NM2-FXS-2230-SFP-201

Install Guide

- M.2 Fast Ethernet Fiber Network Interface Card (NIC)
- Provides a fiber optic interface for the Dell OptiPlex™ 7070, 7060, 5060, and 3060 Micro PCs
- PCI Express M.2 compliant
- A or E keyed M.2 interface

Contents

Product Description

Transition Networks NM2-FXS-2230-SFP-201 M.2 Fast Ethernet Fiber Network Interface Cards (NICs) provide a fiber optic interface for the Dell OptiPlex™ 7070, 7060, 5060, and 3060 Micro PCs. The NM2-FXS-2230-SFP-201 consists of an M.2 NIC that installs into the OptiPlex PC's M.2 "A or E keyed" interface, a fiber optic adapter that installs into the OptiPlex Micro PC's Option port, and a 20-pin Flat Flex Cable (FFC) that connects the NIC to the fiber adapter. The NICs are electro-mechanically designed to be compatible (fit, form, function) with the Dell OptiPlex Micro PCs using the M.2 (E Key) slot.

M.2 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 manual for important notes, cautions, and warnings. Read the section "Before working inside your computer" before proceeding.

Ordering Information

SKU	Description
NM2-FXS-2230-SFP-201	M.2 Fast Ethernet Fiber NIC. M.2 NIC, 100Base-FX; 100Base-FX to SGMII SFP media converter (SFP included)

Supported Fiber Connections

100BASE-SGMII, SFP Slot

Driver Support

Windows 10, 8.1, 8, and 7 (32 and 64 bit); Linux

Features

- IEEE 802.3-2012 compliant
- PCI Express M.2 compliant (3.3V)
- Full Duplex
- IPv6 Capable
- A or E keyed M.2 interface
- Supports UEFI
- Jumbo frame support 9014 bytes
- PXE Boot support

- Flow control
- Wake on LAN (WOL)
- Smart Load Balancing (SLB)
- TCP Segmentation Offload (TSO)
- Message Signaled Interrupts (MSI)
- Extended Message-Signaled Interrupts (MSI-X)
- LACP support (Teaming)

Specifications

- Standards: IEEE 802.3-2012
- Bus Slot: M.2 - '2230-D4-A-E'
- Data Rate: NM2-FXS-2230-SFP-201 = 100Mbps (full duplex only)
- Max Frame Size: 9014 bytes
- Status LEDs: LINK/ACT ON = Link, Flashing = Activity
- Dimensions (M.2 NIC) 2230-D4-A-E
    o Width: 0.87" [22 mm]
    o Depth: 1.18" [30 mm]
    o Height: 0.12" [3.08 mm]
- Dimensions (Fiber Interface) Width: 1.65" [42 mm]
    o Depth: 2.05" [52 mm]
    o Height: 0.51" [13 mm]
- Dimensions (FFC Cable) Length: 2.99" [76 mm]
- 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)
- Environment:
    o Operating Temp: 0°C to +45°C
    o Storage Temp: -40°C to 85°C
    o Humidity: 5% to 95% (non-condensing)
    o Altitude: 0 – 10,000 ft.
- Weight: 0.1 lbs. [0.05 kg]
- Warranty: Lifetime

Regulatory Compliance

Note: Modification of NIC voids regulatory agency compliance.

Compliance: CE Mark; Emissions: EN55032, FCC Part 15 Class A; Immunity: EN55024

Emissions: 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.

Immunity: EN 55024: 2010 (EN 61000-4-2: 2009; EN 61000-4-3: 2006 + A1: 2008 + A2: 2010; EN 61000-4-4: 2004 + AC: 2006 + A1: 2010; EN 61000-4-5: 2006; EN 61000-4-6: 2009; EN 61000-4-8: 2010; EN 61000-4-11: 2004).

Declaration of Conformity

Declaration of Conformity

Transition Networks, Inc.
Manufacture's Name

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

Declares that the products:

NM2-FXS-2230-SFP-201

Conforms to the following Product Regulations:

EN 55032: 2012/AC: 2013; AS/NZS CISPR 32: 2013; VCCI V-3/2015.04; ICES-003, Issue 6: 2016; FCC Part 15 Class B.

EN 55024: 2010 (EN 61000-4-2: 2009; EN 61000-4-3: 2006 + A1: 2008 + A2: 2010; EN 61000-4-4: 2004 + AC: 2006 + A1: 2010; EN 61000-4-5: 2006; EN 61000-4-6: 2009; EN 61000-4-8: 2010; EN 61000-4-11: 2004).

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	Jan 23, 2020		
Place	Date		Signature
		Stephen Anderson	Vice President of Engineering
		Full Name	Position

28141B

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.

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.
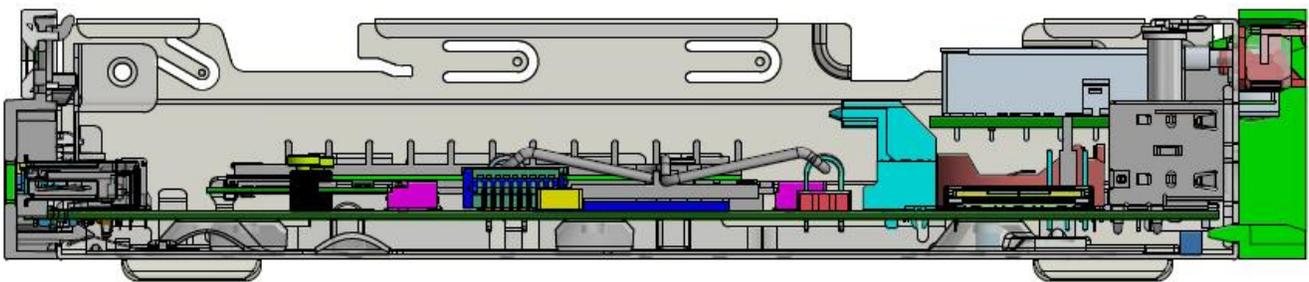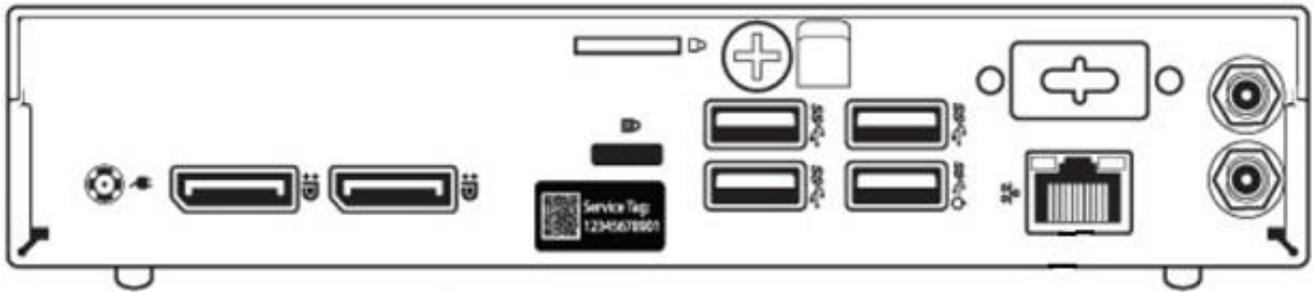
- ☐ One NM2-FXS-2230-SFP-201 M.2 NIC PCB attached to FFC Cable and one fiber optic adapter board in anti-static pouches.
- ☐ Parts in a 4x6 baggie (1 each): #4 Flat Head Screw, #4 Nylon Washer, #6 Black SEMS Screw.
- ☐ One NM2-FXS-2230-SFP-201 Install Guide (this document).
- ☐ One Product Support Postcard.
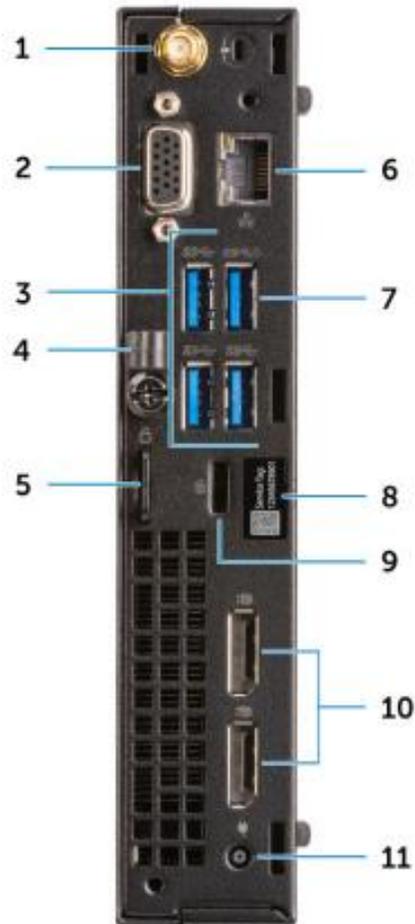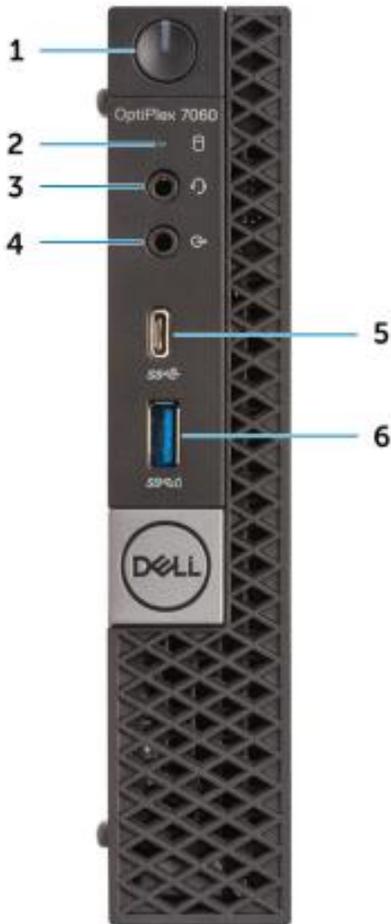
Reference Views

Product Views
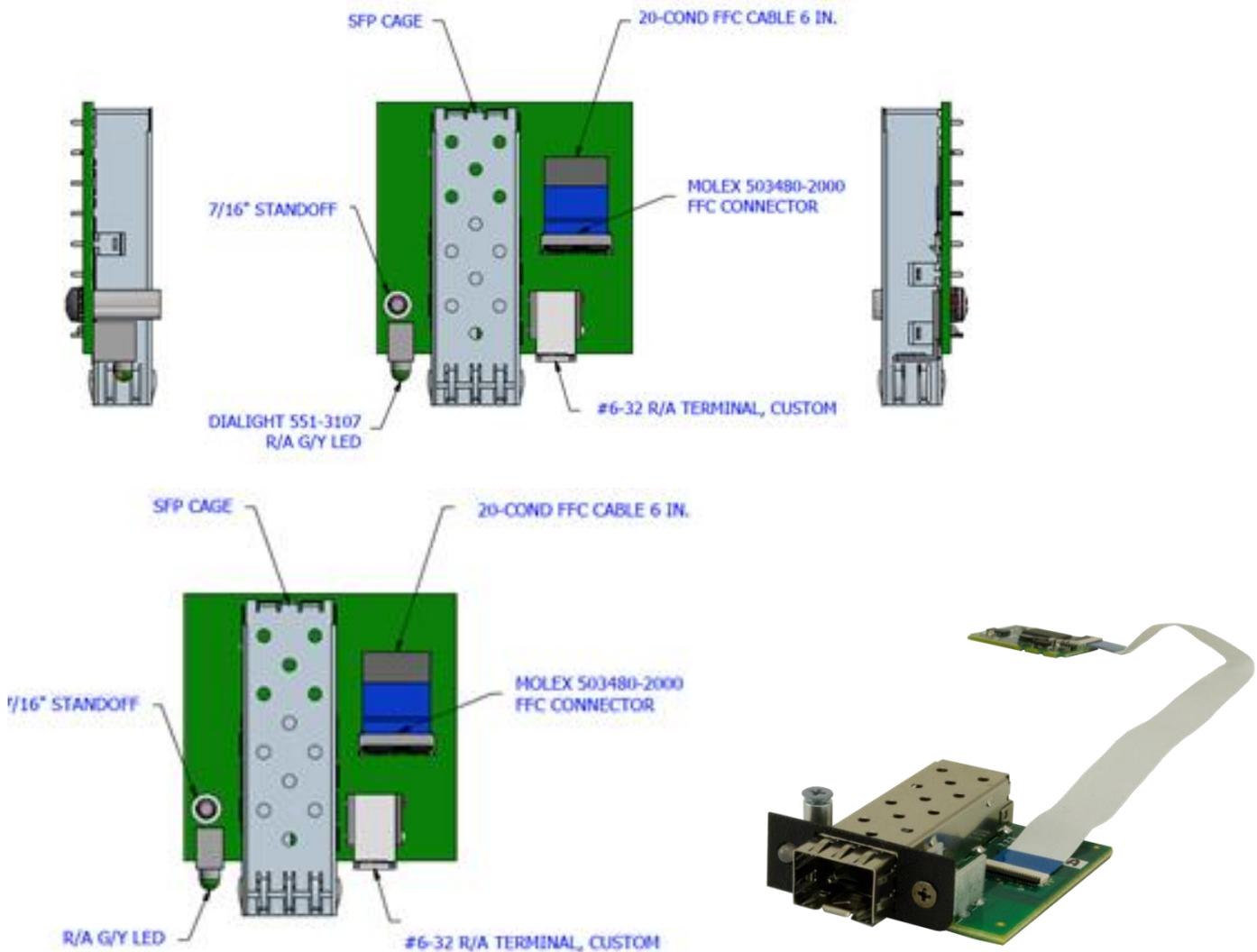
OptiPlex Views

OptiPlex 7060 Micro Ports & Slots

Dell OptiPlex 7060 Micro Front View: 1. Power button and power light. 2. Hard drive activity light.
3. Headset/Universal audio jack port. 4. Line-out port. 5. USB 3.1 Gen 2 Type-C port with PowerShare.
6. USB 3.1 Gen 1 port with PowerShare.

Dell OptiPlex 7060 Micro Back View: 1. External antenna connectors (2) (optional). 2. DisplayPort/VGA/HDMI
2.0b/DP/USB Type-C alt mode (optional). 3. USB 3.1 Gen 1ports (3). 4. Cable holder. 5. Padlock ring. 6. Network
port. 7. USB 3.1 Gen 1 port (supports Smart Power On). 8. Service tag. 9. Kensington security cable slot.
10. DisplayPorts (2). 11. Power connector port.

Dell Support for OptiPlex 7060: Diagnostics, Support topics & articles, Drivers & downloads, Manuals &
documents, System configuration, and Parts & accessories.

Install the NM2-FXS-2230-SFP-201 in the Dell OptiPlex

The NM2-FXS-2230-SFP-201 is designed to install in the Dell OptiPlex™ 7070, 7060, 5060, and 3060 Micro PCs.

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 NIC into the PC. When removing the NIC, unplug the Ethernet cable before removing the PC cover.

Note: Refer to the Notes, Cautions, and Warnings in the Dell OptiPlex 7060 Service Manual. See Manuals & documents for details.

Class I Laser Compliance: This product has been tested and found to comply with the limits for FDA Class I laser for IEC60825, EN60825, and 21CFR1040 specifications. **Warning**: Visible and invisible laser radiation when open. DO NOT stare into laser beam or view directly with optical instruments. Failure to observe this warning could result in damage to your eyes or blindness.

Installation Overview

Before installing your NIC, review the preceding sections, and then do 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. Remove the OptiPlex Side Cover. See Removing the Side Cover below.
7. Gently remove the OptiPlex HDD.
8. Remove the OptiPlex 15-Pin DSUB Knockout.
9. Insert the M.2 NIC into the OptiPlex Micro PC's M.2 "A or E keyed" interface. See "Installation Overview" on page 8.
10. Insert the fiber optic adapter into the OptiPlex Micro PC Option port. See "Installation Overview" on page 8.
11. Replace the OptiPlex HDD.
12. Replace the OptiPlex Side Cover.

Removing the Side Cover

1. Follow the procedure in "Before working inside your computer".
2. To remove the cover:

    a) Slide the release latch on the back side of the system until it gives a click sound to unlock the side cover [1].

    b) Slide and lift the side cover from the system [2].

Replacing the Side Cover

1. Place the cover on the system and slide the cover until it clicks into place [1].
2. The release latch automatically locks the side cover to the system [2].

System Board / Layout (7060 Micro)

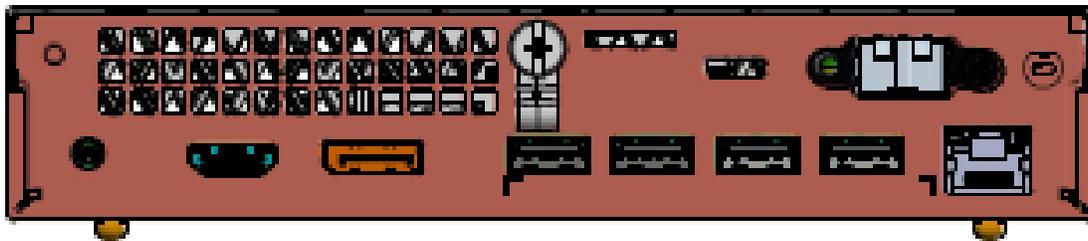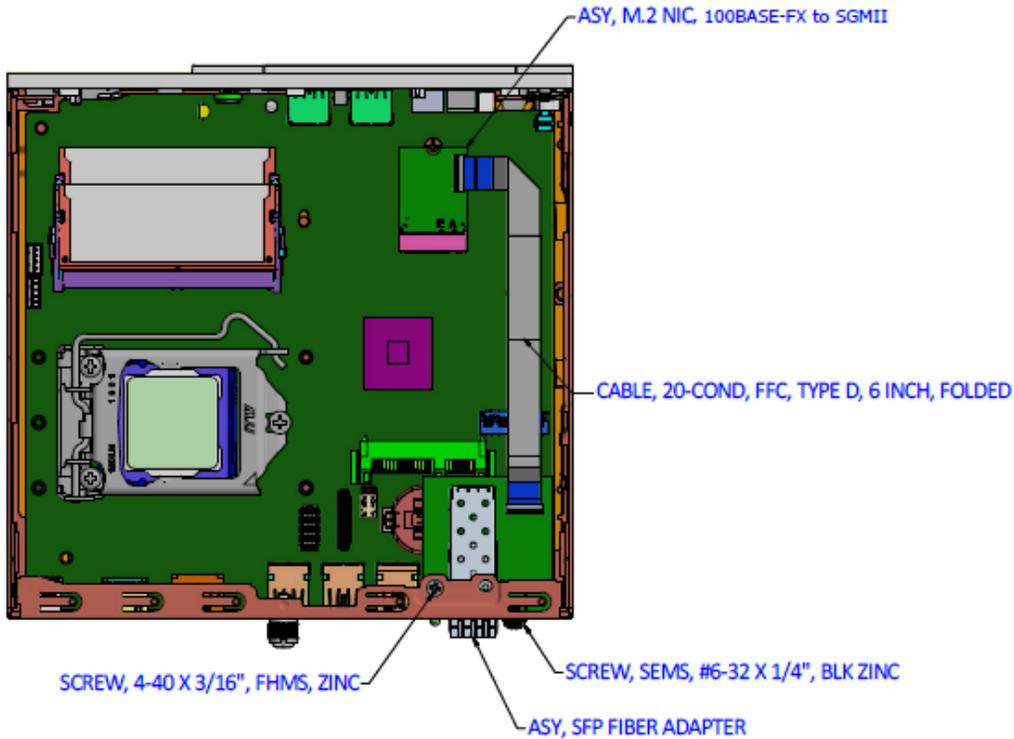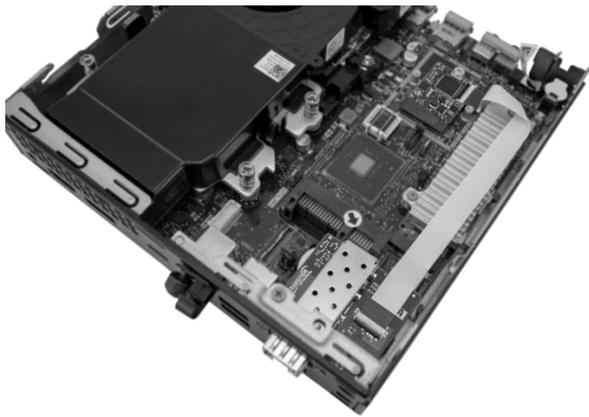# Installing the NM2-FXS-2230-SFP-201 in the OptiPlex

The NM2-FXS-2230-SFP-201 consists of a M.2 NIC that installs into the OptiPlex Micro PC's M.2 "A or E keyed" interface, and a fiber optic adapter that installs into the OptiPlex Micro PC's Option port.

1. Remove the PC cover.
2. Gently remove the HDD Assembly. See the Dell documentation.
3. Remove the 15-Pin DSUB knockout.
4. Insert the M.2 NIC into the OptiPlex Micro PC's M.2 "A or E keyed" interface.
5. Secure the M.2 NIC Assembly into place using the Securing Screw.
6. Insert the fiber optic adapter into the OptiPlex Micro PC's Option port.
7. Attach to PC Case using Black SEMS Screw #6-32x1/4", and partially tighten to hold in place as shown below.
8. Align #4 Standoff with Top Hole in PC Case.
9. Slip #4 Nylon Washer on top of #4 Standoff and insert #4 Screw to secure.
10. Tighten using Black SEMS Screw #6-32x1/4".
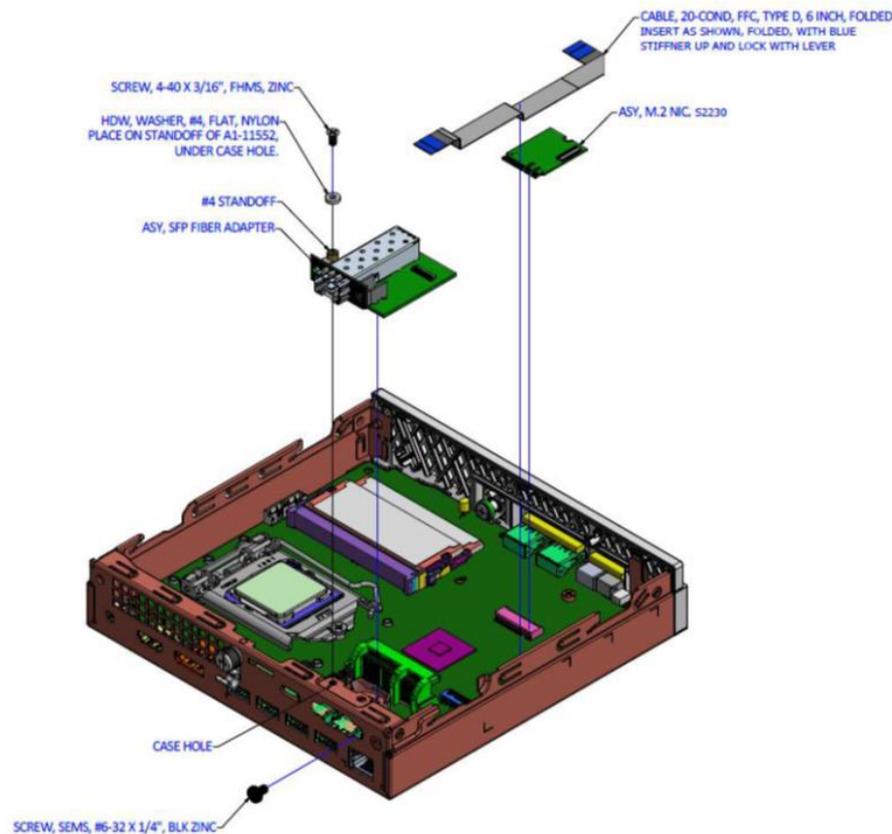
11. Lift Locking Lever of FFC Connector on fiber optic adapter.
12. Insert end of 20-Position FFC Cable into fiber optic adapter, with Pins facing down.
13. Push Locking Lever Down to Lock. Check that Cable is secure. See figure below for final placement.
14. Gently replace the HDD Assembly.
15. Replace PC cover.
16. Install the SFP in the open SFP slot.
17. Power up the PC.

Installed Views

ASY, M.2 NIC, 100BASE-FX to SGMII

CABLE, 20-COND, FFC, TYPE D, 6 INCH, FOLDED

SCREW, 4-40 X 3/16", FHMS, ZINC

SCREW, SEMS, #6-32 X 1/4", BLK ZINC

ASY, SFP FIBER ADAPTER

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-FXS-2230-SFP-201 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.
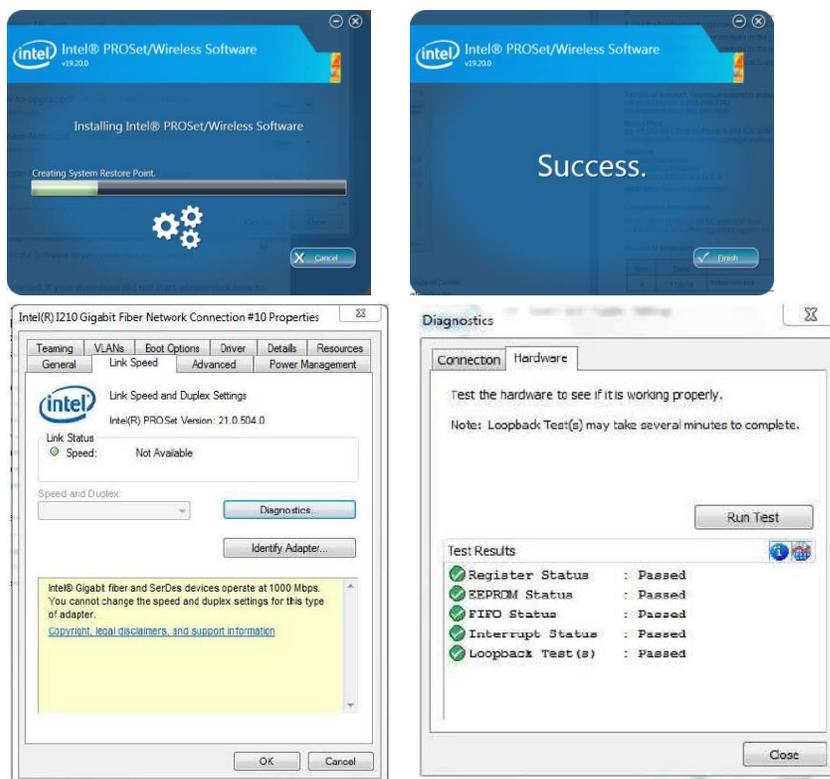
The links below apply to the NM2-FXS-2230-SFP-201. At each link, there is a 32-bit and a 64-bit download for each OS.

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 and 64bit Drivers, Windows 7 32bit and 64bit Drivers, and Windows 8 32bit and 64bit Drivers.

Status LED

The Media Converter has a status LED for checking Link/Activity:

Link/ACTivity LED On = Link; Flashing = Activity. Color is amber when 100M.

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 that the cabling is securely attached. See the FOA troubleshooting guide or the SFP manual.

4. Check for a mismatch of speed, duplex, protocol, or cable type.

5. Make sure the SFP is plugged in to the open SFP slot before you power on the PC. Failure to do so will cause the device to fail, in which case you must shut down and restart the PC.

6. Use the troubleshooting procedures in the *Dell™ OptiPlex™ User's Guide*.

7. Use the troubleshooting procedures on the PXE Boot Loader webpage as required.

8. Use the troubleshooting procedures on the Intel i210 PROSet Drivers webpage as required.

9. 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.

10. Run Windows Device Manager and scan for changes.

11. Check if the PC's BIOS version is appropriate and update to the latest. See the PC documentation.

12. Run the PC diagnostics (e.g., Dell Quick Test or Dell pre-boot diagnostics).

13. 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.

14. Record information and contact TN Technical Support. See Recording Model and System Information below.

For More Information

To view the Dell™ OptiPlex™ User's Guide at the Support Center web page:

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.

Technical information in this document is subject to change without notice.

See our SFP Products for more SFP information.

The Fiber Optic Association, Inc. provides a Technical Bulletin on "Guidelines For Testing And Troubleshooting Fiber Optic Installations" at http://www.thefoa.org/tech/guides/TT3.pdf. Other FOA Technical Bulletins to be used as references for the design and planning of the network can be downloaded from the FOA Tech Topics website.

Record 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: _____

_____

_____

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

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Minnetonka, MN 55343, U.S.A.

Web: https://www.transition.com

Record of Revisions

Rev	Date	Notes
A	7/24/18	Initial release for production.
B	11/14/18	Incorporate technical and editorial changes.
C	12/9/19	Remove LC version from this manual.
D	1/23/20	Remove NM2-GXE-2230-SFP-201 from this manual.
E	9/1/20	Update features.

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