Dual port, Copper GigE, low profile x1 PCI-Express NIC
Advanced offload functions
Ideal for Desktop, Workstations, and Low-end servers

The Talon1214™ is a dual-port Gigabit Ethernet (GigE), low profile PCI-Express copper network interface card (NIC) designed for a wide range of desktop, workstation, server, storage, and security system applications. It's designed to work in the short distance LAN applications. The board is low cost and suitable for small, medium, or large size businesses.

LeWiz's Talon1214™ card is designed to maximize the performance of each port to full wire rate in both directions. Each of the GigE port has a dedicated MAC with its own transmit/receive engines, DMA, and buffers. Each of the port has advance offload functions such as TCP/UDP transmit segmentation, checksum processing, iSCSI/NFS assist benefiting applications such as video, iSCSI, NAS storage, VoIP, and others. The ports have advanced interrupt handling scheme maximizing the efficiency of multi-processor or multi-threaded systems.

Each port is capable of 1 Gbps and is backward compatible with existing Ethernet networks. The board takes advantage of the high performance PCI-express bus available in many clients (desktop, workstations), servers, storage, and security systems. The x1 PCI-Express bus interface on the Talon1214™ board has 1 lane, and can be used with x1, x4, x8, or x16 PCI-Express slots.

Internally, the Talon1214™ card has wide internal on-chip data paths eliminate performance bottlenecks. It has a combination of parallel and pipelined logic architecture optimized for Gigabit Ethernet with independent transmit and receive queues. The Talon1214™ board efficiently handles packets with minimum latency. It uses efficient ring buffer descriptor data structures, with up to 64 packet descriptors cached on chip. A large 48 KByte per port on-chip packet buffer maintains superior performance. In addition, using hardware acceleration, the controller offloads tasks from the host, such as TCP/UDP/IP checksum calculations and TCP segmentation/large send offload.

The physical size of the board is tiny – about the physical size of a typical credit card but packing 2 GigE ports. Its small size is ideal for ANY small form factor computing systems.

The Talon1214™ has a full range of loadable device driver support for many different operating systems from Windows, to Linux, to Solaris. It simply works every where and easy to deploy.

The Talon1214™ is a member of LeWiz's family of advanced NIC products from 1Gbps to 10Gbps for the PCI-Express bus. Customers using the Talon1214™ can upgrade to higher port count or higher speed easily. Contact LeWiz or see LeWiz's Talon NIC PCI-Express products at www.LeWiz.com.

Software support	
(LeWiz continues to add drivers for other OS's. If you do not find your OS listed, contact LeWiz for assistance.)	
Windows 2000	Includes Server and Advanced Server versions
Windows Server2003	Includes Standard and Enterprise x64 versions
Windows XP	Includes Professional, x64, and 64-bit versions
Linux	Redhat, SuSE, Fedora Core (32 and 64 bit)
Solaris10	SPARC and x64 platforms
Netware	5.1, 6.0, 6.5
OpenBSD	Version 3.8 and later

Physical size	(Length x Height)
Talon1214	3.6 x 2.535 inches

Variety of flavors of Windows & Linux

System interface

Compliant PCI-Express Base Specification 1.0a	Compatible with existing deployed PCI software
1 lane PCI-express (PCI-E)	x1 lane PCI-E compatible with x1, x4, x8, and x16 slots in clients and servers
PCI-E lane capable of 2Gbps in each direction	
Supports message signal interrupt (MSI)	
Supports both PCI-E's baseline & optional advanced error reporting	More robust error reporting & system reliability
Each MAC has its own PCI-E register set	Host system can control and examine each MAC independently. Each MAC appears as an independent instance to the host software.

External network interfaces

2 1Gbps ports Ethernet per board	Great for multi-zone networking, storage back-up, or data mirroring using only 1 board and 1 system PCI-E slot

100 meter Cat-5 UTP copper
(applicable to Talon1244-TX product only)

Standard RJ45 copper connection (1 for each port, 1000Base-T, 100Base-TX, 10Base-T compliant)	Low cost NIC, cable and external switching equipments.
Category-5, unshielded twisted pair cable	Low cost, standard copper cabling
Capable of 100 meter distance for standard quality Cat-5 UTP copper cable	Great for system to system interconnect such as server to storage systems

Offload and high performance features

General performance features

Each Ethernet port has a dedicated MAC with its own register set, memory buffers, DMA engines	Optimizes for high performance with independent transmit and receive simultaneously on a per port basis.
Multiple transmit and receive queues	Maximizes performance of multi-threaded systems
TCP/UDP segmentation, or large send offload	Device drivers automatically uses this feature for high performance
TCP/UDP/IP checksum offload	Free the CPU from performing checksum functions on a packet to packet basis
Statistic collection for management and RMON on a per Ethernet port basis	Useful for diagnostic and performance optimization of the network
Independent DMA engines for transmit and receive	Mitigating instantaneous receive bandwidth and eliminating transmit underruns. Optimizes the 10Gbps bandwidth efficiency in the network.
Dedicated DMA engines for fetching transmit and receive descriptors	Maximizes the host bus bandwidth
Supports reception and transmission of packets with length up to 16Kbytes	Maximizes the efficiency of the network
48KByte configurable transmit and receive FIFO buffer per Ethernet port (total of 2, 48KByte FIFOs)	Large burst transmit/receive to/from the network. Maximizes the network efficiency. FIFO size can be adjustable to application
Transmit interrupt delaying and reducing	Optimizes system CPU usage
High speed 4 lane PCI-express bus	System bus interface capable of 16Gbps
Jumbo frame support	Up to 9KByte frame size
IPv6	Supports IPv6 checksum and segmentation offload

Networking features

Flow control 802.3x	Compliant to standard networking
802.1 VLANs	Supports virtual networking concepts Adding VLAN tags on transmit Removal of VLAN tags on receiving Packet filtering based on VLAN tags for up to 4096 VLAN tags
802.1p QoS	
802.3ad	Port aggregation
Port fail-over capability	Network redundancy to enhance network system reliability – continue network operating even during network down time.
Port bonding (or port teaming)	Achieve 2 times the throughput rate. Treating 2 ports as 1 great big pipe for faster data transfer. Up to 8 ports per team.

Operating spec

Uses standard voltages from PCI-express connector	
Operating temperature	$0 - 55^{\circ}C$
Operating humidity	85% at +55 $^{\circ}C$

Recommended system requirements
(The following is the minimum recommended system requirement. The board can work in many different environments including the configuration specified below. This is not a required environment for the board to function.)

x86 or other CPUs with 1GHz speed, 32-bit or better	For example: Pentium, Xeon, Opteron, Athlon or others
128MByte of system memory or better	
X2 PCI-express slot or better	

Product part numbers

	* for low profile bracket add – LP on the end on each part number
Talon1214	RJ45 copper version, Compliant with 1000BASE-T, 100BASE-TX, and 10BASE-T networks (802.3, 802.3u, and 802.3ab) 100m with Cat-5 UTP cable

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