 EtherSound PCI sound cards

**LX1616ES & LX6464ES**

Digigram LX1616ES and LX6464ES are versatile PCI sound cards that provide convenient and effective ways to bridge a wide range of computer audio applications to a 100Mb/s EtherSound network.

With up to 64 inputs/outputs, the LX6464ES combines the widely used EtherSound technology for distributing real-time audio over Ethernet with Digigram’s sound card expertise. Professional audio software applications now have a gateway to EtherSound networks.

The LX1616ES is the right choice when direct-to-disk applications need to play and/or record selected ES-100 audio channels without jeopardizing flexibility. Should your application be highly price sensitive or require more channels in the future, the LX1616ES comes with a channel count of 16/16 that can be upgraded on the fly to 32/32, 48/48 or 64/64 through simple firmware updates.

**Applications**
- broadcast - live - installed sound - recording

**Key features**
- From 16 to 64 bi-directional PCM linear channels over EtherSound using DirectSound or ASIO drivers.
- Word Clock synchronization
- I/O routing remotely controllable via EScontrol or other applications using the EtherSound SDK
- EtherSound ES-100 firmware making it compatible with the EtherSound redundant ring topology

Digigram LX1616ES & LX6464ES EtherSound PCI sound cards come with DirectSound and ASIO drivers. They can transmit and receive up to 64 EtherSound channels, thus connecting professional audio software to any 100 Mb/s EtherSound network for a wide range of applications.

In a live environment using 100 Mb/s EtherSound as the ultra-low latency audio distribution system the ability to receive up to 64 channels from an EtherSound-ready mixing console and record them straight onto a computer’s hard disk for mix down at a later date, offers a highly cost-effective solution for multichannel recording and a solution for musician replacement during sound checks.

With their ability to record many channels from different locations, the LX1616ES & LX6464ES are also perfect solutions for logging applications and surveillance monitoring. For hotels, conference centers and other multioroom venues, the LX1616ES & LX6464ES offer the ability to play back up to 32 stereo music programs from just one PC, or 64 in mono mode.

In broadcast installations, LX1616ES & LX6464ES teaming up with Digigram analog and digital EtherSound interfaces offer a compelling solution for multichannel audio delivery and distribution in and between studios via standard Ethernet.
**About EtherSound ES-100**

EtherSound is an elegant, simple, and open digital audio network standard with extremely low latency that is fully compliant with the IEEE’s 802.3x Ethernet specification.

- **Channel count** (at 44.1/48kHz)
  - Per 100 Mpbs cable: up to 64 channels in each direction.
  - Per system: Total channel count may exceed 128 by "overwriting" existing channels in parts of the network.
  - All channels are independent from one another.
  - In bi-directional daisy-chains all channels are available to all nodes. In star architectures or uni-directional daisy-chains, all channels are available to all nodes "downstream" of the input.
- **Sampling frequency**: 44.1 kHz or 48 kHz or multipeles/divisors: (96, 48, 24 kHz, etc.)
- **Audio format**: 24-bit PCM
- **Audio clock**: All devices are synchronized from the clock reference of a master device on the network. Phase can be recovered using a distributed Word Clock source.

**Bandwidth requirements**: dedicated 100 Mbsp Ethernet network. Operational in VLANs on Gigabit networks.

**Latency**:
- Network latency (SSI in to SSI out): 104 microseconds (five samples at 48 kHz)
- Independent from the number of channels
- Additional latency per device in a daisy-chain: 1.4 microseconds
- Additional latency per switch: 5 – 20 microseconds
- Overall latency, including A/D and D/A conversion: 1.5-2 milliseconds
- EtherSound is deterministic with stable latency: delay and phase between any two nodes can be calculated.

**Ethernet standard compliance**:
- Fully IEEE 802.3x compliant.
- Operational with standard Ethernet network layer 1 & 2 components (cables, fiber optics, switches, media converters, etc.)

**Control and monitoring data over the same cable**:
- Network remote control through embedded control data
- Standard control software with multi vendor support. EScontrol
- Control application generator with multi vendor support via strategic partnership with Stardraw.com
- ES command port for microcontroller based control system

**Network architectures**:
- Daisy-chain / Redundant ring
- Star through Ethernet switches
- Combination of daisy-chain and star

**Interoperability**
- EtherSound enabled products are available from a number of leading audio equipment manufacturers for installed sound and pro audio applications.
- Regardless of the product’s manufacturer, all products can operate as a unified system on the same network, exchanging audio and control signals.

**Supported audio formats**
- PCM 16 and 24 bit

**Supported operating systems**
- Windows Vista, Windows XP(2) and Windows 2003(2) Server

*LX1616ES may receive up to three packs of 16/16 additional ES-100 channels (at 44.1 or 48 kHz).

(1) Please consult Digigram for availability  (2) 32-bit version