

TN9710x

Multi-speed 10GBase-T / NBASE-T (™) Network Adapter Card

Low Power - Low Area - Low Cost

10 Gigabit Performance, More than 1G over legacy cables!

Designed to support high-volume enterprise wireless local-area network (WLAN) OEM systems requiring multi-Gigabit Ethernet connectivity, such as 802.11ac Wave 2 wireless access points, the TN9710x adapter reference design offers a low-power, small form factor and low cost solution enabling pervasive NBASE-T connectivity. NBASE-T technology boosts the speed of broadly deployed Cat5e twisted pair copper cabling up to 100 meters in length well beyond the designed limits of 1Gbps.

Overview

The TN9710x Network Adapter reference design hosts the latest Tehuti TN4010 controller, an optimized 10GbE controller designed for low-power, low-cost and single-port applications. The TN4010 MAC is paired with one of the Marvell Alaska® X 88X3310P/88E2010P transceivers, single-port, low power, high performance NBASE-T PHYs devices that support IEEE 802.az Energy Efficient Ethernet (EEE). The Tehuti adapter reference design supports auto-negotiation allowing the NBASE-T solution to optimally select the best speed: 10 Gigabit Ethernet (10GbE), 5 Gigabit Ethernet (5GbE), 2.5 Gigabit Ethernet (2.5GbE), 1Gigabit Ethernet (GbE) or 100 Megabit Ethernet (100MbE) over Cat5e/Cat6 or better cabling.

Key Features

- Low Cost, Low Power, 10 Gigabit performance in a low profile PCIe form factor
- IEEE 802.3an 10G, 1G and 100M over up to 100m of Cat6a (or better) cables
- NBASE-T 10G, 5G, 2.5G, 1G and 100M on Cat5e (or better) cables
- PCI Express Gen-2 x4 Host Bus Interface
- 16K Jumbo Frames
- IP, TCP, UDP checksum offloading
- RMON statistics
- IEEE 802.1Q Tagged VLAN
- Virtual NIC support
- Reduced CPU utilization and improved throughput

Solution	MAC	PHY	Speed	PCIe
TN9710P	TN4010	X3310P	10G,5G,2.5G,1G,100M	4 Lanes
TN9710Q	TN4005	E2010P	5G,2.5G,1G,100M	2 Lanes

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Features	Benefits
PCI Express Host Bus Interface <ul style="list-style-type: none"> • PCI Express Rev 2.0 specification (5 GT/s) 	<ul style="list-style-type: none"> • Standard high performance bus interface • Supports x4, x2, x1 lanes
Reduced System complexity <ul style="list-style-type: none"> • 1Mbit internal memory • Internal OTP 	<ul style="list-style-type: none"> • No on-board DRAM required • No Flash/EEPROM required on board
Flexible solution support <ul style="list-style-type: none"> • TN9710P: TN4010+X3310P, 5-speed, 4 lane PCIe • TN9710Q: TN4005+E2010P, 4-speed, 2 lane PCIe 	<ul style="list-style-type: none"> • 10GBASE-T (IEEE 802.3an) and NBASE-T (IEEE P802.3bz) • NBASE-T (IEEE P802.3bz)
Ethernet and Media support <ul style="list-style-type: none"> • Full IEEE Std 802.3ae Compliant • NBASE-T Alliance draft specification compliant • 10G/5G/2.5G/1000M/100M auto negotiation support • Jumbo frame support (16K) • IEEE 802.1q VLAN support • RFC2819 RMON MIB statistics • Multicast • IEEE 802.3ad Link Aggregation support 	<ul style="list-style-type: none"> • 10Gb/s over unshielded twisted pair (UTP) • Backward compatibility for wide range of systems • Higher network utilization for large data transfers • Traffic isolation for security • Generic statistics monitoring • Reduce network traffic • Maximize network throughput via teaming
OptiStrata™ Accelerator Engine <ul style="list-style-type: none"> • Integrated OptiStrata™ Processor 	<ul style="list-style-type: none"> • Flexibility in implementing packet processing algorithms and supporting future TCP/IP stack implementations
Performance enhancements <ul style="list-style-type: none"> • Microsoft Scalable Networking • Receive-side scaling (RSS) • MSI • IP, TCP and UDP checksum offloading • Large Send (up to 64 KB) • Low Latency (< 4 uS) 	<ul style="list-style-type: none"> • Reduced host bus traffic • Efficiently support multi-core systems • Minimize overhead and eliminates interrupt sharing • Lower CPU utilization • Increased network throughput • Ideal for high performance computing applications
Driver support <ul style="list-style-type: none"> • Microsoft Windows Server 2016 (Technical Preview) • Microsoft Windows Server 2012 R2, Microsoft Windows Server 2008 R2 • Microsoft Windows 10 32/64 bit • Microsoft Windows 8.1 32/64 bit, Microsoft Windows 7 32/64 bit • Microsoft Hyper-V • Linux 2.6.x, Linux 3.x, Linux 4.x • vmware® ESXi 5.x, ESXi 6.0 • Apple OS X 10.10.3 or later 	<ul style="list-style-type: none"> • Short time to market • Seamless software integration • No interference with existing TCP/IP implementations • Advanced multi-processor platforms support
Manageability <ul style="list-style-type: none"> • Advanced cable diagnostics • Comprehensive Built-In self-test 	<ul style="list-style-type: none"> • On the field cable and network connection debug • Improves yield, increases reliability, and lowers overall cost • Optimizing system management & thermal design
Physical and Electrical <ul style="list-style-type: none"> • Voltage: 3.3V • Power consumption (Full bidirectional traffic, 100m cable): <ul style="list-style-type: none"> 10G speed: 6.1W 5G speed: 3.6 W 2.5G speed: 3.0W 1G speed: 2.7W 100M speed: 2.5W 	<ul style="list-style-type: none"> • Operating Temperature 0 ÷ C to 70 ÷ C • Storage Temperature -40 ÷ C to 85 ÷ C • Green & RoHS Compliant • Size: 82mmX62mm