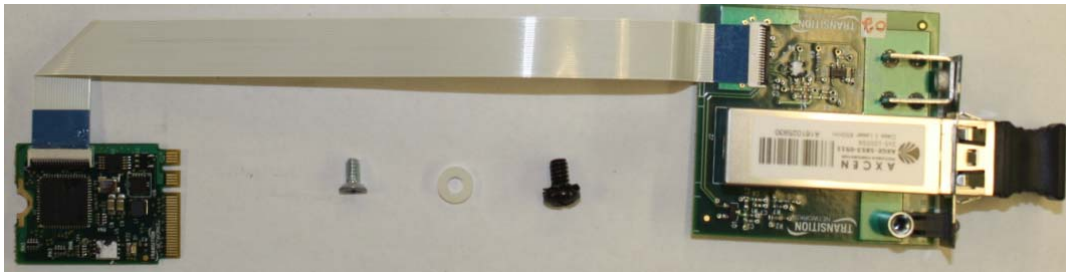
CAUTION: Wear a grounding device and observe electrostatic discharge precautions when installing the NIC in a system. Failure to observe this caution could result in damage to the NIC. Before installing the NIC, review the Pre-Installation Checklist and Safety Precautions below. Before installing the NIC, ensure that system power is OFF, the power cord is unplugged from the power outlet, and that proper electrical grounding procedure has been followed.

WARNING: High voltage inside the system may present a safety hazard. Make sure that the system power is off before removing the cover. Unplug and disconnect the PC and then wait for 15-20 seconds before plugging the PoE NIC into the PC. When removing the NIC, unplug the Ethernet cable before removing the PC cover.

Pre-Installation Checklist

Before installing your NIC, review the preceding sections, and then verify the following:

1. Verify that your system is using the latest BIOS.
2. If you download the driver software, record the path where you saved the downloads.
3. If your system is active, shut it down. Do not install the NIC until system power is completely removed. When system shutdown is complete, power OFF and unplug your system.
4. Holding the NIC by the edges, remove it from its shipping package and place it on an antistatic surface.
5. Check the NIC for signs of damage, particularly on the PCB edge connector. **CAUTION:** Never attempt to install a damaged NIC card. If the NIC is damaged, report it to Transition Networks.
6. **CAUTION:** Wear a grounding device and observe electrostatic discharge precautions when installing the NIC in a system. Failure to observe this caution could result in damage to the NIC. Before installing the NIC, ensure that system power is OFF, the power cord is unplugged from the power outlet, and that proper electrical grounding procedures have been followed.
7. **CAUTION:** Install the NIC in an operating environment where the temperature range is from 0°C to +45°C (+32°F to +113 °F), with relative humidity of 5% to 90% non-condensing. Failure to observe this caution could result in poor equipment performance.
8. **CAUTION:** DO NOT install the NIC in areas where strong electromagnetic fields (EMF) exist. Failure to observe this caution could result in poor equipment performance and data corruption.



NM2-GXE-2230-LC-01 and NM2-GXE-2230-LC-01-D



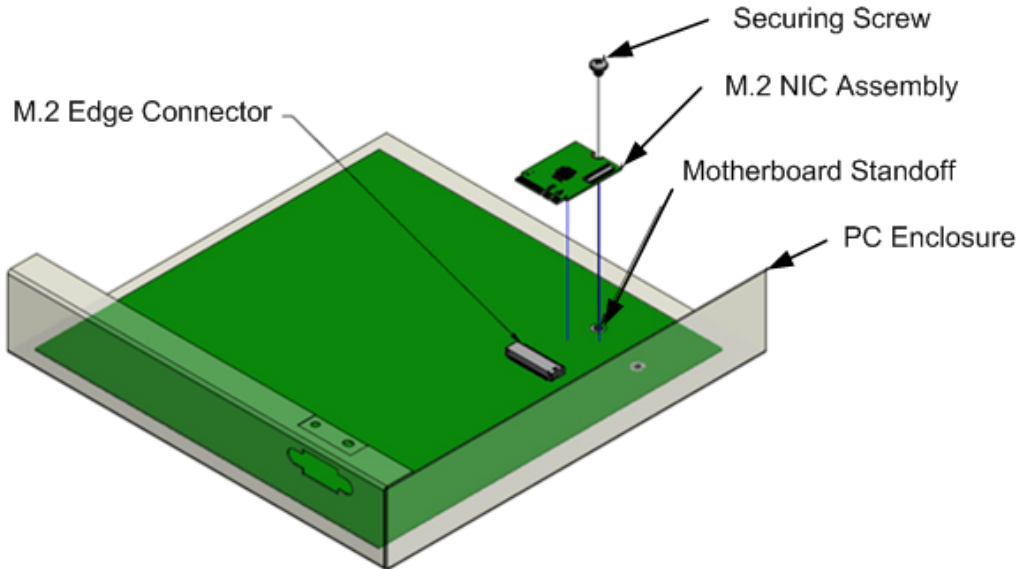
NM2-GXE-2230-SFP-01 and NM2-GXE-2230-SFP-01-D

Hardware Installation Procedure

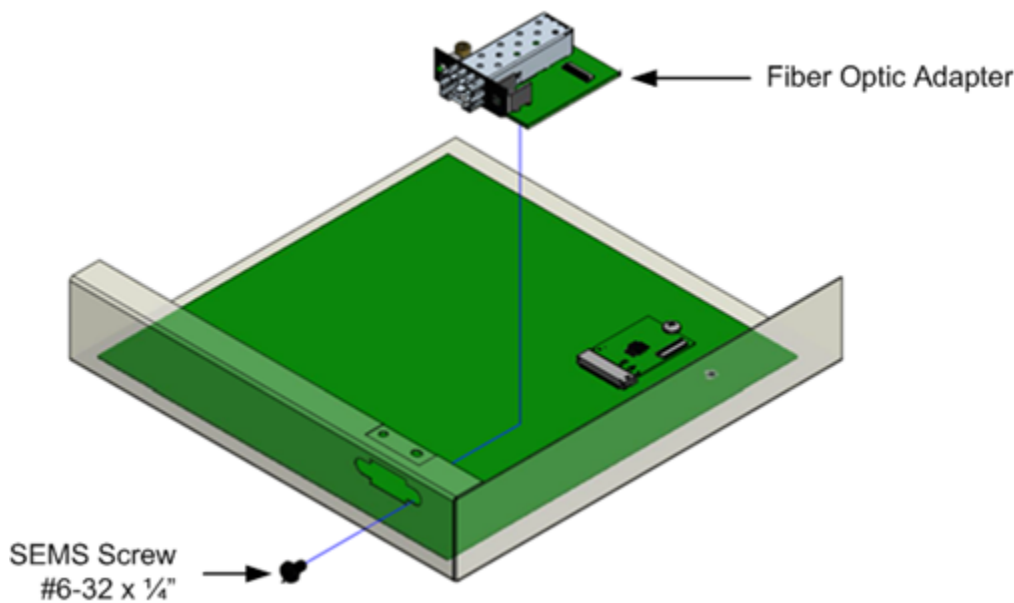
The FFC cable is shipped attached to the M.2 NIC. We recommend installing the M.2 NIC, then the Fiber Optic Adapter, and then attach the loose end of the cable to the Fiber Optic Adapter.

Alternatively, you can attach the loose end of the FFC cable to the Fiber Optic Adapter, and then install the M.2 NIC or the Fiber Optic Adapter.

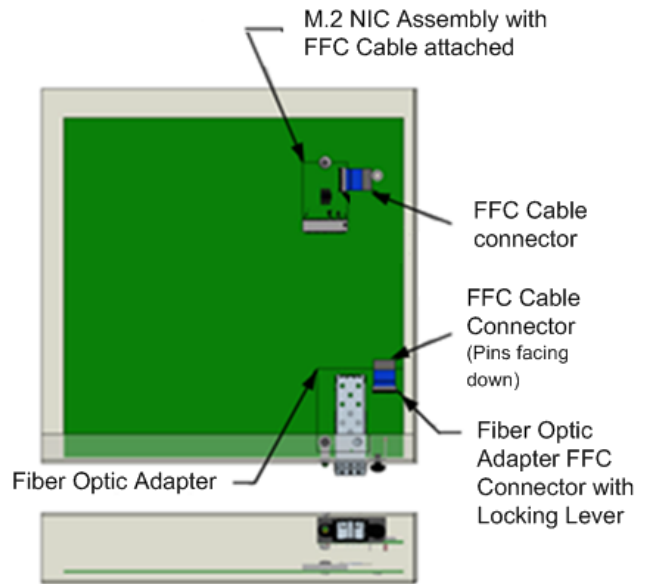
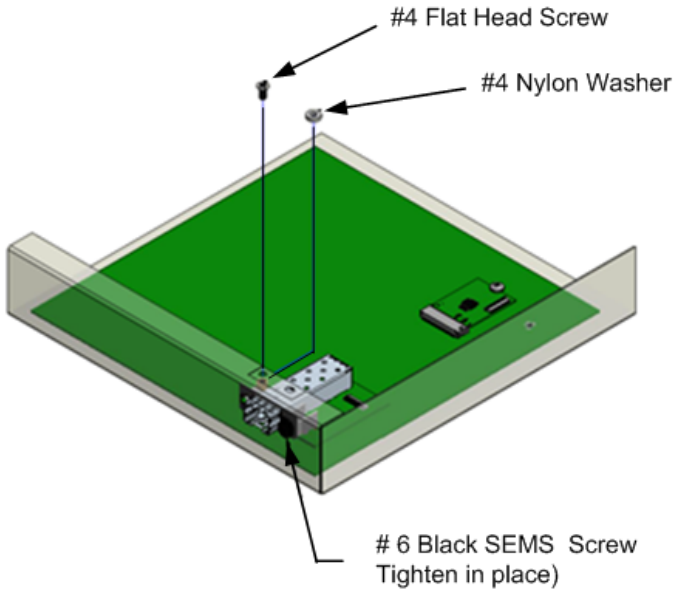
1. Remove PC cover.
2. Install the M.2 NIC Assembly (with attached cable) into Motherboard M.2 Edge Connector.
3. Secure the M.2 NIC Assembly into place using the Securing Screw.



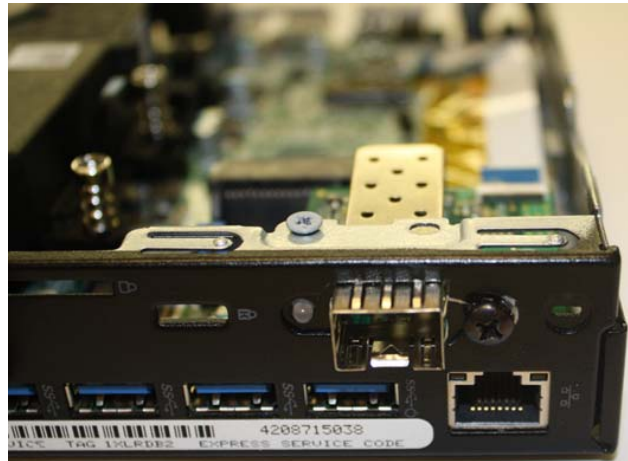
4. Install the Fiber Optic Adapter into the VGA opening in PC Case, as shown below.
5. Attach to PC Case using Black SEMS Screw #6-32x1/4", and partially tighten to hold in place as shown below.



6. Align #4 Standoff with Top Hole in PC Case.
7. Slip #4 Nylon Washer on top of #4 Standoff and insert #4 Screw to secure.
8. Tighten using Black SEMS Screw #6-32x1/4".



9. Insert the end of 20-Position FFC Cable into fiber optic adapter, with Pins facing down.
10. See the figure below for final placement.



11. Replace PC cover.

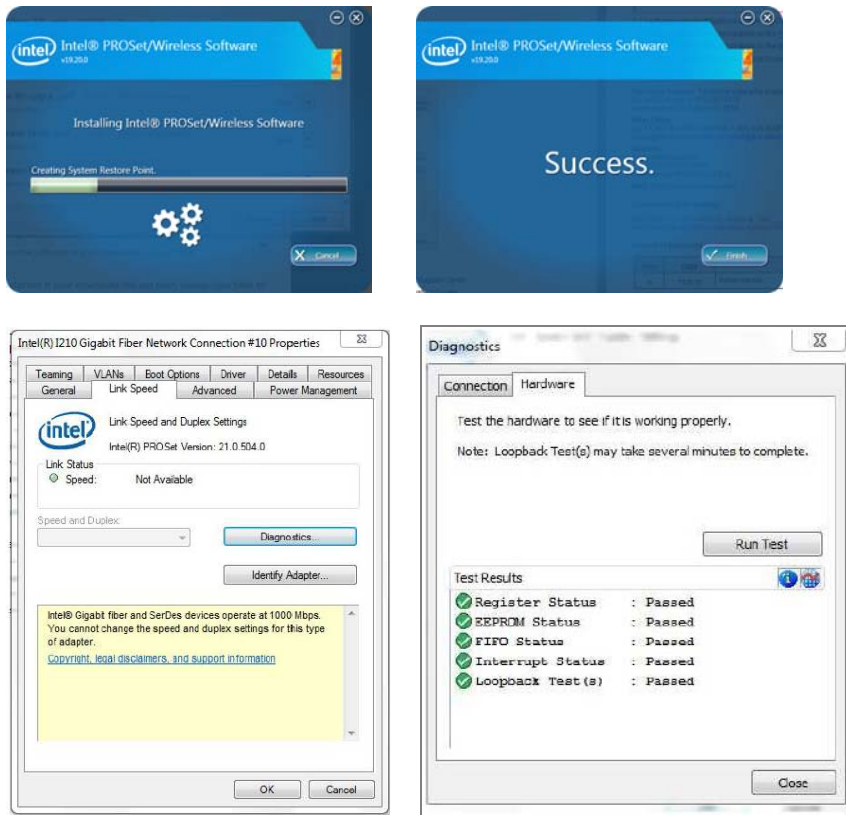
PXE Boot Loader from Intel.com

PXE boot loader image pre-loaded: <https://downloadcenter.intel.com/download/19186/Intel-Ethernet-Connections-Boot-Utility-Preboot-Images-and-EFI-Drivers>.

Intel i210 PROSet Drivers from Intel.com

If your PC does not automatically detect the NM2-GXE-2230-xx-01 or NM2-GXE-2230-xx-01-D NIC, download and install the standard i210 PROSet drivers from Intel at <http://www.intel.com/content/www/us/en/support/network-and-i-o/ethernet-products/000005686.html>.

The Intel® PROSet for Windows* Device Manager is an extension for Windows Device Manager. When you install the Intel PROSet software, tabs are automatically added to the supported Intel adapters in Windows Device Manager. These features allow you to test and configure wired Intel® Ethernet Adapters.



The links below apply to the NM2-GXE-2230-xx-01, the NM2-FXS-2230-SFP-01, and -D versions. At each link, there is a 32-bit and a 64-bit download for each OS.

- [Intel® Network Adapter Driver for Windows* 7.](#)
- [Intel® Network Adapter Driver for Windows* 8.1.](#)
- [Intel® Network Adapter Driver for Windows® 10.](#)

The full set of [Intel Network Adapter Drivers](#) for download (e.g., for Linux, Windows Server, etc.) is available .

Transition Networks [Resources page](#) has Drivers (ZIP format) for Windows 10 32bit Driver, Windows 10 64bit Driver, Windows 7 32bit Driver, Windows 7 64bit Driver, Windows 8 32bit Driver, and Windows 8 64bit Driver.

For More Information

To view the Dell™ OptiPlex™ User's Guide at Microsoft Windows Help and Support Center:

1. Click Start → Help and Support → Dell User and System Guides → System Guides.
2. Click the User's Guide for your computer.

The User's Guide is also available on the optional Drivers and Utilities media.

Support for Wyse 7020 Thin Client is on the [Dell Wyse support page](#).

Troubleshooting

This section lists some common problems, their causes, and potential recovery steps.

1. Confirm the [Pre-Installation Checklist](#) items on page 8.
2. Verify the [Hardware Installation Procedure](#) on page 9.
3. Check the LEDs; see Specifications on page 3.
4. Check that the cabling is securely attached. See the [FOA troubleshooting](#) guide or the SFP manual. Check for a mismatch of speed, duplex, protocol, or cable type.
5. Use the troubleshooting procedures in the *Dell™ OptiPlex™ User's Guide*.
6. Use the troubleshooting procedures on the [PXE Boot Loader webpage](#) as required.
7. Use the troubleshooting procedures on the [Intel i210 PROSet Drivers webpage](#) as required.
8. Verify that the link partner is active and can send/receive traffic; make sure partner settings match; verify that the port is enabled; try connecting to another port or link partner. Check for incompatible or conflicting devices / settings.
9. Run Windows Device Manager and scan for changes.
10. Check if the PC's BIOS version is appropriate and update to the latest. See the PC documentation.
11. Run the PC diagnostics (e.g., [Dell Quick Test](#) or [Dell pre-boot diagnostics](#)).
12. Automatically detect and update drivers and software if you are connected to the Internet from the computer that needs updated drivers from <http://www.intel.com/support/network/sb/CS-031482.htm>.
13. Record information and contact TN Technical Support. See [Recording Model and System Information](#) below.

Recording Device and System Information

After performing the troubleshooting steps, and before calling or emailing Technical Support, please record as much information as possible in order to help the TN Tech Support Specialist. Record the following information:

1. Product ID: _____ MAC Address: _____
Serial #: _____ Board Rev: _____
LED status: _____
2. Record the System information: Check your computer documentation for support information.
PC make and model: _____
Operating System: _____
BIOS version: _____
Intel i210 Driver version: _____
PC's Icon Tray indication: _____
Connected Device(s): _____
3. Provide your TN service contract number: _____
4. Describe the failure: _____

5. Describe any action(s) already taken to resolve the problem: _____

6. Connected device(s) make and model? _____

Contact Us

Technical Support: Technical support is available 24-hours a day

US and Canada: 1-800-260-1312

International: 00-1-952-941-7600

Main Office

tel: +1.952.941.7600 | toll free: 1.800.526.9267 | fax: 952.941.2322

sales@transition.com | techsupport@transition.com | customerservice@transition.com

Address

Transition Networks
10900 Red Circle Drive
Minnetonka, MN 55343, U.S.A.

Web: <https://www.transition.com>

Compliance Information

EN 55024: 2010

EN 55032: 2012/AC: 2013

AS/NZS CISPR 32: 2013

VCCI V-3/2015.04

ICES-003, Issue 6: 2016

FCC Part 15 Subpart B

Declaration of Conformity

Declaration of Conformity

Transition Networks, Inc.
Manufacturer's Name

10900 Red Circle Drive, Minnetonka, Minnesota 55343 U.S.A.
Manufacturer's Address

Declares that the products:
NM2-GXE-2230-xx-01 and NM2-GXE-2230-xx-01-D
Conforms to the following Product Regulations:

FCC Part 15 Class A, EN 55032:2012, EN 55024:2010
Directive 2014/30/EU
Low-Voltage Directive 2014/35/EU
IEC /EN 60950-1:2006+A2:2013
2011/65/EU EN 50581:2012

With the technical construction on file at the above address, this product carries the
CE Mark

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standards(s).

Minnetonka, Minnesota
Place

Oct 31, 2016
Date



Stephen Anderson
Full Name

Vice President of Engineering
Position

251415

Modification of NIC voids regulatory agency compliance. See packaging for DoC, FCC, Canadian and European regulations and warnings, and other regulatory agency information.

High Risk Activities Disclaimer: Components, units, or third-party products used in the product described herein are NOT fault-tolerant and are NOT designed, manufactured, or intended for use as on-line control equipment in the following hazardous environments requiring fail-safe controls: the operation of Nuclear Facilities, Aircraft Navigation or Aircraft Communication Systems, Air Traffic Control, Life Support, or Weapons Systems ("High Risk Activities"). Transition Networks and its supplier(s) specifically disclaim any expressed or implied warranty of fitness for such High Risk Activities.

Record of Revisions

Rev	Date	Notes
A	6/5/17	Initial release for production.
B	12/11/17	Update driver information.
C	3/18/19	Update install procedure.

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