

LX6464ES

EtherSound PCI Sound Card



User's manual

**For technical support,
please contact your supplier**



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INFORMATION FOR THE USER

This device complies with part 15 of FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a CLASS B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions contained in this data sheet, may cause harmful interference to radio and television communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- * reorient or relocate the receiving antenna
- * increase the separation between the equipment and the receiver
- * connect the equipment into an outlet on a circuit different from that of the receiver
- * consult the dealer or an experienced audio television technician.

Note: *Connecting this device to peripheral devices that do not comply with CLASS B requirements or using an unshielded peripheral data cable could also result in harmful interference to radio or television reception. The user is cautioned that any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. To ensure that the use of this product does not contribute to interference, it is necessary to use shielded I/O cables.*

Warning:

Electrostatic discharge (ESD) can damage several components on the board. To avoid such damage in handling the board, take the following precautions:

Bring the device and everything that contacts it to ground potential by providing a conductive surface and discharge paths. As a minimum, observe these precautions:

- *Disconnect all power and signal sources.*
- *Place the device on a grounded conductive work surface.*
- *Ground yourself via a grounding wrist strap or by holding a grounded object.*
- *Ground any tool that will contact the device.*



IMPORTANT NOTICE

This card has been tested and found to comply with the following standards:

- International: CISPR22 Class B.
- Europe: EMC 89/336/CEE (1992) specifications.
- United States: FCC Rules-Part 15-Class B (digital device).

CONTENTS OF THIS PACKAGE

Thank you for purchasing a Digigram LX EtherSound PCI sound card.

The package consists of the following components:

- the LX6464ES sound card,
- the User's Manual at hand
- a CD-Rom*
- a registration form*

**These items are not delivered with the OEM version.*

FEATURES

The LX6464ES is an audio card for PCI bus. It is Universal PCI (32-bit/66 MHz), which means it can be plugged in 32-bit/33 MHz 5 V keyed PCI slots as well as in 64-bit/66 MHz 3.3 V keyed PCI slots. The cards are also compatible with PCI-X interfaces.

LX6464ES main hardware features

- 64 EtherSound ES-100 mono inputs at 44.1 kHz or 48 kHz
- 64 EtherSound ES-100 mono outputs at 44.1 kHz or 48 kHz
- 1 standard Word Clock input

Main software features

- Real-time, simultaneous record and playback in PCM (16 and 24 bits)
- Low latency DirectSound and ASIO drivers

EtherSound features

- EtherSound ES-100 compatible
- The card can generate the network audio clock, or it can synchronize on the network audio clock
- Network clock frequencies supported:
48 kHz if the card is the audio clock source for the network
44.1 kHz or 48 kHz if the card synchronizes on the EtherSound network
- Audio sampling frequencies supported:
48 kHz, 96 kHz, 192 kHz *at a network clock frequency of 48 kHz**
44.1 kHz, 88.2 kHz, 176.4 kHz *at a network clock frequency of 44.1 kHz**

Note: *the audio sampling frequency defines the number of available inputs/outputs:*

at 88.2 kHz or 96 kHz: 32 inputs and 32 outputs

at 176.4 kHz or 192 kHz: 16 inputs and 16 outputs

To define the audio sampling frequency settings, go to the Digigram control panel (<Start> <Programs> <Digigram> <Digigram Control Center>).

Please refer to its online help.

* For the management of these modes, please refer to the corresponding question on our web site in the FAQ section

HARDWARE REQUIREMENTS

Minimum requirements

- Pentium IV minimum (or equivalent)
- 512 MB RAM
- One free PCI or PCI-X slot (5 V or 3.3 V)

Software requirements

The LX6464ES requires installation of the drivers included in LX6464ES Kit version 1.00 or higher. This kit includes:

- a WDM DirectSound driver (Microsoft DirectX 9 or a later version must also be installed).
- an ASIO driver

Supported operating systems

LX6464ES cards run under Windows Server 2003¹ and Windows XP¹.

HARDWARE INSTALLATION

The card has to be installed in the computer prior to installing its driver.

Installing the card

Gently plug the card in a free PCI slot and press it down to position it firmly. Tighten the screw.

Interrupt and memory address

Hardware interrupt and addresses are automatically set up at start-up by the PCI PnP BIOS.

¹ version 32 bits

SOFTWARE INSTALLATION

Please visit the Digigram web site at www.digigram.com for the most recent driver.

In case you run a specific application developed or installed by a Digigram Partner, this application might require the use of a specific driver version. In this case, make sure that the updated driver has been approved by your supplier.

Installation under XP and Windows Server 2003

If the driver has been downloaded from our web site, it has to be expanded prior to the driver's installation as follows: double-click on the downloaded file (self-expanding). You can use the default destination location (Windows temporary folder) or select another directory.

- Shut down your computer and insert the LX6464ES card.
- Restart your computer.
- Click on Cancel if the "Found New Hardware" Wizard appears.
- Double-click on the *setup.exe* icon to launch the driver installation.
- A welcome message is displayed, click **Next** to continue.
- The "License Agreement" window appears: read it, and click on **Yes** to approve it. Do the same for the "Read Me First" window.
- Choose the destination folder where *Setup* will install the application files. Note that the driver files are installed in `\windows\system32\Drivers\Digigram\LXES`. **Next**.
- In the "Select components" window, make sure that the box "Drivers for the LX6464ES board" is checked.
- Check the ASIO driver if you want it to be installed in addition to DirectSound.
- Select the program folder where the program icons will be added (default: DIGIGRAM). **Next**.
- Click on **Next** to start copying the files.
- Click on **Continue anyway** in the "Hardware installation" window.

WARNING: if the firmware of your card requires an update, it will start automatically at this stage. The update is recommended, it ensures optimal performances and robustness of the system. The update **MUST IN NO CASE BE INTERRUPTED.** If you do so, the card will have to be returned to our After Sales Service.

To use the card via the DirectSound interface, you'll have to configure the devices you intend to use in the "DirectSound Device Builder" application, which is launched automatically. One DirectSound stereo device is declared (channels 1 and 2). You can declare additional devices by using the "+" button, then enter the first channel used by this device, the number of channels, and the name of the device. A DirectSound device can be multichannel (the application must be able to manage this type of device). For more details, please refer to the on line help of this application.

- In the "Digigram drivers" window, select the granularity of the data exchanges between card and driver, as well as the sampling rate of the audio data. A granularity of 32 samples is the default value. However, using many I/O channels may require a higher granularity (maximum recommended is 128 samples). Click on **Ok**.
- Click on the **Finish** button to complete the driver installation.

Removing the driver under Windows XP and Windows Server 2003

- Open the Windows Control Panel and double-click on the Add/Remove Software icon.
- Select "Digigram LX6464ES Kit ...", and **Change/Remove**.
- Select **Remove**.
- Follow the instructions to finish the driver removal.

HOW TO CHECK THE INSTALLATION

Once driver and card installed according to the procedure described in this manual, you can verify that the card works correctly as follows:

- Menu <Start>, <Settings>, <Control panel>, <Sound and Multimedia>, tab “Audio”, <Default device> (Playback device, Recording device). Pull-down menus allow for the card’s DirectSound devices as declared during installation (e.g. “LX6464ES -01 (WDM)” by default for the card’s first stereo channel). The card can be used with any *DirectSound* application (see pages hereafter).
- If the ASIO option has been selected during installation, the card is visible through any ASIO compliant application.

If the card is not displayed:

- Make sure that the box “**Drivers for the LX6464ES board**” is checked in the “**Select components**” window.
- make sure that the card is correctly inserted in the PCI slot, and screwed on the PC chassis.
- if necessary, uninstall the driver as described in this manual, and re-install it.

DIRECTSOUND CONTROL PANEL

The card does not dispose of digital gain. Under the Windows 'Volume' control panel only a 'Mute' is available.

ASIO CONTROL PANEL

With the *ASIO* driver installed, the card's settings can be adjusted through the *ASIO* control panel. To launch this interface, go to <Start>, <Programs>, <Digigram>, <ASIO HR Settings>.

For help on how to use this control panel, please refer to its on-line help.

CLOCK AND ROUTING

The clock management as well as the assignment of devices to EtherSound channels ("I/O mapping") are done through Digigram's EScontrol application, or a specific application conceived by one of our development partners.

SPECIFICATIONS

Configuration

Bus/Format	Universal PCI (32-bit/66 MHz), PCI-X compatible, master mode
Size	175 mm x 99 mm x 20 mm
Power requirements (+3.3 V / +5 V / +12 V / -12 V)	1 A / 0.2 A / 0 A / 0 A
Operating: temp / humidity (non-condensing)	0°C / +50°C • 5% / 90%
Storage: temp / humidity (non-condensing)	-5°C / +70°C • 0% / 95%

Inputs/Outputs

Inputs	64 EtherSound channels at 44.1 or 48 kHz 32 EtherSound channels at 88.2 kHz or 96 kHz 16 EtherSound channels à 176.4 kHz or 192 kHz
Outputs	64 EtherSound channels at 44.1 or 48 kHz 32 EtherSound channels at 88.2 kHz or 96 kHz 16 EtherSound channels à 176.4 kHz or 192 kHz
Other inputs	Word clock, 44.1 or 48 kHz <i>(can be used if card is the audio clock for the EtherSound network)</i>

Connectors

EtherSound IN	(RJ45 female)
EtherSound OUT	(RJ45 female)
Word Clock IN	BNC female

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EtherSound

Technology	ES-100
Functions	Compatible with Ring Redundancy mode Can generate the audio network clock in all modes
Network clock frequencies supported	Can generate a 48 KHz audio clock for the EtherSound network Can synchronize on an EtherSound network at either 44.1 or 48 kHz
Other inputs	Word clock, the card can generate a 44.1 or 48 kHz audio clock synchronized on the Word Clock In
EtherSound virtual control port	Virtual Ethernet interface (software) enabling an application such as EScontrol, installed on the same PC, to directly access an EtherSound network with no need of an additional network connection

Audio specifications

Audio sampling frequencies supported	192 kHz, 96 kHz, 48 kHz* (at 48 kHz network clock frequency) 176.4 kHz, 88.2 kHz, 44.1 kHz* (at 44.1 kHz network clock frequency)
Supported audio formats	PCM 16, 24, 24 bits "packed" (packets of 32 bits)

Development environments

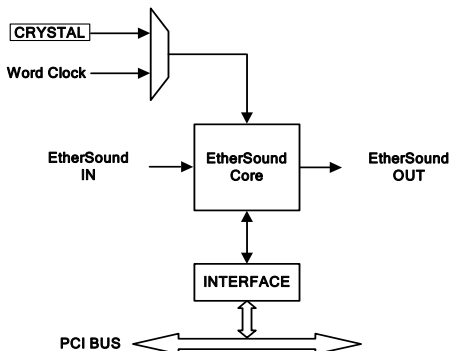
Management	WDM DirectSound, ASIO
Supported operating systems	Windows XP ¹ and 2003 Server ¹

* For the management of these modes, please refer to the corresponding question on our web site in the FAQ section

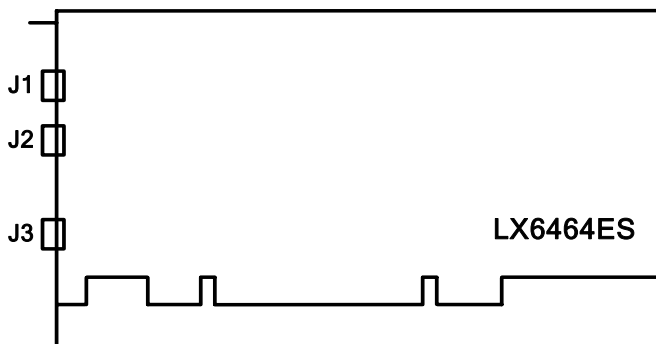
¹ version 32 bits

APPENDICES

LX6464ES schematic diagram



Connectors



- J1 : EtherSound IN
- J2 : EtherSound OUT
- J3 : Word Clock IN