

Overview

Models

Copper Ethernet Networking

	<u>Part Number</u>
HP 1-Port 1GbE Flex IO NIC	3TQ26AA
Intel® I210-T1 1-Port 1GbE NIC	E0X95AA
Intel I226-T1 2.5GbE Ethernet Network Adapter	9P1U8AA
HP 1GbE LAN Flex Port 2020	141J6AA
Allied Telesis AT-2911T/2-901 Dual Port 1GbE NIC	6E3Y9AA
Intel® I350-T4 4-Port 1GbE NIC	W8X25AA
HP 2.5GbE LAN Flex Port	169K0AA
Intel® X550-T2 2-Port 10GbE NIC	1QL46AA
HP 10GBASE-T Dual NIC Module Z6/8 G4	1QL49AA
HP Dual Port 10GBase-T NIC Module G2	360K6AA
HP 10GBase-T Flex IO	56Q71AA

Fiber Ethernet Networking

AT-2914SX/LC-901 1Gb LC Fiber NIC	1C7Q2AA
HP Flex 1GbE Fiber LC Single Port	20J15AA
Intel® X710-DA2 2-Port 10GbE SFP+ NIC	1QL47AA
HP 10GbE SFP+ SR Transceiver	C3N53AA
NVIDIA Mellanox ConnectX-6 LX Dual Port 25/10GbE SFP28 NIC	436M8AA
HP 10GbE SFP+ SR/SW LC Fiber Optic Transceiver	860T8AA
HP 25GbE SFP28 LC Fiber Optic Transceiver	860T9AA

Wireless Networking

Intel® 8265 802.11 a/b/g/n/ac WLAN + Bluetooth® 4.2 PCIe NIC ¹	1QL48AA
Intel® 9260 802.11ac PCIe x1 Kit ¹	6SL33AA
Intel® AX210 Wi-Fi 6E non-vPro® +Bluetooth® 5.2 External Antenna WLAN ²	340L7AA

Note 1: Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 6 (802.11ax) is backwards compatible with prior 802.11 specs.

Note 2: Wi-Fi 6E requires a Wi-Fi 6E router, sold separately to function in the 6GHz band. Availability of public wireless access points limited. Wi-Fi 6E is backwards compatible with prior 802.11 specs. And available in countries where Wi-Fi 6E is supported.

Ethernet Networking

HP 1-Port 1GbE Flex IO NIC (3TQ26AA)



Introduction

The HP 1-Port 1GbE Flex IO NIC is designed to work in the Flex IO port of select HP systems. Refer to platform specifications for compatibility. It utilizes a Realtek RTL8153 10/100/1000 Ethernet controller to provide an additional 1GbE LAN Port.

Performance and Features

- Supports IEEE 802.3az-2010, also known as Energy Efficient Ethernet (EEE). IEEE 802.3az-2010 operates with the IEEE 802.3 Media Access Control (MAC) Sublayer to support operation in Low Power Idle mode. When the Ethernet network is in low link utilization, EEE allows systems on both sides of the link to save power
- Fully compliant with Microsoft NDIS5, NDIS6 (IPv4, IPv6, TCP, UDP) Checksum features, and supports IEEE 802 IP Layer 2 priority encoding and IEEE 802.1Q Virtual bridged Local Area Network (VLAN).

Network Management

The HP 1-Port 1GbE Flex IO NIC provides Wake-on-LAN (WOL) support through the Flex IO port. A system that supports Wake on LAN can remain available to a systems administrator during its normal downtime. Once the machine is awakened, the systems administrator can remotely control, audit, debug, or manage the machine.

PXE Support

Support for pre-boot execution environment (PXE) enables automatic deployment of computing resources remotely from anywhere. It allows new or existing workstations to boot over the network and download software, including the operating system, from a management/ deployment server at another location on the network. Additionally, PXE enables decentralized software distribution and remote troubleshooting and repairs.

Service and Support

The HP Limited Warranty terms and conditions for HP-branded options and accessories (collectively referred to in this HP Limited Warranty collectively as "HP Option") are as set forth in the HP Limited Warranty applicable to the HP Option and included with the HP Hardware Product. If your HP Option is installed in an HP Hardware Product, HP will provide warranty service for either the period specified in the warranty documents (HP Option Limited Warranty Period) that shipped with the HP Option or for the remaining warranty period of the HP Hardware Product in which the HP Option is installed, whichever period is longer, but not to exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP Option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.

Ethernet Networking

Technical Specifications

Network Interface(s)	1 RJ-45
System Interface	Flex IO
Network Cable	1GbE over Category 5e (or better) up to 100m
Data Rates Supported	10/100/1000 Mbps, Half- and full-duplex
Controller	Realtek RTL8153
LED Indicators	Link/Activity LED (Green): Off = No Link, Solid = Link, Blinking = Activity Speed LED (Green): Off = 100Mbps, Green = 1Gbps
Compliance	802.3 (LAN) 802.3u (100BASE-TX) 802.3ab (1000BASE-T) 802.3x (Ethernet Flow Control) 802.1Q (Virtual LAN) 802.3az (Energy Efficient Ethernet) CB Certification (International Safety) NRTL UL Certification (North America Safety) FCC Class B (USA) CE (European Union) ICES-003 Class B (Canada) BSMI (Taiwan) VCCI (Japan) KCC (Korea) CTICK (Australia/New Zealand) UKCA (UK) UL (Safety) RoHS (Restricted or Hazardous Substances)
Power Requirement	0.81W (typical)
Operating Temperature	32° to 131° F (0° to 55° C)
Physical Dimensions (LxW)	1.5 in x 1.5 in. x 0.75 in (3.81 cm x 3.81 cm x 1.9 cm)
Kit Contents	HP 1-Port 1GbE Flex IO NIC 2 screws for securing to the system motherboard Product Warranty statement and the Installation Guide.

Ethernet Networking

Intel® I210-T1 1-Port 1GbE NIC (E0X95AA)



Introduction

The Intel® Ethernet Controller I210 Family provides an ideal GbE solution for customers looking for a full-featured Gigabit Ethernet Media Access Control (MAC) and Physical-Layer (PHY) for Desktop Workstation applications. The Intel® Ethernet Controller I210 Family supports advanced features such as Audio-Video Bridging (AVB), IEEE 802.1AS Precision Time Stamping, Error Correcting Code (ECC) Packet Buffers, and Enhanced Management Interface options.

Single-port controllers use a PCIe v2.1 one lane (x1) interface operating at 2.5GT/s. The Intel® Ethernet Controller I210 Family provides fully integrated GbE MAC/PHY capabilities that can be configured for either 1000 Mb/s or 10/100 Mb/s modes of operation. The Intel® Ethernet Controller I210 Family enables a quick migration from custom interconnects to Ethernet.

Performance and Features

- IEEE 802.1Qav Audio-Video Bridging (AVB) for customers requiring tightly controlled media stream synchronization, buffering and reservation
- Hardware-based time stamping of IEEE 1588 and 802.1AS packets enabling high-precision time synchronization over Ethernet
- Innovative power management features including Energy Efficient Ethernet (EEE) and DMA Coalescing for increased efficiency and reduced power consumption
- Extended management support including MCTP, NC-SI or SMBus interfaces supporting IPMI pass-through and OS2BMC

Network Management

The Intel® I210-T1 provides Wake-on-LAN (WOL) support through the PCI Express bus. A system that supports Wake on LAN can remain available to a systems administrator during its normal downtime. Once the machine is awakened, the systems administrator can remotely control, audit, debug, or manage the machine.

PXE Support

Support for pre-boot execution environment (PXE) enables automatic deployment of computing resources remotely from anywhere. It allows new or existing workstations to boot over the network and download software, including the operating system, from a management/ deployment server at another location on the network. Additionally, PXE enables decentralized software distribution and remote troubleshooting and repairs.

Ethernet Networking

Service and Support

The HP Limited Warranty terms and conditions for HP-branded options and accessories (collectively referred to in this HP Limited Warranty collectively as "HP Option") are as set forth in the HP Limited Warranty applicable to the HP Option and included with the HP Hardware Product. If your HP Option is installed in an HP Hardware Product, HP will provide warranty service for either the period specified in the warranty documents (HP Option Limited Warranty Period) that shipped with the HP Option or for the remaining warranty period of the HP Hardware Product in which the HP Option is installed, whichever period is longer, but not to exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP Option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.

Technical Specifications

Network Interface(s)	1 RJ-45
System Interface	PCI Express v2.1 x1
Network Cable	1GbE over Category 5e (or better) up to 100m
Data Rates Supported	10/100/1000 Mbps, Half- and full-duplex
Controller	Intel® Ethernet I210 Controller
LED Indicators	Link/Activity LED (Green): Off = No Link, Solid = Link, Blinking = Activity Speed LED (Green/Amber): Off = 10Mbps, Green = 100Mbps, Amber = 1Gbps
Compliance	802.3 (LAN) 802.3u (100BASE-TX) 802.3ab (1000BASE-T) 802.3x (Ethernet Flow Control) 802.1Qav (Audio-Video Bridging) 802.1Q (Virtual LAN) 802.3az (Energy Efficient Ethernet) 802.1AS (Frame Expansion) 1588 (Precision Clock Synchronization) FCC B (USA) CE (European Union) ICES-003 B (Canada) BSMI (Taiwan) VCCI (Japan) KCC (Korea) CTICK (Australia/New Zealand) UL (Safety) RoHS (Restricted or Hazardous Substances)
Power Requirement	0.81W (typical)
Operating Temperature	32° to 131° F (0° to 55° C)
Physical Dimensions (LxW)	0.709 in x 2.64 in. (6.7 cm x 1.8 cm)
Kit Contents	Clamshell container holding: • Intel® I210-T1 Single-Port 1GbE NIC with a standard height bracket attached • Low profile bracket Product Warranty statement and the Installation Guide.

Ethernet Networking

Intel® I226-T1 1-Port 2.5GbE NIC (9P1U8AA)



Introduction

The Intel® Ethernet Network Adapter I226-T1 provides an ideal 2.5GbE solution for customers looking for a full-featured Ethernet Media Access Control (MAC) and Physical-Layer (PHY) for Desktop Workstation applications. The Intel® I226-T1 supports advanced features such as Audio-Video Bridging (AVB), IEEE 802.1AS Precision Time Stamping, Error Correcting Code (ECC) Packet Buffers, and Enhanced Management Interface options.

The Intel® I226-T1 uses a PCIe v3.1 by one lane (x1) interface operating at 5GT/s to provide fully integrated 2.5GbE MAC/PHY capabilities that can be configured for any of the following speeds: 2.5Gbps, 1Gbps, 1000 Mbps, 100Mbps or 10Mbps. The Intel® I226-T1 is perfect for upgrading existing network connections while maintaining seamless backwards compatibility with existing infrastructure.

Performance and Features

- IEEE 802.1Qav Audio-Video Bridging (AVB) for customers requiring tightly controlled media stream synchronization, buffering and reservation
- Hardware-based time stamping of IEEE 1588 and 802.1AS packets enabling high-precision time synchronization over Ethernet
- Innovative power management features including Energy Efficient Ethernet (EEE) and DMA Coalescing for increased efficiency and reduced power consumption compared to the previous generation Intel® I225-T1.

Network Management

The Intel® I226-T1 provides Wake-on-LAN (WOL) support through the PCI Express bus. A system that supports Wake on LAN can remain available to a systems administrator during its normal downtime. Once the machine is awakened, the systems administrator can remotely control, audit, debug, or manage the machine.

PXE Support

Support for pre-boot execution environment (PXE) enables automatic deployment of computing resources remotely from anywhere. It allows new or existing workstations to boot over the network and download software, including the operating system, from a management/ deployment server at another location on the network. Additionally, PXE enables decentralized software distribution and remote troubleshooting and repairs.

Ethernet Networking

Service and Support

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Technical Specifications

Network Interface(s)	1 RJ-45
System Interface	PCI Express v2.1 x1
Network Cable	1GbE over Category 5e (or better) up to 100m
Data Rates Supported	10/100/1000 Mbps, Half- and full-duplex
Controller	Intel® Ethernet I210 Controller
LED Indicators	Link/Activity LED (Green): Off = No Link, Solid = Link, Blinking = Activity Speed LED (Green/Amber): Off = 10Mbps, Off = 100Mbps, Amber = 1Gbps, Green = 2.5Gbps
Compliance	802.3 (LAN, 10BASE-T _e , 100BASE-TX, 1000BASE-T, and 2500BASE-T) 802.3u (auto-negotiation) 802.3br (Interspersing Express Traffic) 802.1Qav (Audio-Video Bridging) 802.1Q (Virtual LAN) 802.1Qbu (Frame Preemption) 802.1Qav and Qbv, Linux Only 802.3az (Energy Efficient Ethernet) 802.1AS (Frame Expansion) 1588 (Precision Clock Synchronization) FCC B (USA) CE (European Union) BSMI (Taiwan) VCCI (Japan) KCC (Korea) CTICK (Australia/New Zealand) ICES-3(A) (Canada) UL (Safety) RoHS (Restricted or Hazardous Substances)
Power Requirement	Typical Power Consumption: 0.5W at 10Mbps 0.6W at 100Mbps 0.9W at 1Gbps 1.4W at 2.5Gbps
Operating Temperature	32° to 131° F (0° to 55° C)
Physical Dimensions (LxW)	2.70 in x 2.57 in. (6.87 cm x 6.53 cm)
Kit Contents	Clamshell container holding: - Intel® I226-T1 Single-Port 2.5GbE NIC and standard height bracket attached - Low profile bracket, Product Warranty statement, Installation Guide

Ethernet Networking

HP 1GbE LAN Flex Port 2020 (141J6AA)



Introduction

The HP 1GbE LAN Flex Port 2020 NIC is designed to work in the Flex IO port of select HP systems to allow expanded networking capability without occupying a PCIe slot. Refer to platform specifications for compatibility. It utilizes a Realtek RTL8153 10/100/1000 Ethernet controller to provide an additional 1GbE LAN Port.

Performance and Features

- Supports IEEE 802.3az-2010, also known as Energy Efficient Ethernet (EEE). IEEE 802.3az-2010 operates with the IEEE 802.3 Media Access Control (MAC) Sublayer to support operation in Low Power Idle mode. When the Ethernet network is in low link utilization, EEE allows systems on both sides of the link to save power
- Fully compliant with Microsoft NDIS5, NDIS6 (IPv4, IPv6, TCP, UDP) Checksum features, and supports IEEE 802 IP Layer 2 priority encoding and IEEE 802.1Q Virtual bridged Local Area Network (VLAN).

Network Management

The HP 1GbE LAN Flex Port 2020 NIC provides Wake-on-LAN (WOL) support through the Flex IO port. A system that supports Wake on LAN can remain available to a systems administrator during its normal downtime. Once the machine is awakened, the systems administrator can remotely control, audit, debug, or manage the machine.

PXE Support

Support for pre-boot execution environment (PXE) enables automatic deployment of computing resources remotely from anywhere. It allows new or existing workstations to boot over the network and download software, including the operating system, from a management/ deployment server at another location on the network. Additionally, PXE enables decentralized software distribution and remote troubleshooting and repairs.

Service and Support

Ethernet Networking

The HP Limited Warranty terms and conditions for HP-branded options and accessories (collectively referred to in this HP Limited Warranty collectively as "HP Option") are as set forth in the HP Limited Warranty applicable to the HP Option and included with the HP Hardware Product. If your HP Option is installed in an HP Hardware Product, HP will provide warranty service for either the period specified in the warranty documents (HP Option Limited Warranty Period) that shipped with the HP Option or for the remaining warranty period of the HP Hardware Product in which the HP Option is installed, whichever period is longer, but not to exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP Option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.

Technical Specifications

Network Interface(s)	1 RJ-45 Port
System Interface	Flex IO (communicates via USB protocol)
Network Cable	1GbE over Category 5e (or better) up to 100m
Data Rates Supported	10/100/1000 Mbps
Controller	Realtek 8153 Ethernet Controller
LED Indicators	On = Link Up Blinking = Activity Off = Link Down
Compliance	802.3 (LAN) 802.3u (100BASE-TX) 802.3ab (1000BASE-T) 802.3x (Ethernet Flow Control) 802.1Q (Virtual LAN) 802.1P Layer 2 Priority Encoding 802.3az (Energy Efficient Ethernet) CB Certification (International Safety) NRTL UL Certification (North America Safety) FCC Class B (USA) CE (European Union) ICES-003 Class B (Canada) BSMI (Taiwan) VCCI (Japan) KCC (Korea) CTICK (Australia/New Zealand) UKCA (UK) UL (Safety) RoHS (Restricted or Hazardous Substances)
Power Requirement	3.8 Watts
Operating Temperature	32 °F to 158 °F (0 °C to 70 °C)
Physical Dimensions (LxW)	1.65 in x 1.57 in. (4.0 cm x 4.2 cm)
Kit Contents	HP 1GbE LAN Flex Port, screws (qty 2), Install guide, Product Notices, Warranty Card

Ethernet Networking

Allied Telesis AT-2911T/2-901 Dual Port 1GbE NIC (6E3Y9AA)



Introduction

The Allied Telesis AT-2911T/2-901 Dual Port 1GbE NIC uses a PCIe Gen 2 x1 connection to provide two RJ-45 port connections each capable of 1GbE. Its compact PCIe x1 form factor allows it to fit in any PCIe expansion slot, making it an ideal candidate for increasing network connection points without taking up space.

Performance and Features

10/100/1000 Mbps Ethernet transfer rate delivers outstanding network performance that improves response time and removes bottlenecks. The Allied Telesis AT-2911T/2 supports both 10Mbps Ethernet and 100Mbps Fast Ethernet in addition to Gigabit Ethernet, so users are guaranteed end-to-end protocol support across their enterprise.

- Dual port Gigabit PCI Express 2.0 NIC with full height and low-profile bracket
- Support for Preboot eXecution Environment (PXE) 2.1, iSCSI boot, and UEFI network boot (UEFI available upon request)
- Supports virtualization features including VMware® NetQueue and Microsoft VMQ, plus power management technologies such as IEEE 802.3az
- Supports Jumbo frames, Checksum offloading, CPU task offload, smart load balancing and failover, link aggregation, TCP segmentation, transmit and receive side scaling, IPv6
- Supports cable lengths up to 100 meters (328 feet)

Network Management

The Allied Telesis AT-2911T/2-901 Dual Port 1GbE NIC can be used for VLAN support, link aggregation LACP, link aggregation smart switch and failover network setups.

PXE Support

Support for pre-boot execution environment (PXE) enables automatic deployment of computing resources remotely from anywhere. It allows new or existing workstations to boot over the network and download software, including the operating system, from a management/ deployment server at another location on the network. Additionally, PXE enables decentralized software distribution and remote troubleshooting and repairs.

Service and Support

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Ethernet Networking

remaining warranty period of the HP Hardware Product in which the HP Option is installed, whichever period is longer, but not to exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP Option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.

Technical Specifications

Network Interface(s)	2 RJ-45 Ports
System Interface	PCIe v2.0 x1
Network Cable	Cat3 (or higher) for 10Mbps Cat5 (or higher) for 100Mbps Cat5e (or higher) for 1Gbps up to 100m
Data Rates Supported	10/100/1000 Mbps
Controller	Broadcom 5718 Ethernet Controller
LED Indicators	On = Link Up Blinking = Activity Off = Link Down
Compliance	IEEE 802.1p (Quality of Service) IEEE 802.1Q (VLANs) IEEE 802.2 (LLC) IEEE 802.3ac (MAC) IEEE 802.3x (Flow control auto-negotiation) IEEE 802.3z (1000 Base-X) IEEE 802.3ad (Link aggregation and draft static) IEEE 802.3ab (10/100/1000T) RoHS UL FCC/EN55022 Class A TUV EN55024 CE C-TICK VCCI KCC UKCA
Power Requirement	2.4 Watts (typical)
Operating Temperature	32 °F to 104 °F (0 °C to 40 °C)
Physical Dimensions (LxW)	3.5 in x 2.7 in. (8.8 cm x 6.9 cm)
Kit Contents	Allied Telesis AT-2911T/2-901 Dual Port 1GbE NIC, full height bracket (installed), half height bracket, Install guide, Product Notices, Warranty Card

Ethernet Networking

Intel® I350-T4 4-Port 1GbE NIC (W8X25AA)



Introduction

The new Intel® Ethernet Server Adapter I350 family builds on Intel's history of excellence in Ethernet products. Intel® continues its market leadership with this new generation of PCIe* gigabit Ethernet (GbE) network adapters. Built with the bridgeless Intel® Ethernet Server Adapter I350, these adapters represent the next step in the GbE networking evolution for the enterprise and data center by introducing new levels of performance through industry-leading enhancements for both virtualized and iSCSI unified networking environments. This new family of adapters also includes new power management technologies, such as energy-efficient Ethernet and direct memory access coalescing.

Performance and Features

10/100/1000 Mbps Ethernet transfer rate delivers outstanding network performance that improves response time and removes bottlenecks. Because the Intel® I350-T4 supports both 10Mbps Ethernet and 100Mbps Fast Ethernet in addition to Gigabit Ethernet, users are guaranteed end-to-end protocol support across their enterprise.

- Quad port bandwidth, Gigabit PCI Express 2.1 NIC, with full height or low-profile bracket
- New fully integrated (bridgeless) Intel® Ethernet I350 Controller, optimized for the new Integrated I/O and Data Direct I/O technologies
- Supports the IEEE 1588 Precision Time Stamping protocol and 802.1AS implementation
- Supports latest virtualization features including VMware® NetQueue and Microsoft VMQ, plus power management technologies such as IEEE 802.3az and DMAC
- Support for 9.5K Jumbo Frames, TCP/IP Checksum Offload (TCO) & large send offload (LSO)
- Intel® Integrated I/O and Data Direct I/O for increased performance and reduced latency
- IPv6 packet transmit and receive (excluding all offload capabilities); IPv6 aware SNMPv1 agent for Windows®
- Support for Preboot eXecution Environment (PXE)
- Supports cable runs up to 100 meters (328 feet).

Network Management

The Intel® I350-T4 provides Wake-on-LAN (WoL) support through the PCI Express bus. A system that supports Wake on LAN can remain available to a systems administrator during its normal downtime. Once the machine is awakened, the systems administrator can remotely control, audit, debug, or manage the machine. WoL is limited to Port A only.

Ethernet Networking

PXE Support

Support for pre-boot execution environment (PXE) enables automatic deployment of computing resources remotely from anywhere. It allows new or existing workstations to boot over the network and download software, including the operating system, from a management/ deployment server at another location on the network. Additionally, PXE enables decentralized software distribution and remote troubleshooting and repairs.

Service and Support

The HP Limited Warranty terms and conditions for HP-branded options and accessories (collectively referred to in this HP Limited Warranty collectively as "HP Option") are as set forth in the HP Limited Warranty applicable to the HP Option and included with the HP Hardware Product. If your HP Option is installed in an HP Hardware Product, HP will provide warranty service for either the period specified in the warranty documents (HP Option Limited Warranty Period) that shipped with the HP Option or for the remaining warranty period of the HP Hardware Product in which the HP Option is installed, whichever period is longer, but not to exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP Option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.

Technical Specifications

Network Interface(s)	4 RJ-45
System Interface	PCI Express v2.1 x4 (operable in PCI Express v2.1 x1 with some performance degradation)
Network Cable	1GbE over Category 5e (or better) up to 100m
Data Rates Supported	10/100/1000 Mbps, Half- and full-duplex
LED Indicators	Link/Activity LED (Green): Off = No Link, Solid = Link, Blinking = Activity Speed LED (Green/Amber): Off = 10Mbps, Green = 100Mbps, Amber = 1 Gbps
Controller	Intel® Ethernet I350 Controller
Compliance	802.3 (LAN) 802.3u (100BASE-TX) 802.3ab (1000BASE-T) 802.3x (Ethernet Flow Control) 802.1Q (Virtual LAN) 802.3az (Energy Efficient Ethernet) 802.1AS (Frame Expansion) IEEE 1588 (Precision Clock Synchronization) FCC B (USA) CE (European Union) ICES-003 B (Canada) BSMI (Taiwan) VCCI (Japan) KCC (Korea) CTICK (Australia/New Zealand) UL (Safety) RoHS (Restricted or Hazardous Substances)
Power Requirement	5.0W (typical)
Operating Temperature	32° to 131° F (0° to 55° C)
Physical Dimensions (LxW)	5.5 in x 2.75 in (14 cm x 7 cm) (without bracket)
Kit Contents	Clamshell container holding: Intel® I350-T4 Quad-Port 1GbE NIC with a standard height bracket attached

Ethernet Networking

- Low profile bracket
- Product Warranty statement and the Installation Guide.

HP 2.5GbE LAN Flex Port (169K0AA)



Introduction

The HP 2.5GbE LAN Flex Port NIC is designed to work in the Flex IO port of select HP systems to allow expanded networking capability without occupying a PCIe slot. Refer to platform specifications for compatibility. It utilizes the Intel® I225-V Ethernet controller to provide speeds up to 2.5GbE.

Performance and Features

The HP 2.5GbE LAN Flex Port NIC is a highly capable and widely adaptable compact networking solution. It can communicate at 10/100/1000Mbps and 2.5Gbps which virtually guarantees compatibility with existing infrastructure while allowing considerable headroom compared to a traditional 1GbE solution.

- Single RJ-45 port 2.5GbE NIC connected via HP's Flex IO interface and communicating via PCIe 3.1 x1 protocol
- IEEE 802.3 auto negotiation of network speed
- TCP/UDP, IPv4 checksum offloads (Rx/ Tx)
- Transmit Segmentation Offloading (TSO) (IPv4, IPv6)
- Support Jumbo Frames up to 9.5KB
- Support for Preboot eXecution Environment flash interface support via PXE 2.1 or EFI (64bit)

Network Management

The HP 2.5GbE LAN Flex Port NIC provides Wake-on-LAN (WOL) support through the Flex IO port. A system that supports Wake on LAN can remain available to a systems administrator during its normal downtime. Once the machine is awakened, the systems administrator can remotely control, audit, debug, or manage the machine.

PXE Support

Support for pre-boot execution environment (PXE) enables automatic deployment of computing resources remotely from anywhere. It allows new or existing workstations to boot over the network and download software, including the operating system, from a management/ deployment server at another location on the network. Additionally, PXE enables decentralized software distribution and remote troubleshooting and repairs.

Service and Support

Ethernet Networking

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Ethernet Networking

Technical Specifications

Network Interface(s)	1 RJ-45
System Interface	Flex IO Connector (Communicates via PCIe V3.1 x1 protocol)
Network Cable	Cat5e up to 100m
Data Rates Supported	10/100/1000Mbps and 2.5Gbps BASE-T
Controller	Intel® I225-V
LED Indicators	On = Link Up Blinking = Activity Off = Link Down
Compliance	IEEE: 802.3 (Ethernet Interface for 2500BASE-T, 1000BASE-T, 100BASE-TX, and 10BASE-TE) 802.1AS-Rev 802.1Q (Virtual LAN) 802.1Qav 802.1Qbu 802.1Qbv 1588 802.1AS-REV 802.1p/Q 802.3br 802.3az (Energy Efficient Ethernet) 802.3x (Ethernet Flow Control) 802.3z CB Certification (International Safety) NRTL UL Certification (North America Safety) FCC Class B (USA) CE (European Union) ICES-003 Class B (Canada) BSMI (Taiwan) VCCI (Japan) KCC (Korea) CTICK (Australia/New Zealand) UKCA (UK) UL (Safety) RoHS (Restricted or Hazardous Substances)
Power Requirement	2.2 Watts
Operating Temperature	32° F to 158° F (0° to 70° C)
Physical Dimensions (LxW)	1.65 in x 1.57 in. (4.0 cm x 4.2 cm)
Kit Contents	HP 2.5GbE LAN Flex Port, screws (qty. 2), Install Guide, Product Notices, Warranty Card

Ethernet Networking

Intel® X550-T2 2-Port 10GbE NIC (1QL46AA)



Introduction

The Intel® Ethernet Converged Network Adapter is the newest innovation in Intel's leadership to drive 10GbE into the broad server market. The adapter hosts Intel's latest Ethernet silicon, the Intel® Ethernet Controller X550, a low-cost single-chip 10GBASE-T solution for today's server platforms.

Performance and Features

- Industry-leading throughput and latency performance
- Operates at 1Gbps/10Gbps, auto-negotiation, on both ports
- 10GBASE-T connectivity supporting up to 100 meters with CAT 6A cabling (or better)
- Up to 40Gb/s bi-directional near line rate throughput
- Low profile design shipping with standard height and low-profile brackets
- SR-IOV for direct assignment: NIC-based isolation and switching for various virtual stations instances enabling optimal CPU usage in virtualized environments
- PXE 2.0 enabled through boot read-only memory (ROM)

WoL is not supported on Intel® Ethernet 10-gigabit adapters.

Service and Support

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Technical Specifications

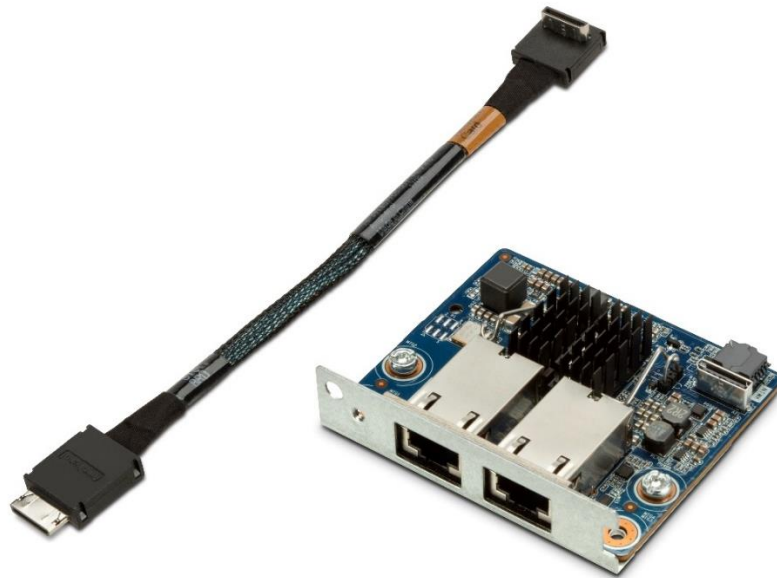
Network Interface(s) 2 RJ-45

Ethernet Networking

System Interface	PCI Express v3.0 x4 (operable in PCI Express v3.0 x4 with potential performance degradation)
Network Cable	1GbE over Category 5e (or better) up to 100m 5GbE over Category 5e (or better) up to 100m 10GbE over Category 6 (or better) up to 55m 10GbE over Category 6a (or better) up to 100 meters
Data Rates Supported	100 Mbps, 1/2.5/5/10 Gbps
LED Indicators	Link/Activity LED (Green): Off = No Link, Solid = Link, Blinking = Activity Speed LED (Green/Amber): Off = No Link, Amber = <10Gbps, Green = 10Gbps
Controller	Intel® Ethernet Controller X550
Compliance	802.1Q VLANs 802.1Qbg (Virtual Ethernet Port Aggregator) FCC A (USA) CE (European Union) ICES-003 A (Canada) BSMI (Taiwan) VCCI (Japan) KCC (Korea) CTICK (Australia/New Zealand) UL (Safety) RoHS (Restricted or Hazardous Substances)
Power Requirement	11.2W (typical)
Operating Temperature	32° to 131° F (0° to 55° C)
Physical Dimensions (LxW)	5.1 in x 2.7 in (14.5 cm x 6.9 cm) (without bracket)
Kit Contents	Clamshell container holding: - Intel® X550-T2 Dual-Port 10GbE NIC with a standard height bracket attached - Low profile bracket Product Warranty statement and the Installation Guide.

Ethernet Networking

HP 10GBASE-T Dual NIC Module Z6/8 G4 (1QL49AA)



Introduction

The HP Z Dual-Port 10GbE Network Module is a 10GBASE-T adapter utilizing the Intel® X722 MAC and X557-AT2 PHY pairing to deliver full line-rate performance, utilizing CAT 6A UTP cabling (or better) with distances up to 100 meters. Providing high performance Ethernet connectivity, it is ideal for use in workstation, virtual workstation and cloud computing environments. It supports enterprise class features (VLAN tagging, adaptive interrupt coalescing, MSI-X, NIC teaming (bonding), Receive Side Scaling (RSS), jumbo frames, PXE boot) and virtualization features (VMware® NetQueue and Microsoft VMQ). Experience increased performance with offload protocols and Intel's iWARP RDMA protocol. The module was developed to be a low-cost option without the need of a PCIe slot, which can help with network transitions to 10G.

Performance and Features

- Industry-leading throughput and latency performance
- Operates at 1 Gbps/10 Gbps, auto-negotiation, on both ports
- 10GBASE-T connectivity supporting up to 100 meters with CAT 6A cabling (or better)
- Up to a theoretical 20Gb/s bi-directional near line rate throughput per port (combined dual port throughput limited)
- Remote Direct Memory Access (RDMA) using internet Wide Area RDMA Protocol (iWARP)
- SR-IOV capable in hardware (requires server FW, SW and OS support; 128 per device)
- 1,536 Transmit and Receive Queues per port
- Jumbo Frames, Checksum & Segmentation Offload, IPv6 and RSS
- Field replaceable and upgradeable
- Support for Preboot eXecution Environment (PXE)
- IEEE 1588 / IEEE 802.1as (Time Synchronization)
- Energy Efficient Ethernet (EEE) for low power consumption during periods of low data activity

Service and Support

The HP Limited Warranty terms and conditions for HP-branded options and accessories (collectively referred to in this HP Limited Warranty collectively as "HP Option") are as set forth in the HP Limited Warranty applicable to the HP Option and included with the HP Hardware Product. If your HP Option is installed in an HP Hardware Product, HP will provide warranty service for either the period specified in the warranty documents (HP Option Limited Warranty Period) that shipped with the HP Option or for the remaining warranty period of the HP Hardware Product in which the HP Option is installed, whichever period is longer, but not to exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.

Ethernet Networking

Network Management

I/O Virtualization support for VMware® NetQueue and Microsoft VMQ help meet the performance demands of consolidated virtual workloads. Compliant with Single-Root I/O Virtualization (SR-IOV), accommodating up to 256 Virtual Machines (VMs) to share single PCIe resources. Network virtualization can be taken a step further with support of Network Service Headers (NSH), Geneve, VXLAN, and NVGRE. The HP Z Dual-Port 10GbE Network Module HP Z 10GbE Dual Port Module is SR-IOV ready, requiring firmware, software and OS support.

RDMA with iWARP

With the Intel® C620 series chipset, the HP Z Dual-Port 10GbE Network Module HP Z 10GbE Dual Port Module natively supports a form of Remote Direct Memory Access (RDMA) using Internet Wide Area RDMA Protocol (iWARP). The Intel® iWARP support enables three performance-enhancing features: Kernel Bypass – which allows software applications to bypass the OS and directly access the Ethernet adapter resources, Direct Data Placement – which allows data to be written directly into user space, bypassing buffers, and Transport Acceleration – where the TCP/IP and iWARP protocols are accelerated in silicon relative to host software stacks. All of these features equate to reducing latency, freeing up processor cycles, and increasing memory bandwidth. RDMA support may be limited depending on OS support.

Dual-port 10 Gigabit Ethernet Throughput

The HP Z Dual-Port 10GbE Network Module HP Z 10GbE Dual Port Module delivers 20 Gbps full duplex Ethernet transfer rate per individual port, providing the network performance needed to improve response times and alleviate bottlenecks that impact performance of next generation data centers. 10Gb Ethernet bandwidth is ideal for high performance workstation computing, virtual workstations, database access, and more.

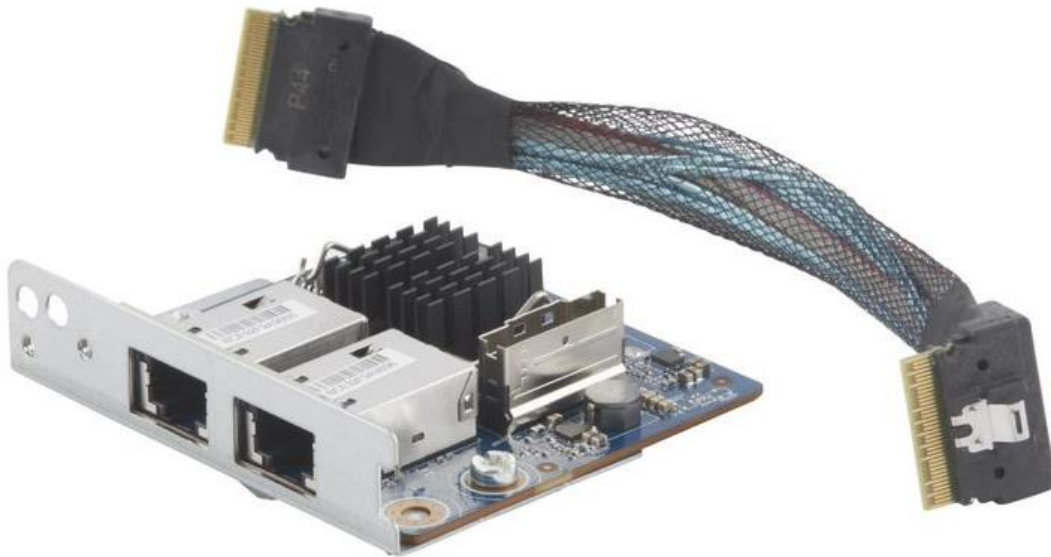
On the HP Z8 Gen 4 and Z6 Gen 4 Workstations, the HP Z Dual-Port 10GbE Network Module HP Z 10GbE Dual Port Module will operate with a combined theoretical throughput of 32 Gbps full duplex when both ports are actively transferring at maximum capacity.

Technical Specifications

Network Interface(s)	2 RJ-45
System Interface	Cabled interface through specialized motherboard connecrot and to the Intel® C622 Chipset
Network Cable	10GbE over Category 6a up to 100 meters
Data Rates Supported	1/10 Gbps
LED Indicators	Link/Activity LED (Green): Off = No Link, Solid = Link, Blinking = Activity Speed LED (Green/Amber): Off = No Link, Amber = 1Gbps, Green = 10Gbps
Controller	Intel® X722 MAC's in Chipset, paired with the Intel® X557-AT2 PHY
Compliance	FCC B (USA) CE (European Union) ICES-003 B (Canada) BSMI (Taiwan) VCCI (Japan) KCC (Korea) CTICK (Australia/New Zealand) Morocco UL (Safety) RoHS (Restricted or Hazardous Substances)
Power Requirement	Up to 7W
Operating Temperature	32° to 131° F (0° to 55° C)
Physical Dimensions (LxW)	2.75 x 3 in (Module dimensions only)
Kit Contents	HP Z Dual-Port 10GbE Network Module, module-to-motherboard Oculink cable, Rear I/O Label, Installation guide, Warranty card.

Ethernet Networking

HP Dual Port 10GBase-T NIC Module G2 (360K6AA)



Introduction

The HP Z Dual-Port 10GbE G2 Network Module is a 10GBASE-T adapter utilizing the Marvell AQC113 controller chip to deliver premium network performance. This compact, low-cost module provides two 10Gbps networking ports attached through a proprietary connector in HP systems to enhance networking capability without occupying a PCIe slot. This NIC is ideal for use in workstation, virtual workstation, and cloud computing environments.

This is the follow-on product to the original HP Z Dual-Port 10GbE NIC. The 2nd generation version is for use on Z6, Z8, and Z8 Fury Gen 5 workstations.

Performance and Features

The HP Z Dual-Port 10GbE G2 Network Module is a highly capable and widely adaptable compact networking solution. It can communicate at speeds of 10/100/1000Mbps as well as 2.5/5/10Gbps and can auto negotiate between speeds, which virtually guarantees compatibility with existing infrastructure while allowing considerable performance enhancement over 1GbE network technology.

- Dual RJ-45 ports, each capable of up to 10Gbps throughput
- IEEE 802.3 auto negotiation of network speed
- Jumbo packet support up to 16KB in all operating modes
- IPv4/v6, IPv6/TCP, and IPv6/UDP checksum offload
- Large Send Offload (LSO), Receive Side Scaling (RSS), and Direct Cache Access (DCA)

Network Management

The HP Z Dual-Port 10GbE G2 Network Module provides Wake-on-LAN (WOL) support. A system that supports Wake on LAN can remain available to a systems administrator during its normal downtime. Once the machine is awakened, the systems administrator can remotely control, audit, debug, or manage the machine.

Service and Support

The HP Limited Warranty terms and conditions for HP-branded options and accessories (collectively referred to in this HP Limited Warranty collectively as "HP Option") are as set forth in the HP Limited Warranty applicable to the HP Option and included with the

Ethernet Networking

HP Hardware Product. If your HP Option is installed in an HP Hardware Product, HP will provide warranty service for either the period specified in the warranty documents (HP Option Limited Warranty Period) that shipped with the HP Option or for the remaining warranty period of the HP Hardware Product in which the HP Option is installed, whichever period is longer, but not to exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.

Technical Specifications

Network Interface(s)	2 RJ-45 Ports
System Interface	Attaches to proprietary mainboard connector via cable, communicates via PCIe Gen 3 x4 protocol
Network Cable	10GbE over Category 6a (or better) up to 100m 5GbE over Category 5e (or better) up to 100m
Data Rates Supported	10/100/1000 Mbps and 2.5/5/10 Gbps
LED Indicators	Link/Activity LED (Green): Off = No Link, Solid = Link, Blinking = Activity Speed LED (Green/Amber): Off = 10Mbps, Green = 10Gbps, Amber = Less than 10Gbps
Controller	Marvell AQC113 (2 controllers per module)
Compliance	IEEE 802.3-2018 Clauses 55 and 126 IEEE 802.3az (Energy Efficient Ethernet) IEEE 1588v2 Precision Time Protocol (Precision Clock Synchronization) NBASE-T™ Alliance PHY Specification FCC B (USA) CE (European Union) ICES-003 B (Canada) BSMI (Taiwan) VCCI (Japan) KCC (Korea) CTICK (Australia/New Zealand) UKCA UL (Safety) RoHS (Restricted or Hazardous Substances)
Power Requirement	6.5 Watts
Operating Temperature	32° to 226° F (0° to 108° C)
Physical Dimensions (LxW)	3.3 in x 2.9 in (8.4 cm x 7.3 cm) (not including cable)
Kit Contents	HP Dual-Port 10GBase-T NIC Module G2, module-to-motherboard SlimSAS cable, Rear I/O Label, Install guide, Product Notices, Warranty Card

Ethernet Networking

HP 10GBase-T Flex IO (56Q71AA)



Introduction

HP 10GBase-T Flex IO is a compact, low-cost networking expansion module that provides high performance networking capabilities. This HP custom adapter connects to the system via the HP Flex IO connector instead of taking up a PCIe expansion slot.

Performance and Features

The HP 10GBase-T Flex IO is a highly capable and widely adaptable compact networking solution. It can communicate at speeds of 10/100/1000Mbps as well as 2.5/5/10Gbps and can auto negotiate between speeds, which virtually guarantees compatibility with existing infrastructure while allowing considerable performance enhancement over 1GbE network technology.

- One RJ-45 port capable of up to 10Gbps throughput
- IEEE 802.3 auto negotiation of network speed
- Jumbo packet support up to 16KB in all operating modes
- IPv4/v6, IPv6/TCP, and IPv6/UDP checksum offload
- Large Send Offload (LSO), Receive Side Scaling (RSS), and Direct Cache Access (DCA)

Network Management

The HP 10GBase-T Flex IO provides Wake-on-LAN (WOL) support. A system that supports Wake on LAN can remain available to a systems administrator during its normal downtime. Once the machine is awakened, the systems administrator can remotely control, audit, debug, or manage the machine.

PXE Support

Support for pre-boot execution environment (PXE) enables automatic deployment of computing resources remotely from anywhere. It allows new or existing workstations to boot over the network and download software, including the operating system, from a management/ deployment server at another location on the network. Additionally, PXE enables decentralized software distribution and remote troubleshooting and repairs.

Service and Support

The HP Limited Warranty terms and conditions for HP-branded options and accessories (collectively referred to in this HP Limited Warranty collectively as "HP Option") are as set forth in the HP Limited Warranty applicable to the HP Option and included with the HP Hardware Product. If your HP Option is installed in an HP Hardware Product, HP will provide warranty service for either the

Ethernet Networking

period specified in the warranty documents (HP Option Limited Warranty Period) that shipped with the HP Option or for the remaining warranty period of the HP Hardware Product in which the HP Option is installed, whichever period is longer, but not to exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.

Technical Specifications

Network Interface(s)	1 RJ-45 Port
System Interface	Flex IO Connector (Communicates via PCIe Gen3 x2 protocol)
Network Cable	10GbE over Category 6a (or better) up to 100m 5GbE over Category 5e (or better) up to 100m
Data Rates Supported	10/100/1000 Mbps and 2.5/5/10 Gbps
LED Indicators	Link/Activity LED (Green): Off = No Link, Solid = Link, Blinking = Activity Speed LED (Green/Amber): Off = 10Mbps, Green = 10Gbps, Amber = Less than 10Gbps
Controller	Marvell AQC113C
Compliance	802.3-2018 Clauses 55 and 126 802.3az (Energy Efficient Ethernet) 1588 v2 (Precision Clock Synchronization) NBASE-T™ Alliance PHY Specification CB Certification (International Safety) NRTL UL Certification (North America Safety) FCC Class B (USA) CE (European Union) ICES-003 Class B (Canada) BSMI (Taiwan) VCCI (Japan) KCC (Korea) CTICK (Australia/New Zealand) UKCA (UK) UL (Safety) RoHS (Restricted or Hazardous Substances)
Power Requirement	6.5 Watts
Operating Temperature	32° to 226° F (0° to 108° C)
Physical Dimensions (LxW)	1.65 in x 1.57 in. (4.0 cm x 4.2 cm)
Kit Contents	HP 10GBase-T Flex IO, captive screws (qty. 2), Install guide, Product Notices, Warranty Card

Fiber Ethernet Networking

AT-2914SX/LC-901 1Gb LC Fiber NIC (1C7Q2AA)



Introduction

The AT-2914SX/LC is a simple and straightforward option for adding fiber optic networking capability to an HP workstation. Its compact PCIe x1 form factor will fit in any PCIe expansion slot. The Little Connector “LC” interface built directly into the NIC eliminates the need for an optical transceiver and allows for easy setup in existing optical network infrastructure.

Performance and Features

- LC Fiber single port gigabit PCI Express NIC with full height and low-profile bracket
- Support for Preboot eXecution Environment (PXE) 2.1, and UEFI network boot (UEFI available upon request)
- IEEE 802.3x Flow control auto-negotiation
- Supports Jumbo frames up to 9.6KB, smart load balancing and failover, link aggregation,
- Supports for PCIe based Wake-on-LAN

Network Management

The AT-2914SX/LC can be used for VLAN support, link aggregation LACP, link aggregation smart switch and failover network setups. It also provides Wake-on-LAN (WOL) support through the PCI Express bus. A system that supports Wake on LAN can remain available to a systems administrator during its normal downtime. Once the machine is awakened, the systems administrator can remotely control, audit, debug, or manage the machine.

PXE Support

Support for pre-boot execution environment (PXE 2.1) enables automatic deployment of computing resources remotely from anywhere. It allows new or existing workstations to boot over the network and download software, including the operating system, from a management/ deployment server at another location on the network. Additionally, PXE enables decentralized software distribution and remote troubleshooting and repairs.

Service and Support

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Fiber Ethernet Networking

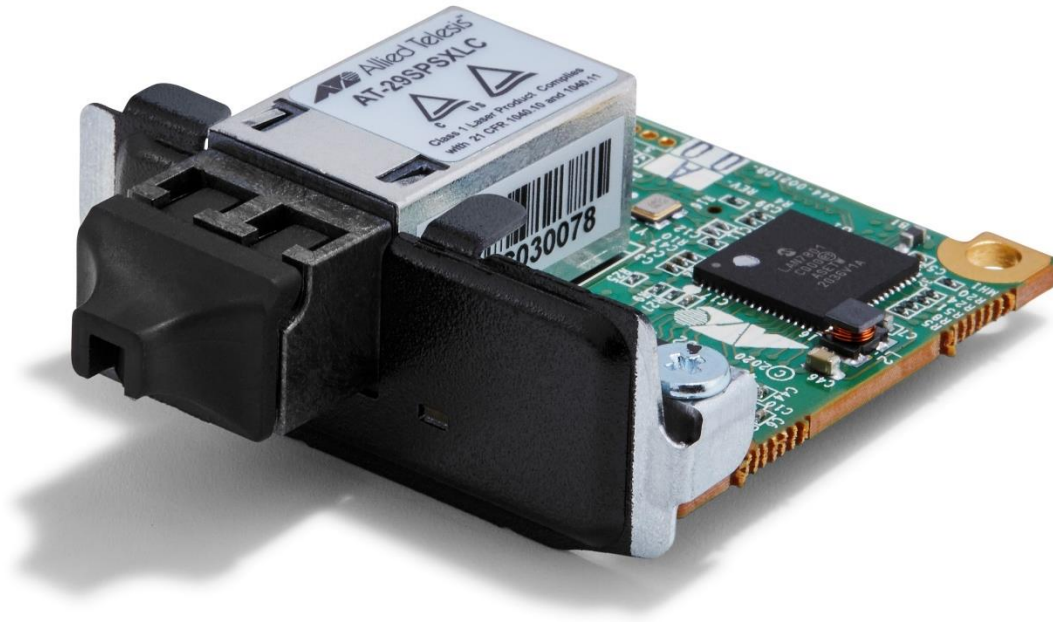
exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP Option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.

Technical Specifications

Network Interface(s)	1 LC Optical Fiber Port (Little Connector) at 850nm
System Interface	PCIe x1
Network Cable	Optical Multi Mode Fiber OM2 or better
Data Rates Supported	1Gbps (1000SX)
LED Indicators	On = Link Up Blinking = Activity Off = Link Down
Controller	Broadcom BCM57762A1KMLG
Compliance	IEEE 802.1p Quality of Service IEEE 802.1Q VLANs IEEE 802.2 LLC IEEE 802.3ac IEEE 802.3x IEEE 802.3z MAC Flow control auto-negotiation 1000 Base-X IEEE 802.3ad Link aggregation RoHS UL FCC/EN55022 Class A TUV EN55024 CE C-TICK VCCI
Power Requirement	1.5 Watts (typical)
Operating Temperature	32°F to 122°F (0°C to 50°C)
Physical Dimensions (LxW)	3.5 in x 2.7 in (8.8 cm x 6.9 cm)
Kit Contents	AT-2914SX/LC-901 1Gb LC Fiber NIC with low-profile bracket attached, standard height PCIe bracket included, Install Guide, Product Notices, Warranty Card

Fiber Ethernet Networking

HP Flex 1GbE Fiber LC Single Port (20J15AA)



Introduction

The HP Flex 1GbE Fiber LC NIC provides a compact option for increasing networking connectivity in HP workstations. This module connects via HP's proprietary Flex IO connector to add a single 1GbE LC optical fiber (little connector) port without occupying a PCIe expansion slot. This is a great option for workstations deployed in optical fiber networks or in places where both copper and optical fiber connections may be available.

Performance and Features

- LC Fiber single port gigabit NIC
- HP Flex IO Board connection does not occupy a PCIe slot
- Provides Wake-on-LAN support via fiber
- Provides Pre-boot eXecution Environment (PXE) support
- Jumbo frame support up to 9 KB

Network Management

The HP Flex 1GbE Fiber LC NIC provides Wake-on-LAN (WOL) support through the Flex IO port. A system that supports Wake on LAN can remain available to a systems administrator during its normal downtime. Once the machine is awakened, the systems administrator can remotely control, audit, debug, or manage the machine.

PXE Support

Support for pre-boot execution environment (PXE) enables automatic deployment of computing resources remotely from anywhere. It allows new or existing workstations to boot over the network and download software, including the operating system, from a management/ deployment server at another location on the network. Additionally, PXE enables decentralized software distribution and remote troubleshooting and repairs.

Service and Support

Fiber Ethernet Networking

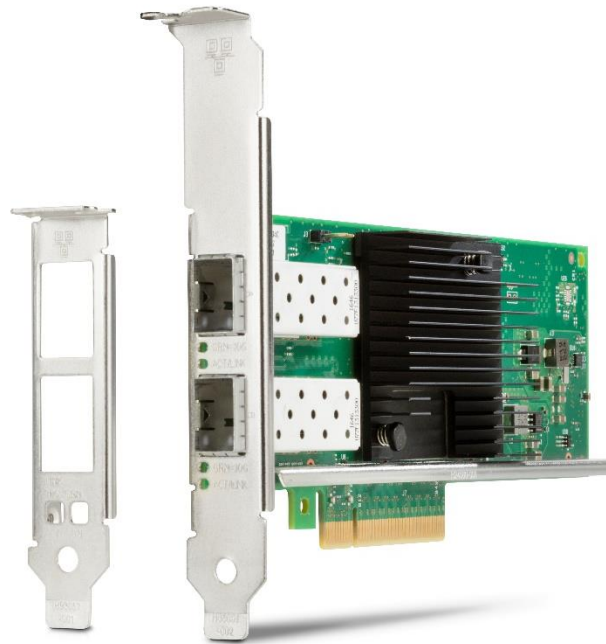
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Technical Specifications

Network Interface(s)	1 LC Optical Fiber Port (Little Connector)
System Interface	Flex IO Connector (communicates via USB 3.1 protocol)
Network Cable	Optical Multi Mode Fiber OM2 or better
Data Rates Supported	1GbE
LED Indicators	On = Link Up Blinking = Activity Off = Link Down
Controller	AT-29M2
Compliance	IEEE 802.3 IEEE 802.3u IEEE 802.3ab IEEE 802.1q VLAN Tagging IEEE 802.1AS IEEE 1588 IEEE 802.3az Energy Efficient Ethernet CB Certification (International Safety) NRTL UL Certification (North America Safety) FCC Class B (USA) CE (European Union) ICES-003 Class B (Canada) BSMI (Taiwan) VCCI (Japan) KCC (Korea) CTICK (Australia/New Zealand) UKCA (UK) UL (Safety) RoHS (Restricted or Hazardous Substances)
Power Requirement	Up to 5W
Operating Temperature	32°F to 158°F (0°C to 70°C)
Physical Dimensions (LxW)	1.65 in x 1.57 in. (4.0 cm x 4.2 cm)
Kit Contents	Flex 1GbE Fiber LC Single Port, Mounting Screws (qty 2), Install guide, Product Notices, Warranty Card

Fiber Ethernet Networking

Intel® X710-DA2 2-Port 10GbE SFP+ NIC (1QL47AA)



Introduction

The X710 adapters address the demanding needs of the next-generation agile data center by providing unmatched features for both server and network virtualization, flexibility for LAN and SAN networks and proven, reliable performance.

The new generation of X710 adapters are power misers. They deliver double the throughput with only half the power of the previous X520 generation.

Performance and Features

- Industry-leading throughput and latency performance
- Up to 40Gb/s bi-directional near line rate throughput
- Exceptional Low Power Adapters
- Network Virtualization offloads including VXLAN, NVGRE, Geneve, Network Service Headers (NSH)
- Intel® Ethernet Flow Director for hardware based application traffic steering
- Intel® Data Plane Developer Kit (DPDK) optimized for efficient packet processing
- Excellent small packet performance for network appliances and Network Function Virtualization (NFV)
- Intelligent offloads to enable high performance with Intel® Xeon® processor-based servers

WoL is not supported on Intel® Ethernet 10-gigabit adapters.

Service and Support

The HP Limited Warranty terms and conditions for HP-branded options and accessories (collectively referred to in this HP Limited Warranty collectively as "HP Option") are as set forth in the HP Limited Warranty applicable to the HP Option and included with the HP Hardware Product. If your HP Option is installed in an HP Hardware Product, HP will provide warranty service for either the period specified in the warranty documents (HP Option Limited Warranty Period) that shipped with the HP Option or for the remaining warranty period of the HP Hardware Product in which the HP Option is installed, whichever period is longer, but not to exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP Option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.

Fiber Ethernet Networking

Technical Specifications

Network Interface(s)	2 SFP+ Ports (designed to be used with HP 10GbE SFP+ Transceivers)
System Interface	PCI Express v3.0 x8 (operable in PCI Express v3.0 x4 with potential performance degradation)
Network Cable	10GbE over Multimode LC Fiber via HP 10GbE SPF+ SR Transceiver
Data Rates Supported	10 Gbps
LED Indicators	Link/Activity LED (Green): Off = No Link, Solid = Link, Blinking = Activity Speed LED (Green/Amber): Off = No Link, Green = 10Gbps
Controller	Intel® X710-AM2
Compliance	802.3 (LAN) 802.3u (100BASE-TX) 802.3ab (1000BASE-T) 802.3x (Ethernet Flow Control) 802.1Q (Virtual LAN) 802.1Qbg (Virtual Ethernet Port Aggregator) 802.3az (Energy Efficient Ethernet) 802.1AS (Frame Expansion) IEEE 1588 (Precision Clock Synchronization) 802.1P (Quality of Service) 802.3ad (Link Aggregation Control Protocol) 10GBASE-SR FCC B (USA) CE (European Union) ICES-003 B (Canada) BSMI (Taiwan) VCCI (Japan) KCC (Korea) CTICK (Australia/New Zealand) UL (Safety) RoHS (Restricted or Hazardous Substances)
Power Requirement	4.3W (typical)
Operating Temperature	32° to 131° F (0° to 55° C)
Physical Dimensions (LxW)	6.5 in x 2.5 in (16.5 cm x 6.4 cm)
Kit Contents	Clamshell container holding: - Intel® X710-DA2 Dual-Port 10GbE SFP+ NIC with a standard height bracket attached - Low profile bracket Product Warranty statement and the Installation Guide.

Fiber Ethernet Networking

HP 10GbE SFP+ SR Transceiver (C3N53AA)



Introduction

A 10-Gigabit transceiver in SFP+ form-factor that supports the 10-Gigabit SR standard, providing 10-Gigabit connectivity up to 300m on multimode fiber.

Compatibility

This transceiver is compatible with the following Network Adapters:

- HP 560SFP+ 2-Port 10GbE SFP+ NIC (C3N52AA)
- Intel® X710-DA2 2-Port 10GbE SFP+ NIC (1QL47AA)

Service and Support

The HP Limited Warranty terms and conditions for HP-branded options and accessories (collectively referred to in this HP Limited Warranty collectively as "HP Option") are as set forth in the HP Limited Warranty applicable to the HP Option and included with the HP Hardware Product. If your HP Option is installed in an HP Hardware Product, HP will provide warranty service for either the period specified in the warranty documents (HP Option Limited Warranty Period) that shipped with the HP Option or for the remaining warranty period of the HP Hardware Product in which the HP Option is installed, whichever period is longer, but not to exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP Option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.

Technical Specifications

Operating Temperature	32°F to 113°F (0°C to 45°C)
Operating Humidity	0% to 85%, noncondensing
Dimensions (HxWxD)	0.47 in x 0.54 in x 2.19 in (1.19 cm x 1.38 cm x 5.57 cm)

Wireless Networking

Intel® 8265 802.11 a/b/g/n/ac WLAN + Bluetooth® 4.2 PCIe NIC (1QL48AA)



Introduction

The Intel® Dual Band Wireless-AC 8265 is Intel's 3rd Generation 802.11 ac, dual band, 2x2 Wi-Fi® + Bluetooth® 4.2 adapter. It's engineered to deliver lower power consumption, improved RF coexistence, and complete Microsoft Windows® 10 support. Combined with Intel® Core™ processors and exceptional Intel® wireless innovations like Dynamic Regulatory Solution, the Intel® Dual Band Wireless-AC 8265 dramatically reshapes your connected experience at home, work or on the go.

Performance and Features

- 802.11 a/b/g/n/ac, Dual band 2x2 with up to 867Mbps speed; 3x faster than 802.11n, with up to 3x more bandwidth per stream
- Dual mode Bluetooth® 4.2 enables BR/EDR-Low Energy devices to act as a Bluetooth® Smart Ready Hub and Bluetooth® Smart peripheral at the time.
- Full support for latest Microsoft Windows® 10 OS with HCI drivers.

Service and Support

The HP Limited Warranty terms and conditions for HP-branded options and accessories (collectively referred to in this HP Limited Warranty collectively as "HP Option") are as set forth in the HP Limited Warranty applicable to the HP Option and included with the HP Hardware Product. If your HP Option is installed in an HP Hardware Product, HP will provide warranty service for either the period specified in the warranty documents (HP Option Limited Warranty Period) that shipped with the HP Option or for the remaining warranty period of the HP Hardware Product in which the HP Option is installed, whichever period is longer, but not to exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP Option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.

Roaming

Wireless Networking

Supports seamless roaming between respective access points (802.11b, 802.11g, 802.11a/b/g, 802.11a/b/g/n, and 802.11ac)

Dual Mode Bluetooth® 2.1, 2.1+EDR, 3.0, 4.0, 4.1, BLE, 4.2

Technical Specifications

Network Interface(s)	Wireless LAN: 802.11ac dual-band 2x2, (up to 867Mbps) Bluetooth®: 4.2
System Interface(s)	PCI Express v2.1x1 10-pin or 6-pin cable for Bluetooth®
Operating Temperature	32°F to 176°F (0C to 80°C)
Kit Contents	PCI Express Card with M.2 WLAN External Dual-Band Antenna USB cable for internal Bluetooth® connection Installation Guide Warranty Card

Wireless Networking

Intel® 9260 802.11ac PCIe x1 Kit (6SL33AA)



Introduction

The Intel® Dual Band Wireless-AC 9260 is Intel's 802.11ac wave 2, dual band, 2x2 Wi-Fi® + Bluetooth® 5 adapter. It's engineered to deliver lower power consumption, improved RF coexistence, and complete Microsoft Windows® 10 support. Combined with Intel® Core™ processors and exceptional Intel® wireless innovations like Dynamic Regulatory Solution, the Intel® Dual Band Wireless-AC 9260 doubles the theoretical throughput up to 1.73 Gbps (from 867 Mbps) using 160 Mhz channels.

Performance and Features

- 802.11 a/b/g/n/ac wave 2, Dual band 2x2 with up to 1.73Gbps speed (theoretical maximum); 6x faster than 802.11n, with up to 6x more bandwidth per stream
- Dual mode Bluetooth® 5 provides up to 4x the range over Bluetooth® 4.2 and doubles the transmit speed over the previous generation. Also added in Bluetooth® 5 is support for indoor location services.
- Full support for latest Microsoft Windows® 10 OS with HCI drivers.

Service and Support

The HP Limited Warranty terms and conditions for HP-branded options and accessories (collectively referred to in this HP Limited Warranty collectively as "HP Option") are as set forth in the HP Limited Warranty applicable to the HP Option and included with the HP Hardware Product. If your HP Option is installed in an HP Hardware Product, HP will provide warranty service for either the period specified in the warranty documents (HP Option Limited Warranty Period) that shipped with the HP Option or for the remaining warranty period of the HP Hardware Product in which the HP Option is installed, whichever period is longer, but not to exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP Option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.

Roaming

Supports seamless roaming between respective access points (802.11b, 802.11g, 802.11a/b/g, 802.11a/b/g/n, and 802.11ac wave2) Dual Mode Bluetooth® 2.1, 2.1+EDR, 3.0, 4.0, 4.1, BLE, 4.2, 5.0

Wireless Networking

Technical Specifications

Network Interface(s)	Wireless LAN: 802.11ac wave 2 dual-band 2x2, (up to 1.73Gbps) Bluetooth®: 5.0
System Interface(s)	PCI Express v2.1x1 10-pin or 6-pin cable for Bluetooth®
Operating Temperature	32°F to 176°F (0C to 80°C)
Kit Contents	PCI Express Card with M.2 WLAN Module, External Dual-Band Antenna, USB cable for internal Bluetooth® connection, Install Guide, Product Notices, Warranty Card

Wireless Networking

Intel® AX210 Wi-Fi 6e non-vPro® +Bluetooth® 5.2 External Antenna WLAN (340L7AA)



Introduction

The Intel® AX210 is Intel's 1st Generation 802.11ax (also known as WiFi Wave 6), dual band, 2x2 Wi-Fi® + Bluetooth® 5 adapter. WiFi Wave 6 compatibility greatly improves WiFi performance and reliability, especially in congested wireless network environments, while lowering latency, increasing range, and doubling data throughput over 802.11ac wave 2. Combined with Intel® Core™ processors and exceptional Intel® wireless innovations like Dynamic Regulatory Solution, the Intel® AX210 dramatically reshapes your connected experience at home, work, or on the go

Performance and Features

- 802.11 a/b/g/n/ac/ax Wave 6, Dual band 2x2 with up to 2.4Gbps speed (theoretical maximum); Up to 3x faster than 802.11ac and up to 4x capacity in congested environments than 802.11ac
- Dual mode Bluetooth® 5 provides up to 4x the range over Bluetooth® 4.2 and doubles the transmit speed over the previous generation. Also added in Bluetooth® 5 is support for indoor location services.
- Full support for latest Microsoft Windows® 10 OS with HCI drivers.

Service and Support

The HP Limited Warranty terms and conditions for HP-branded options and accessories (collectively referred to in this HP Limited Warranty collectively as "HP Option") are as set forth in the HP Limited Warranty applicable to the HP Option and included with the HP Hardware Product. If your HP Option is installed in an HP Hardware Product, HP will provide warranty service for either the period specified in the warranty documents (HP Option Limited Warranty Period) that shipped with the HP Option or for the remaining warranty period of the HP Hardware Product in which the HP Option is installed, whichever period is longer, but not to exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP Option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.

Roaming

Supports seamless roaming between respective access points (802.11b, 802.11g, 802.11a/b/g, 802.11a/b/g/n, 802.11ac, and 802.11ax) Dual Mode Bluetooth® 2.1, 2.1+EDR, 3.0, 4.0, 4.1, BLE, 4.2, 5.0

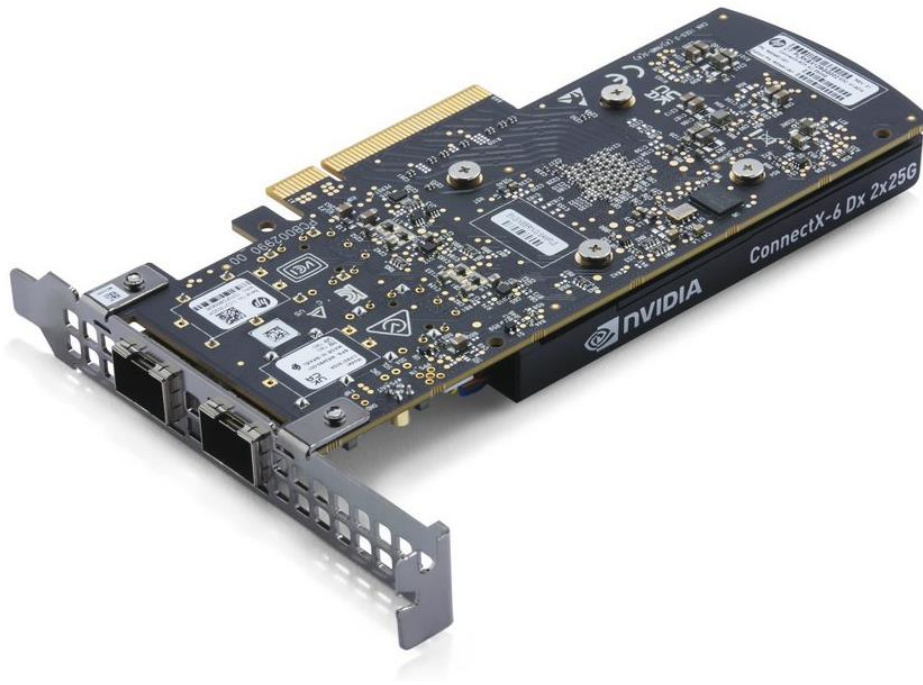
Technical Specifications

Wireless Networking

Network Interface(s)	Wireless LAN: 802.11 ax dual-band 2x2, (up to 2.4Gbps) Bluetooth®: 5.0
System Interface(s)	PCI Express v2.1x1 10-pin or 6-pin cable for Bluetooth®
Operating Temperature	32°F to 176°F (0C to 80°C)
Kit Contents	PCIe M.2 Caddy card with Intel AX210 Wi-Fi 6e non-vPro® WLAN M.2 module, External antenna, USB cable for internal Bluetooth® connection, Install guide, Product Notices, Warranty Card

Wireless Networking

NVIDIA Mellanox ConnectX-6 DX Dual Port 25/10GbE SFP28 NIC (436M8AA)



Introduction

The NVIDIA Mellanox ConnectX-6 DX Dual Port NIC is a high-performance networking adapter card perfect for taking HP workstations connectivity to the next level. This NIC uses PCIe Gen 4 technology in a x8 form factor to provide two fiber optic networking ports. This adapter can accept SFP+ transceivers for 10GbE or SFP28 transceivers for 25GbE throughput in either port.

Performance and Features

- Dual Port fiber optic connectivity at 10GbE or 25GbE
- Accepts SFP+ or SFP28 transceivers for customization to existing fiber optic infrastructure
- Future proof networking speeds for high end workstation applications
- Active cooling system built specifically for workstation environments
- PCIe x8 form factor with full and half-height brackets for a wide range of installation options

PXE Support

Support for pre-boot execution environment (PXE) enables automatic deployment of computing resources remotely from anywhere. It allows new or existing workstations to boot over the network and download software, including the operating system, from a management/ deployment server at another location on the network. Additionally, PXE enables decentralized software distribution and remote troubleshooting and repairs.

Service and Support

The HP Limited Warranty terms and conditions for HP-branded options and accessories (collectively referred to in this HP Limited Warranty collectively as "HP Option") are as set forth in the HP Limited Warranty applicable to the HP Option and included with the HP Hardware Product. If your HP Option is installed in an HP Hardware Product, HP will provide warranty service for either the period specified in the warranty documents (HP Option Limited Warranty Period) that shipped with the HP Option or for the

Wireless Networking

remaining warranty period of the HP Hardware Product in which the HP Option is installed, whichever period is longer, but not to exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP Option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.

Technical Specifications

Network Interface(s)	SFP+/SFP28 – Dependent on the installed transceiver
System Interface	PCIe 4.0 x8
Network Cable	Typically, OM4 or higher LC fiber (Little Connector) - Dependent on the installed transceiver
Data Rates Supported	1/10/25 GbE – Dependent on the installed transceiver
LED Indicators	On (Green) = Link Up Blinking (Green) = Activity Off = Link Down Blinking Yellow at 4Hz = link error
Controller	ConnectX6-DX
Compliance	IEEE 802.3by 25 Gigabit Ethernet IEEE 802.3ae 10 Gigabit Ethernet IEEE 802.3ap based auto-negotiation and KR startup IEEE 802.3ad, 802.1AX Link Aggregation IEEE 802.1Q, 802.1P VLAN tags and priority IEEE 802.1Qau (QCN) Congestion Notification IEEE 802.1Qaz (ETS) IEEE 802.1Qbb (PFC) IEEE 802.1Qbg IEEE 1588v2 Jumbo frame support (9.6KB) Safety: CB/cTUVus/CE EMC: CE/FCC/VCCI/ICES/RCM RoHS Compliant
Power Requirement	11.5 Watts (typical)
Operating Temperature	32°F to 131°F (0C to 55°C)
Physical Dimensions (LxW)	6.6 in x 4.8 in (16.8 cm x 12.2 cm)
Kit Contents	NVIDIA Mellanox ConnectX-6 LX Dual Port 25/10GbE SFP28 NIC with full height PCIe bracket installed, Half Height PCIe bracket, Install guide, Product Notices, Warranty Card NOTE: Transceivers are not included in this kit and must be ordered separately.

Wireless Networking

HP 10GbE SFP+ SR/SW LC Fiber Optic Transceiver (860T8AA)



Introduction

Pluggable SFP+ optical transceiver, designed for use in 10GbE Ethernet systems with LC Connector interface. Operates over multi-mode (MMF) fiber, using a nominal wavelength of 850nm, and is SFF-8472 and 8431 compliant.

- Up to 11.1Gbps data rate
- Up to 300m transmission on MMF
- Hot pluggable SFP+ footprint

Compatibility

This transceiver is compatible with the following Network Adapters:

- NVIDIA Mellanox ConnectX-6 DX Dual Port 10/25GbE SFP28 NIC (436M8AA)

Service and Support

The HP Limited Warranty terms and conditions for HP-branded options and accessories (collectively referred to in this HP Limited Warranty collectively as "HP Option") are as set forth in the HP Limited Warranty applicable to the HP Option and included with the HP Hardware Product. If your HP Option is installed in an HP Hardware Product, HP will provide warranty service for either the period specified in the warranty documents (HP Option Limited Warranty Period) that shipped with the HP Option or for the remaining warranty period of the HP Hardware Product in which the HP Option is installed, whichever period is longer, but not to exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP Option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.

Technical Specifications

Operating Temperature	0°C to 70°C
Operating Humidity	5% to 95%
Dimensions (HxWxD)	13.9 x 12.6 x 58.4mm
Kit Contents	HP 10GbE SFP+ SR/SW LC Fiber Optic Transceiver, Install guide, Warranty card, Product notices

Wireless Networking

HP 25GbE SFP28 LC Fiber Optic Transceiver (860T9AA)



Introduction

Pluggable SFP28 optical transceiver designed for use in 25GbE Ethernet systems with LC Connector interface. Operates over a pair of multi-mode fibers, using nominal wavelength of 850nm and is SFF-8472 and 8431 compliant.

- Up to 28Gbps data rate
- Up to 100M on OM4 and 70M on OM3 multimode fiber at 25Gb/s
- BER better than 1E-15
- Hot Pluggable

Compatibility

This transceiver is compatible with the following Network Adapters:

- NVIDIA Mellanox ConnectX-6 DX Dual Port 10/25GbE SFP28 NIC (436M8AA)

Service and Support

The HP Limited Warranty terms and conditions for HP-branded options and accessories (collectively referred to in this HP Limited Warranty collectively as "HP Option") are as set forth in the HP Limited Warranty applicable to the HP Option and included with the HP Hardware Product. If your HP Option is installed in an HP Hardware Product, HP will provide warranty service for either the period specified in the warranty documents (HP Option Limited Warranty Period) that shipped with the HP Option or for the remaining warranty period of the HP Hardware Product in which the HP Option is installed, whichever period is longer, but not to exceed three (3) years from the date you purchased the HP Option. The HP Option Limited Warranty Period starts from the date of purchase from HP or an HP authorized reseller. Your dated sales or delivery receipt, showing the date of purchase of the HP Option, is your warranty start date. See your HP Option Limited Warranty for details. To the extent permitted by local law, non-HP options are provided "AS IS." However, non-HP manufacturers and suppliers may provide warranties directly to you.

Technical Specifications

Operating Temperature	0°C to 70°C
Operating Humidity	5% to 95%
Dimensions (HxWxD)	13.9 x 12.4 x 57.3mm
Kit Contents	HP 25GbE SFP28 LC Fiber Optic Transceiver, Install guide, Warranty card, Product notices

Summary of Changes

Date of change:	Version History:		Description of change:
October 9, 2017	From v1 to v2	Added	Intel Ethernet I350-T4 4-Port 1Gb NIC card
November 9, 2017	From v2 to v3	Added	Intel X550 10GBASE-T Dual Port NIC , Intel X710-DA2 10GbE SFP+ DP NIC, 10GBASE-T Dual NIC Module Z6/8 G4, Intel 8265 802.11 a/b/g/n/ac&BT PCIe and Aquantia NBASE-T 5GbE PCIe NIC
September 10, 2018	From v3 to v4	Added	Added missing specs
September 21, 2018	From v4 to v5	Added	HP 1-Port 1GbE Flex IO NIC, Intel® 9560, Allied Telesis 1GbE LC Fiber 2pc Module
September 11, 2019	From v5 to v6	Added	Intel 9260 802.11 a/b/g/n/ac Wave 2 WLAN + Bluetooth 5 PCIe NIC and Intel AX200 802.11 a/b/g/n/ac/ax WLAN + Bluetooth 4.25 PCIe NIC
		Changed	Format
February 28, 2020	From v6 to v7	Added	Intel AX200 802.11 a/b/g/n/ac/ax(WiFi 6) V-pro WLAN + Bluetooth 5 PCIe NIC
March 6, 2023	From v7 to v8	Added	New AMO Networking options
September 6, 2023	From v8 to v9	Added	New AMO Networking options
September 20, 2023	From v9 to v10	Changed	Format
August 19, 2024	From v10 to v11	Added	New AMO Networking options

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