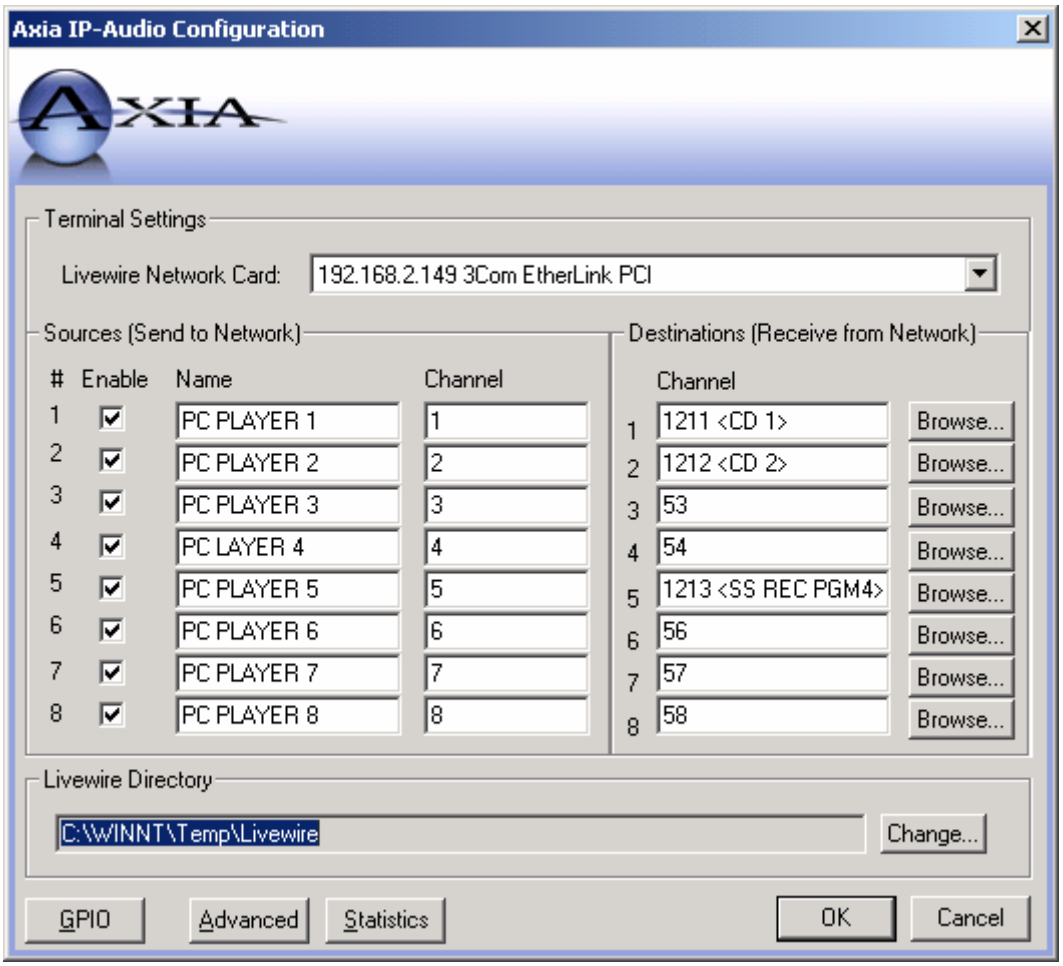
User's Manual

Axia IP-Audio Driver



Version 1.0 for driver version 1.2.x and later

8 November, 2004

NOTES:

Customer Service

We support you...

By phone/Fax in the USA.

Customer service is available from 9:30 AM to 6:00 PM USA Eastern Time, Monday through Friday at +1 216.241.7225.

Fax: +1 216.241.4103.

By phone/Fax in Europe.

Service is available from Axia Europe in Germany at +49 81 61 42 467.

Fax: +49 81 61 42 402.

By E-Mail.

The address is: support@axiaaudio.com.

Via World Wide Web.

The Axia Web site has a variety of information which may be useful for product selection and support. The URL is:

http://www.axiaaudio.com.

Feedback

We welcome feedback on any aspect of the Livewire products or this manual. In the past, many good ideas from users have made their way into software revisions or new products. Please contact us with your comments.

Updates

The operation of the Axia node is determined largely by software. Periodic updates may become available - to determine if this is the case check our web site. Contact us to determine if a newer release is more suitable to your needs.

Our electronic newsletter has announcements of major software updates for existing products, as well as keeping you up to date on the latest Axia, Telos, and Omnia product releases. To subscribe go to:

http://www.axiaaudio.com/news/eNews.htm

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Axia Audio 2101 Superior Ave Cleveland, OH 44114 USA +1 (216) 241-7225 Inquiry@axiaaudio.com

Axia Europe Johannisstra βe 6, 85354 Freising, Germany +49 81 61 42 467 inquiry@axiaaudio.com

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Warranty

This product is covered by a one year limited warranty, the full text of which is included in the rear section of this manual.

NOTES:

A note from the president of Telos

It's been a tradition since Telos' very first product, the Telos 10 digital phone system, that I share a few words with you at the beginning of each manual. So here goes.

In radio broadcast studios we're still picking up the pieces that have fallen out from the digital audio revolution. We're not using cart machines anymore because PCs are so clearly a better way to store and play audio. We're replacing our analog mixing consoles with digital ones and routing audio digitally. But we're still using decades-old analog or primitive digital methods to connect our gear. Livewire has been developed by Telos to provide a modern PC and computer network-oriented way to connect and distribute professional audio around a broadcast studio facility.

Your question may be, "Why Telos? Don't you guys make phone stuff?" Yes, we certainly do. But we've always been attracted to new and better ways to make things happen in radio facilities. And we've always looked for opportunities to make networks of all kinds work for broadcasters. When DSP was first possible, we used it to fix the ages-old phone hybrid problem. It was the first use of DSP in radio broadcasting. When ISDN and MP3 first happened, we saw the possibility to make a truly useful codec. We were the first to license and use MP3 and the first to incorporate ISDN into a codec. We were active in the early days of internet audio, and the first to use MP3 on the internet. Inventing and adapting new technologies for broadcast is what we've always been about. And we've always been marrying audio with networks. It's been our passion right from the start. In our genes, if you will. As a pioneer in broadcast digital audio and DSP, we've grown an R&D team with a lot of creative guys who are open-eyed to new ideas. So it's actually quite natural that we would be playing marriage broker to computer networks and studio audio.

What you get from this is nearly as hot as a couple on their wedding night: On one RJ-45, two-way multiple audio channels, sophisticated control and data capability, and built-in computer compatibility. You can use Livewire as a simple soundcard replacement – an audio interface connecting to a PC with an RJ-45 cable. But add an Ethernet switch and more interfaces to build a system with as many inputs and outputs as you want. Audio may be routed directly from interface to interface or to other PCs, so you now have an audio routing system that does everything a traditional "mainframe" audio router does – but at a lot lower cost and with a lot more capability. Add real-time mixing/processing engines and control surfaces and you have a modern studio facility with many advantages over the old ways of doing things. Ok, maybe this is not as thrilling as a wedding night – perhaps kissing your first lover is a better analogy. (By the way, and way off-topic, did you know that the person you were kissing was 72.8% water?)

While were on the subject of history… you've probably been soldering XLRs for a long time, so you feel a bit, shall we say, "attached" to them. We understand. But no problem – you'll be needing them for microphones for a long while, so your withdrawal symptoms won't be serious. But your facility already has plenty of Ethernet and plenty of computers, so you probably already know your way around an RJ-45 as well. It's really not that strange to imagine live audio flowing over computer networks, and there's little question that you are going to be seeing a lot of it in the coming years.

The 20th century was remarkable for its tremendous innovation in machines of all kinds: power generators, heating and air conditioning, cars, airplanes, factory automation, radio, TV, computers. At the dawn of the 21st, it's clear that the ongoing digitization and networking of text, audio, and images will be a main technology story for decades to come, and an exciting ride for those of us fortunate to be in the thick of it.

Speaking of years, it has been a lot of them since I wrote the Zephyr manual intro, and even more since the Telos 10 – almost 20 years now. Amazing thing is, with all the change around us, I'm still here and Telos is still growing in new ways. As, no doubt, are you and your stations.

Steve Church,

January 2004

A note from the president of Axia

It's been nearly 20 years since I designed my first broadcast console for PR&E. We were building bullet-proof boards for the most prestigious broadcasters in the world – and I've always looked back on that time with great fondness. For a while, we were making each new console design bigger and fancier to accommodate a wider variety of source equipment and programming styles. The console was the core of the studio and all other equipment was on the periphery.

Then things began to change. The personal computer found its way into broadcast audio delivery and production. At first, PC audio applications were simple and used only by budget stations to reduce their operating expenses. Then, predictably, the applications evolved and were embraced by the larger stations. It didn't happen all at once, but slowly the PC was taking over center stage in the radio studio.

Like many, I was captivated by the PC. Stations were retiring cart machines, phonographs, open-reel tape machines, cassettes and replacing all with PC applications. Some were even using the computer to replace more modern digital equipment such as DAT and CD players. I watched with amazement as client/server systems emerged and entire broadcast facilities used PC applications to provide most – and in some cases all – of their recorded audio. Yet consoles continued to treat the PC as nothing more than an audio peripheral. I knew that we console designers were going to have to rethink our designs to deal with the new computer-centric studios. But it was not yet obvious what needed to happen.

During this time, some of the traditional broadcast console companies began to produce digital versions. Many broadcasters thought the new technology would bring operational innovations as the PC had done. But the early digital consoles were nearly identical in form and function to their analog predecessors. It took a fresh look from a European company that had been outside broadcasting to merge together two products – audio routing switchers and broadcast consoles – into a central processing engine and attached control surfaces. Eventually nearly every console and routing switcher company began to follow this idea and a wide variety of digital "engines" and control surfaces flooded the market.

But as advanced as these integrated systems were, they still didn't handle computer-based audio sources any different than their analog ancestors. Sure the routing switcher and console engine were now integrated, but the most important studio element – the PC – was stuck in the past, interfaced with 100-year-old analog technology. The PC and the console couldn't communicate in a meaningful way – which was pretty strange considering that PCs everywhere were becoming networked and, thus, the world's most popular and powerful communication tool. But studio evolution was stalled.

Then a group of Telos engineers developed a method using Ethernet to interconnect audio devices, allowing computers and consoles, controllers and peripherals to interact smoothly and intelligently. The benefits of powerful and flexible networks had finally come to our studios. As with the transition from cart machines to computers, the benefits are many and impressive. A few networked components can replace routing switchers, consoles, processing peripherals, soundcards, distribution amplifiers, selector switches and a myriad of related devices.

This deceptively simple networked system costs a small fraction of other approaches, yet has capabilities far surpassing anything else. The system is modular and can be used to perform discrete functions in a traditional environment. At the same time, the system easily scales from the humblest to the very largest of facilities. The console, router, and the computer work in harmony.

And so equipped with this new technology and countless product ideas, we launch *Axia*, the newest division of Telos. *Axia* is all about delivering innovative networked audio products to future-minded broadcasters. On behalf of every one on our team, I welcome you as a charter client. Axia is the culmination of nearly 40 man-years of some of the most ambitious R&D ever applied to the radio industry. And this is only the beginning. We have more products, innovations, and partnerships in the pipeline.

You already know your Axia system is unlike anything else. So as you read through this manual, it will come as no surprise to you that your new system is loaded with new thinking, new approaches, and new ideas in virtually every conceivable area. Some of the concepts will challenge your traditional ideas of studio audio systems, but we are certain that once you have experienced the pleasures of the networked studio, you will never want to go back. And now, for something completely different...

Michael “Catfish” Dosch

February 2004

About this manual

This manual covers the details of the Axia IP-Audio Driver for use with computers running the Windows ® operating system. However it is assumed in this document that you are familiar with Livewire's basic concepts, as outlined in the companion *Introduction to Livewire* manual.

If you have not done so, please review that material first. In it we explain the ideas that motivated Livewire and how you can use and benefit from it, as well as nitty-gritty details about wiring, connectors, and the like. Since Livewire is built on standard networks, we also help you to understand general network engineering so that you have the full background for Livewire's fundamentals. After reading *Introduction to Livewire* you will know what's up when you are speaking with gear vendors and the network guys that are often hanging around radio stations these days.

This is being written in October 2004, shortly after the release of Livewire. Everything here is new and fresh. There will no doubt be many updates to this manual over the coming months and years.

As always, we welcome your suggestions for improvement. Contact Axia Audio with your comments:

Axia Audio, a Telos company

2101 Superior Avenue
Cleveland Ohio 44114 USA

Phone: +1.216.241.7225
Web: www.AxiaAudio.com
eMail: inquiry@AxiaAudio.com

1 Introducing the Axia IP-Audio Driver

Here we'll tell you what the Axia IP-Audio Driver is, and some examples of typical applications.

This manual is written with the assumption that you have read the *Introduction to Livewire* document. While the Axia Livewire technology is easy to use in powerful ways, it *does* represent a radical new way of thinking for broadcasters. That document will serve to get your feet wet and to orient you. We highly recommend you review that document first, before building a Livewire audio system or reading this manual.

DESCRIPTION

The Axia IP-Audio Driver is the software interface between your PC audio applications and the Livewire network. It provides the following functions:

- Software interface for audio "sources" to be sent to the Livewire network from PC/Windows audio applications, such as delivery systems and other audio players.
- Software interface to receive audio from the Livewire network to "destinations" on the PC/Windows system such as audio editor applications.
- A 'GPIO' function to convey "button-press" data from the Livewire network to "destination" applications, such as when a control surface fader start button commands PC/Windows-based audio player to start playback.
- A software interface to allow Livewire streams to be played on standard media players "destinations" such as the Windows Media player.

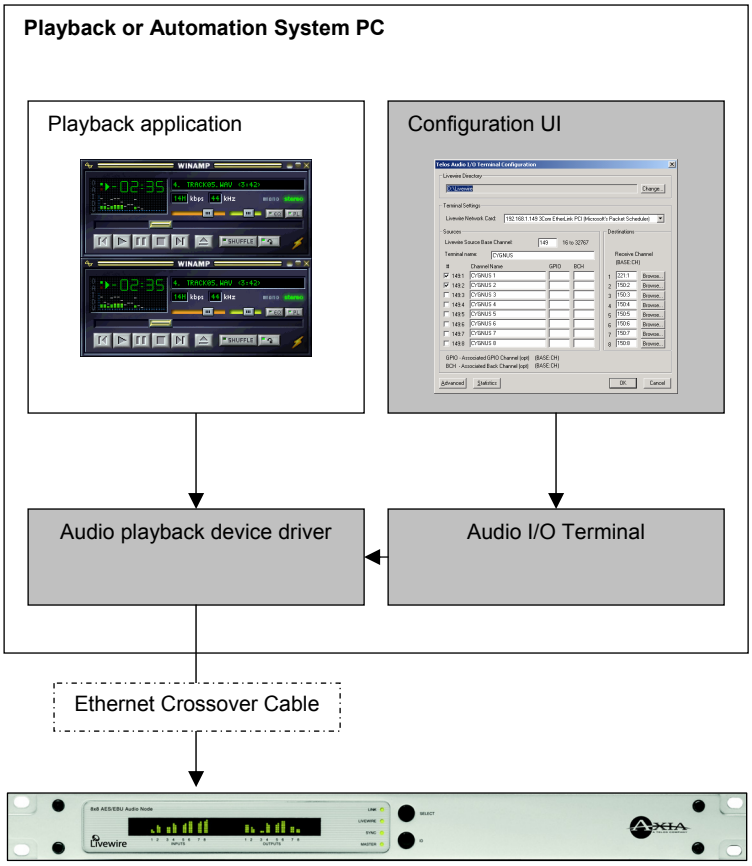
Axia IP-Audio Driver for Windows allows integrating Windows multimedia system with an Axia Livewire audio network. There are wide variety of applications where Axia nodes devices and the Windows software are used together.

Axia Nodes can be simply used as high quality remote 8-channel audio input/output devices, see Scenario 1. Or, Livewire technology can completely eliminate audio input/output devices by simply allowing multiple computers to send audio over the Livewire network, see Scenario 2. In both cases the Axia IP-Audio Driver interfaces through Windows to appear as an audio input/out device(s).

This software package also contains GPIO module that allows controlling any application form Smart Surface (Livewire mixing control device).

Scenario 1: Axia node as a remote sound card

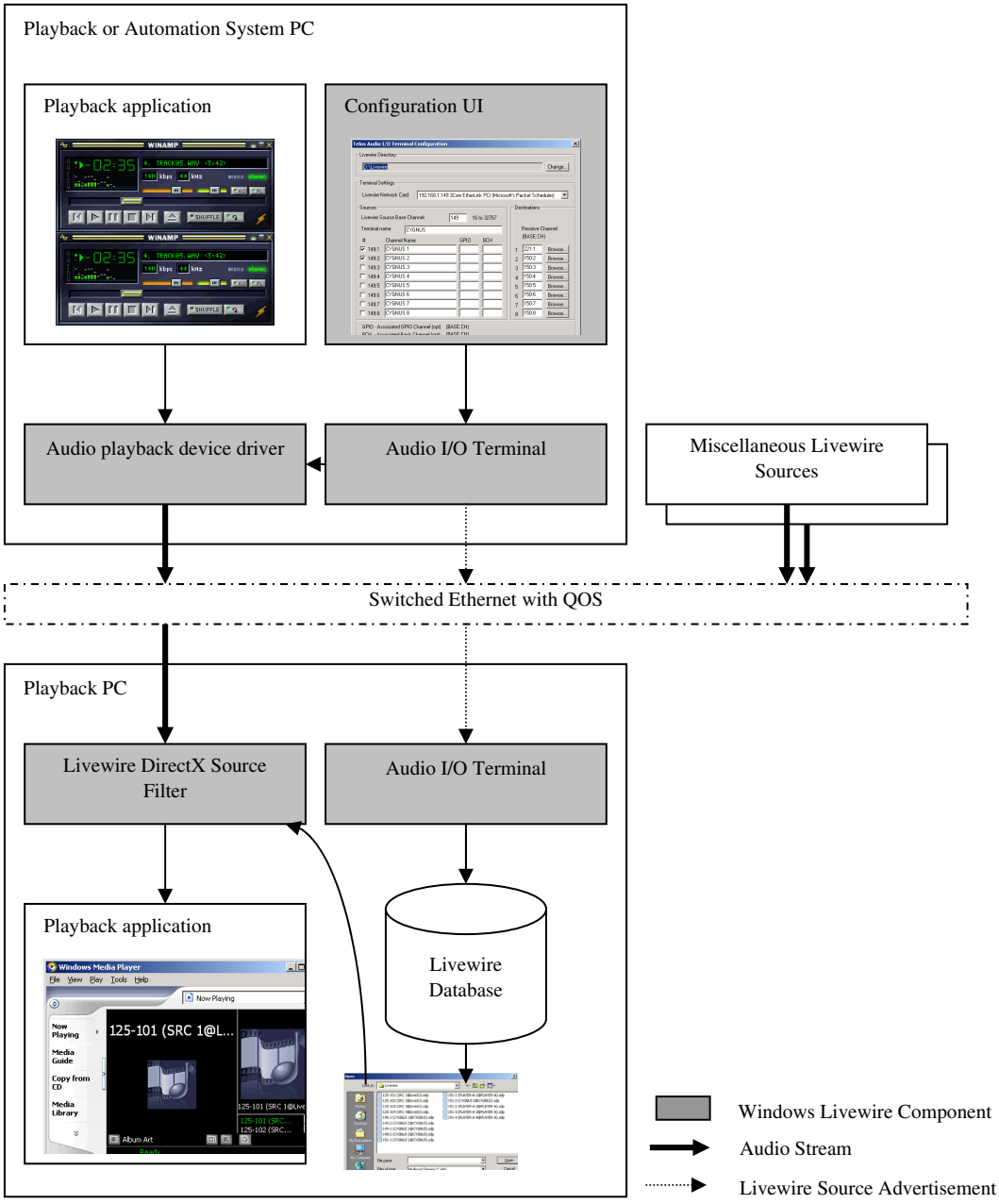
In this example a remote Axia node acts as a sound card, permitting audio input and output to the computer from the node:



Scenario 2: Automation PC (no sound card required)

In this scenario an Automation System places a Livewire stream on the Livewire audio network. This stream is available on the network and can be monitored by Axia

nodes or Axia IP-Audio Driver-equipped PC, as shown below.



Note that Scenario 2, above, also demonstrates how the IP-Audio Driver enables any PC on the Axia audio network can serve as a monitoring station and can be used to monitor any audio stream on the network. The driver provides all software components needed to receive Livewire streams using standard players, like Windows Media player.

2 Installation and Configuration

Here's the nitty gritty

AXIA IP-AUDIO DRIVER VS AXIA IP-AUDIO MULTICHANNEL

The *Axia IP-Audio* Driver version supports emulates a single sound card, with one stereo audio output device and one stereo audio input device. This version is suitable for typical playback or recording applications. *Axia IP-Audio Multichannel* (OEM version) emulates 8 sound cards, with one stereo audio output device and one stereo audio input device per "sound card". It is intended for more complex professional applications. Other than the number of inputs the two drivers are the same. The following information applies to both drivers, with the understanding that the number of inputs and outputs is different as mentioned above.

INSTALLING AXIA IP-AUDIO DRIVER 1.2.X

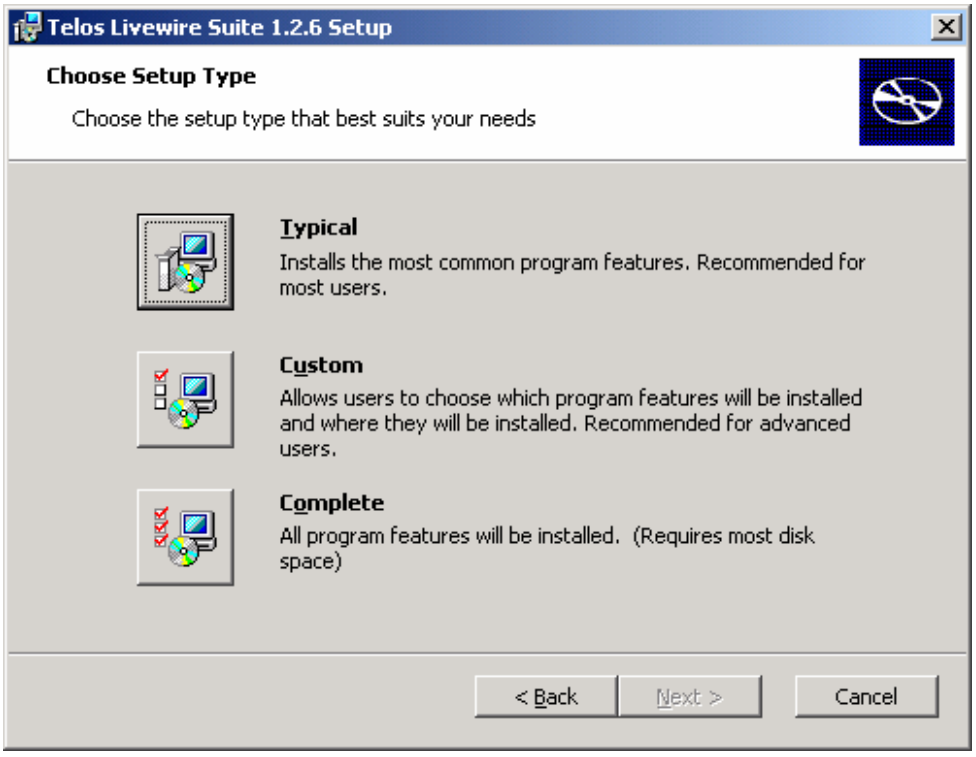
The Axia IP-Audio driver 1.2.x supports the following OS platforms:

- Microsoft Windows 2000 Pro
- Windows XP.

If you are running a recent version of the operating systems, or have installed the latest "service pack" from Microsoft, installation will go smoothly. In the rare case where the installer gives an error message, indicating that the installer is outdated, when installation is attempted, then you must install the latest service pack from Microsoft. Alternatively you can download the required *Microsoft Installer 2.0* from http://www.microsoft.com/downloads/.

To install the Axia IP-Audio driver follow these steps:

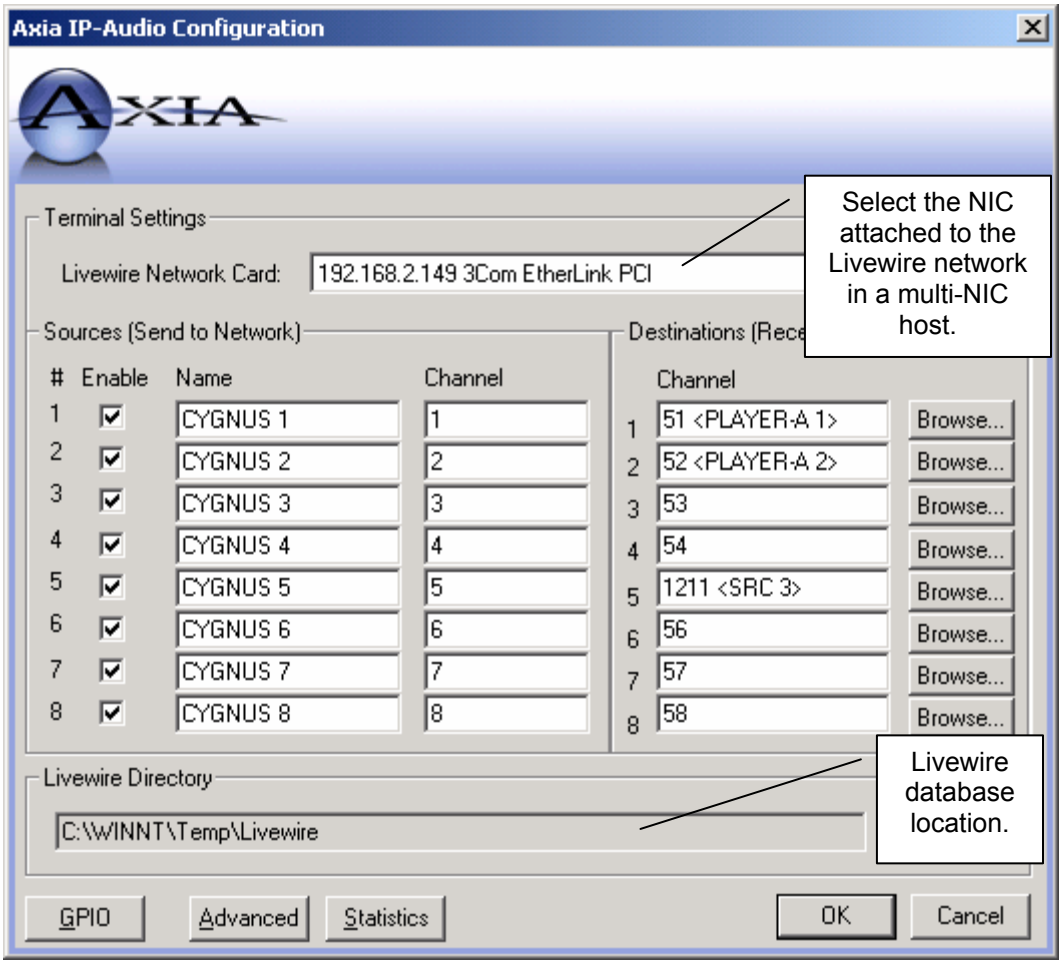
1. Double-click *axiaIP.Msi* to start the installation process. Use *NEXT* button to proceed with the installation.
2. Choose the desired installation. *Typical* is recommended and should be used. It will install Axia IP-Audio driver, Livewire terminal and GPIO modules.



3. You will be prompted for license number and license key. This information can be found in the CD-case in which your installation disk was delivered. Enter this information and press *ENTER* to proceed with the installation. Once installation is complete, proceed to configure the driver as described in the next section.

CONFIGURING AXIA IP-AUDIO DRIVER

After all files are installed on your system, Axia IP-Audio Configuration window will appear, as shown below (you can access this configuration screen at any time from the Control Panel):



To configure the Axia IP-Audio driver follow these steps:

1. If your computer has multiple Network Interface Cards (NICs) installed make sure that network card connected to the Livewire audio LAN is selected from the pull down menu *Livewire Network Card.*

2. Enable as many devices as you intend to use. Note: Standard version permits only one input and one output audio device.

DEEP TECH NOTE: Livewire channel *is an abstraction simplifying user setup. The channel number is translated to multicast addresses in 239.192.0.0/13 range for internal use. The user need only assign a* Livewire Channel. *For more on this see the document* Introduction to Livewire.

By default, sources are configured to send audio to Livewire channels 1 though 8. For simple applications those settings do not have to be changed. For example, Livewire Analog 8x8 node can be connected to the PC as an audio output device. All 8-port nodes are configured to receive audio on channels 1 through 8 by default and can be configured from the front panel. Individual inputs and outputs can be assigned

non-contiguous channels using the Axia node's browser interface. See *Introduction to Livewire* for more on channel assignments.

3. *Livewire Directory* – This is the directory where the Axia IP-Audio driver will create files that allow Livewire streams to be played with standard software players. You can specify any convenient location or use the default.

4. *Statistics* – This button opens a window with packet counters and other information that may be used to verify that Livewire driver works properly. This is described more fully later in this manual. For now you can leave the default settings

5. *Advanced* – This button permits setting quality of service and network parameters. This is described more fully later in this manual. For now you can leave the default settings

6. *GPIO* – This button allows configuration of the GPIO module that allows sending keystrokes to applications that take input from the Surface (Livewire mixing control device). If you will be interfacing software on this computer to be remotely controlled by an Axia audio mixer control surface (such as the *Smartsurface*) you will need to configure this. For more on this see section 3.

7. Click on the *OK* button to accept your settings and enable the driver. You can return to this window and customize your settings from the Control Panel.

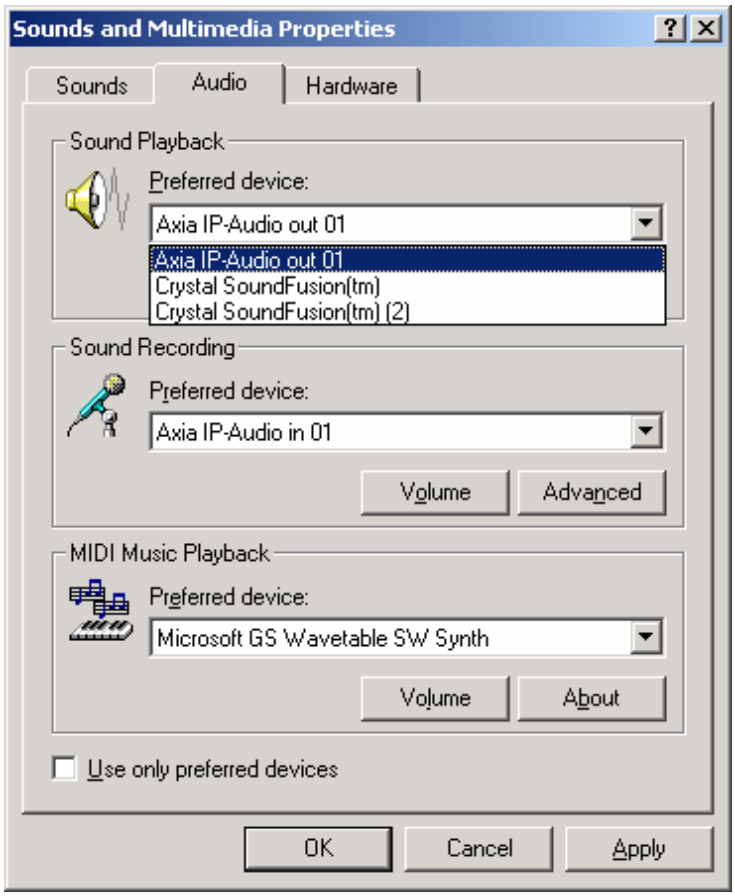
USING AND CONFIGURING THE AXIA IP-AUDIO DRIVER AS A PLAYBACK DEVICE

Configure your player application to use *Axia IP-Audio Output device x* (x = 1 - 8).

Note: Standard version allows only one input and one output audio device.

Most playback applications use a drop down menu to list all available audio output devices; simply choose from the list. If you are using *Axia IP-Audio Multichannel* you can configure up to 8 player applications to simultaneously stream audio to the Livewire LAN.

You may also want to specify one of Livewire *Axia IP-Audio Output devices* as the "preferred device" in Windows *Sound and Multimedia Properties* control panel, as shown below.



Once you start playback on the selected *Axia IP-Audio Output* device, the driver will start generating stream of network packets to one of Livewires 32767 channels, as configured above. Livewire nodes configured to receive audio on that channel will receive the audio data. If the lowest (bottom) segment of the output audio meters are illuminated this indicates that the stream is present, even if the audio source is currently silent. For more on Livewire Channels see the document *Introduction to Livewire*.

Mixing Multiple Devices to an Axia Playback Device

The audio driver provides for mixing multiple sources to a specified playback channel when more than one application uses the same Audio Device. The Axia Audio-IP Driver supports to 32 devices to be mixed – these can be used in a variety of ways, for example 32 devices could be mixed to a single output, or for devices could be mixed to each of the 8 outputs. Standard tools can be used to perform the mixing, such as the Windows™ mixer application. See *Setting Recording and Playback Levels* in Section 3 for additional information.

USING AXIA IP-AUDIO FOR PLAYBACK/ RECORDING TO/FROM THE LIVEWIRE LAN

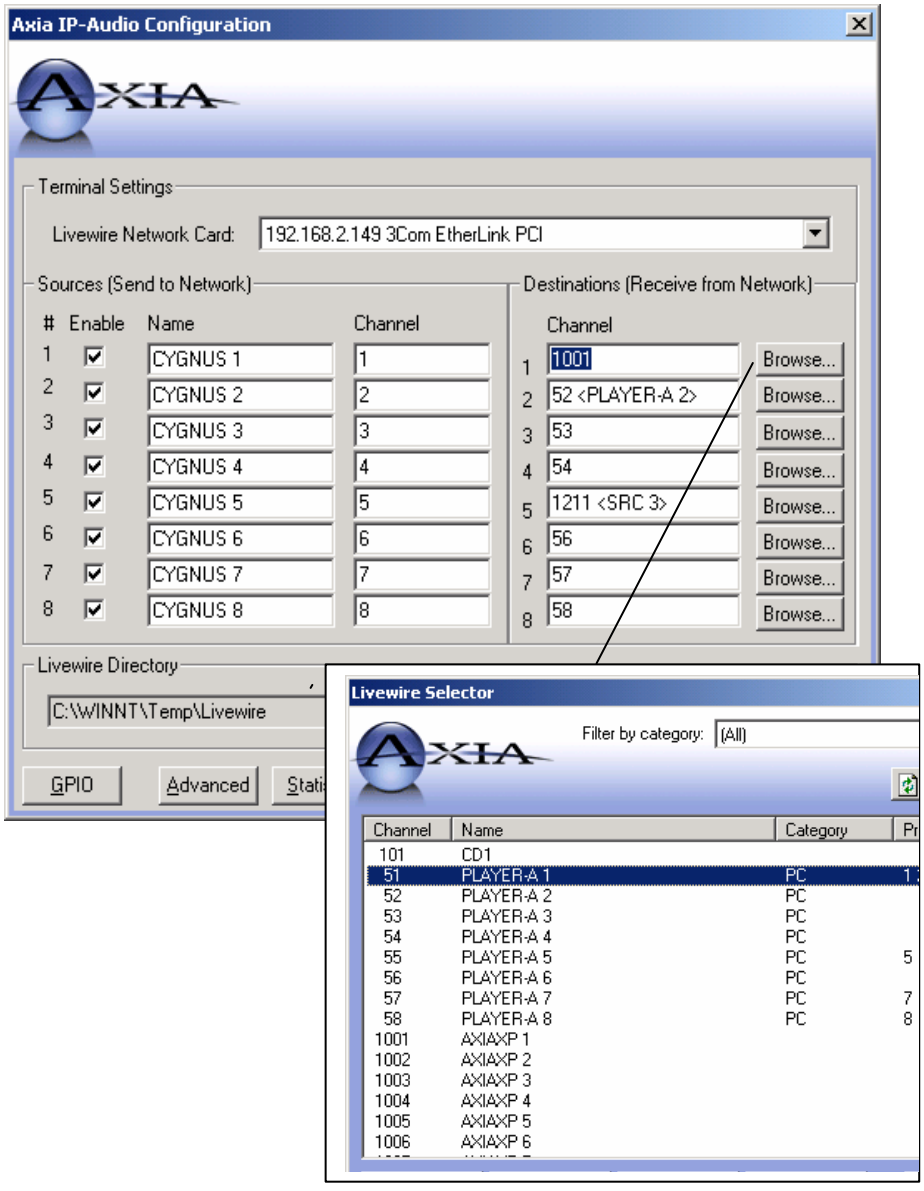
Make sure that your player application is configured to use *Axia IP-Audio Input device x* (x = 1 - 8). Many recording applications use a drop down menu to list all available audio output devices; simply choose from the list.

You may also wish to specify one of the *Axia IP-Audio Input Devices* as the preferred "Sound Recording" device in Windows *Sound and Multimedia Properties* control panel, as shown above. This specifies the *Axia IP-Audio Input device* for recording on applications that do not allow input device selection.

If you have not already done so, Configure Destination Channel with the desired Livewire channel number from which the Audio Input device will receive audio.

To do so, click on the *Browse* button and a *Livewire Selector* window will appear as shown below, allowing you to choose a source stream.

When you start recording, the Axia IP-audio driver will pick up the designated Livewire stream from the audio network.



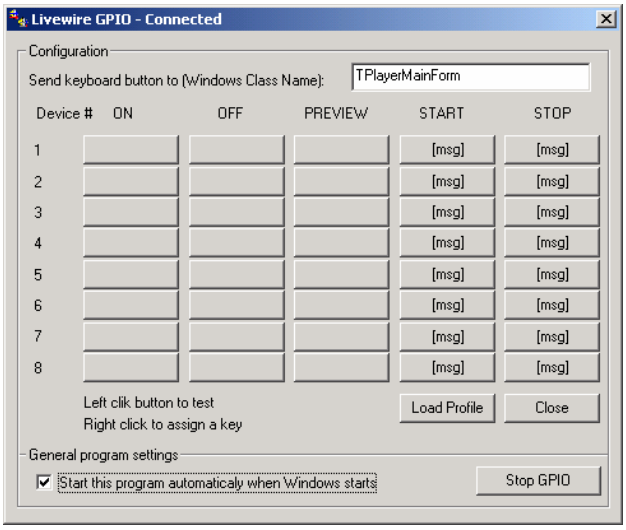
NOTES:

3 Advanced Features

Information on the GPIO function, Livewire performance statistics, using standard players to listen to Livewire streams, and how the driver interacts with standard Windows™ devices.

THE IP-AUDIO DRIVER GPIO MODULE

Clicking on the *GPIO* button from the Axia IP-Audio Configuration screen permits configuration of the GPIO module. This allows remote devices such as the Smartsurface to send a "keystroke" to applications on the Windows™ computer running the Axia IP-Audio Driver. If you will be interfacing software on this computer to be remotely controlled by an Axia audio mixer control surface (such as the *Smartsurface*) you will need to configure this. There are two ways to configure this module; using a profile from your software vendor, or by manually configuring the driver. Each row of the configuration window permits configuring one of the Axia IP-Audio Driver virtual "sound cards" and thus the incoming contact closures are associated with the Source assigned to that sound card.



Starting the GPIO Module

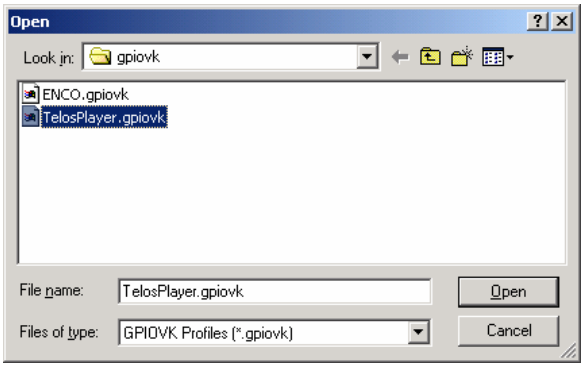
The GPIO module will become active once you have clicked on the *GPIO* button from the main configuration screen. The GPIO module will continue to run until the PC is rebooted, or until the *Stop GPIO* button pressed. If you wish to have the GPIO module started automatically at boot up, click on the check box for *Start this program automatically when Windows starts*. Clicking the *Close* button will close the Configuration Window while leaving the GPIO module running.

The configuration screen has a row of buttons for each "sound card". Clicking on a button will generate a keystroke sent to the target program. This permits you to fully configure and test the GPIO module from the PC. Right-clicking on a button permits assigning keystrokes to the function associated with that button.

Loading a GPIO Profile

If the manufacturer of your PC software is an Axia partner they will have provided you with a GPIO profile to configure the GPIO module for you. To load a profile:

1. Click on the *Load Profile* button. A standard *Open* file dialog will be displayed, as shown below:



2. Using the usual Windows™ procedures locate the *GPIOVK* file (on the manufacturer's CD-ROM for example) then click on *OPEN*.

Note that in addition to GPIO keystroke configuration information, a profile may also include information for sending Windows™ or UDP messages to the software. Buttons programmed to send one of these alternative messages will have "[MSG]" displayed. These message types may only be programmed through profiles.

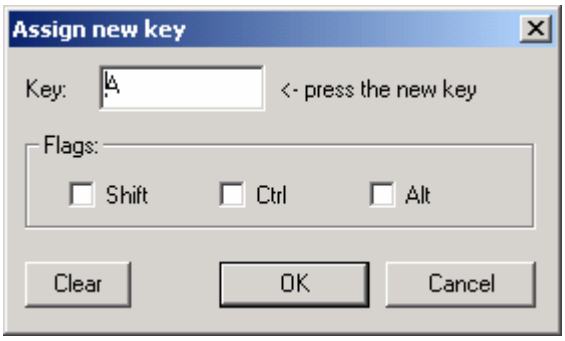
Manual Configuration of the GPIO Module

Send Keyboard button to

This entry determines the program e.g. "Windows™ Class Name" that the keystrokes will be sent to when the GPIO buttons are pressed (locally, or remotely from a Axia control surface). To determine the Windows Class Name consult the software documentation or manufacturer.

Configuring Keystrokes

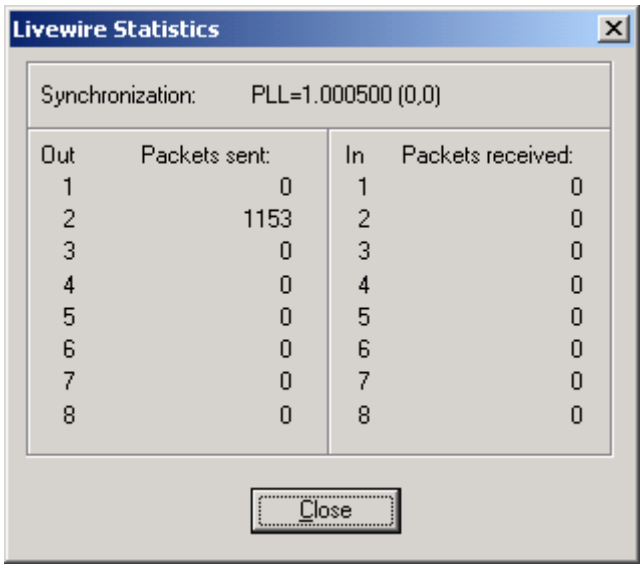
To assign keystrokes to a button right-click on that button. The following window will appear:



Enter the desired letter or other keyboard symbol in the *Key* field. If you wish to enter a "modified" key entry such as a "Control" key click the appropriate flag checkbox(es). Click on *Ok* to accept your entry.

LIVEWIRE STATISTICS

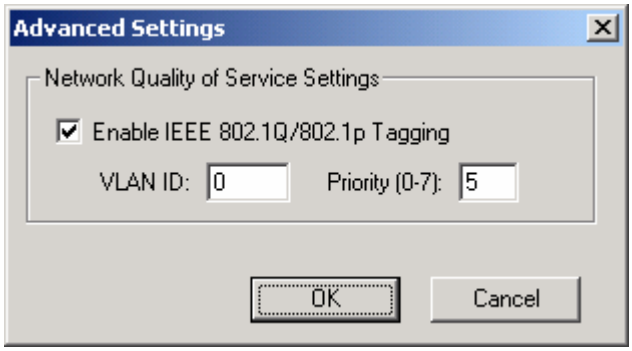
To assure reliable low-delay audio delivery, Livewire provides synchronization between terminals. The *Axia IP-Audio Driver* receives clock information from hardware nodes on the Axia Livewire LAN (you must have at least one Hardware node on the network). To make sure the Axia IP-Audio drive is on-line and receiving this synchronization (e.g. the driver's PLL is locked) check the *Synchronization* value in the *Livewire Statistics* window accessed from the *Statistics* button on the *Axia IP-Audio Configuration* window. When the clock signal not available, the PLL is unlocked and *Unlocked* will be displayed.



Playback applications send audio data to the Axia IP-Audio driver. The driver packages the audio into Livewire audio packets and sends them out the selected network interface to the Livewire LAN. Livewire Statistics window provides counters for all Livewire Output and Input devices.

Quality of Service (QOS) Settings

Clicking on the *Advanced* button on the *Axia IP-Audio Configuration* window allows viewing or changing network Quality of Service parameters for the streaming driver. Those settings should be used with caution or you may cause dropouts in your Axia Livewire network. In most networks the defaults are recommended and should not be changed, unless advised by Axia customer support.



USING AXIA DRIVER WITH THE STANDARD WINDOWS™ MULTIMEDIA INTERFACE

Livewire sources (e.g. audio sources on the Livewire Network) are mapped to Sound Playback devices. To Windows, the Axia IP-Audio driver appears to be just like any other *Sound Playback Device*. Playback applications use these devices. They may have a way of selecting a *Playback Device* or they may simply use the *Preferred Device* selected in the Windows *Sounds and Multimedia Properties* control panel.

Livewire destinations (e.g. audio software capable of accepting audio on the Livewire enabled computer) are mapped to Sound Recording devices. Miscellaneous recording, audio editing and logging applications use those

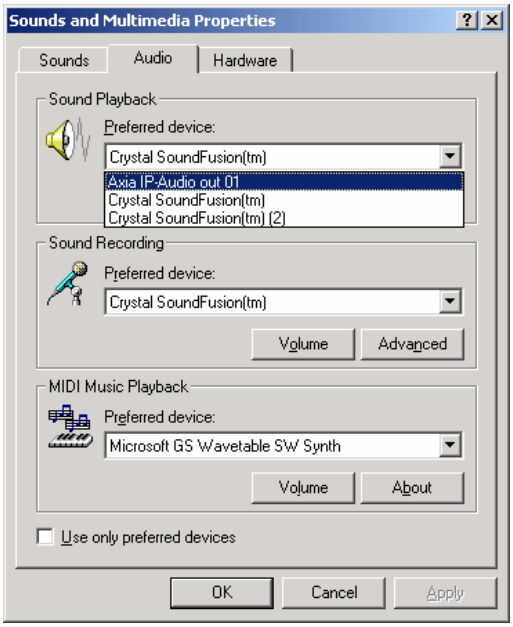
devices to determine the audio source to be recorded. These may have a way of selecting a *Sound Recording Device* or they may simply use the *Preferred Device* selected in the Windows *Sounds and Multimedia Properties* control panel.

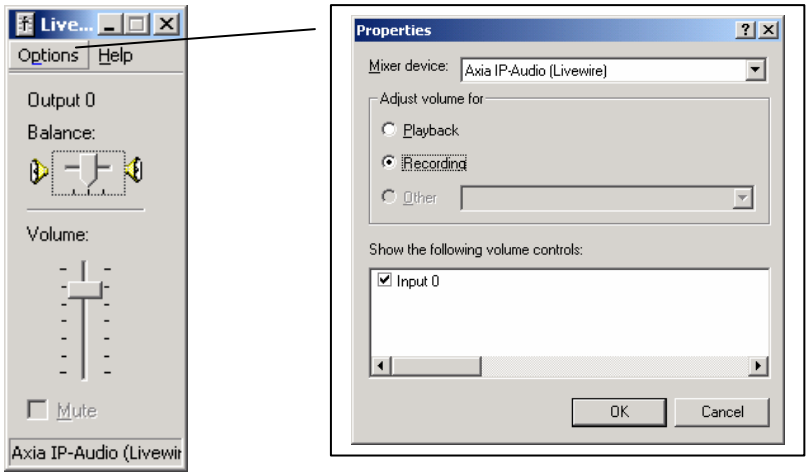
Setting Sources and Destinations for Software Applications

Often playback or recording software have their own custom dialog used to assign playback and recording devices. If they do not, the default settings for *Sound Playback* and *Sound Recording* devices can be configured using the Windows *Sounds and Multimedia Properties* Control Panel.

Setting Recording and Playback Levels

Windows also offers tools for setting *Playback* and *Record* levels. To adjust these audio levels the, standard Windows Mixer application can be used, see below. Note that the mixer can only display *Record* or *Playback* at a given time. To change between these two functions choose options/properties to select *Playback* or *Recording* for the *Adjust volume for* option as shown below. Some software chooses not to support the standard Windows Multimedia interface. You won't be able to use this software with Livewire without modification. Please contact your software vendor.



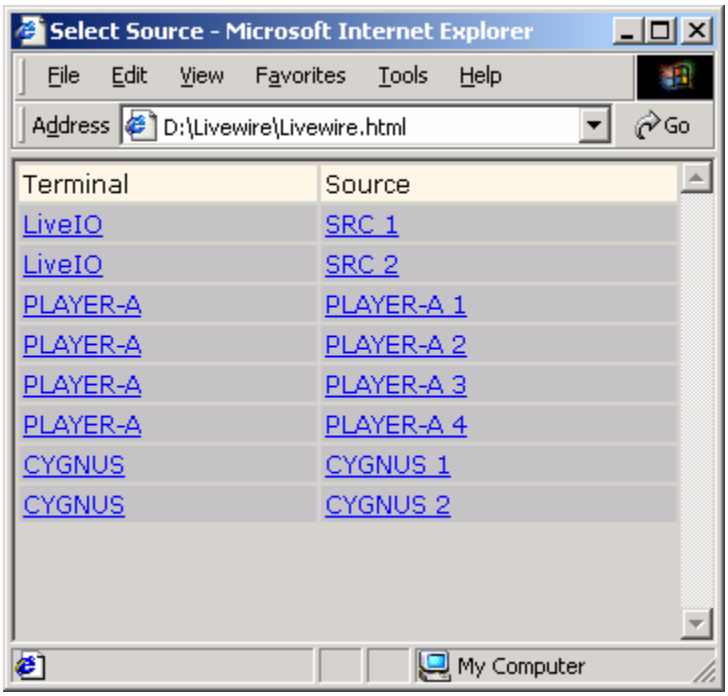


THE LIVEWIRE STREAMING SOURCES DATABASE

In the Livewire system, Axia Audio I/O Terminals advertise their source information over the network. This information is processed by Windows Livewire Suite software and is stored as a group of files in the location specified by user. For each source, one .sdp file is created (SDP is defined in RFC 2327: Session Description Protocol).

These files have user-friendly names containing name of the Audio I/O Terminal (Network Host Name) and name of the source. When a playback application supporting .sdp is installed, you can start playback by opening file describing Livewire source of interest.

To make access to Livewire streams more convenient, you can open a WEB page that lists the complete database of all sources and allows playback access to them by simply clicking on their description. To do so, open the file *Livewire.html* (located in the same location as the database files) with your browser, as shown on the next page.



Select Source Web Page: clicking ona link will launch a .sdp capable player such as the Real Player.

A Windows Media Player play list file (.asx) is also generated and stored in Livewire database directory. Windows media player users can open this file from the player, rather than accessing individual .sdp files:

Furthermore, you can create your own and customize play lists including Livewire sources:

REMOVING THE AXIA IP-AUDIO DRIVER

1. Launch the *Add-Remove Programs* Control Panel.
2. Select Axia IP-Audio Driver, and click “Remove”.
3. All components installed in your system will be removed automatically.

NOTES:

APPENDIX

Here are a few useful bits of information we think might prove useful.

GPIO PROFILE FILE FORMAT

The following technical information on sending Windows and UDP message is included for OEM's developing GPIO Profiles for interfacing to their software packages.

Profile File Format

These are ASCII test files.

Windows Class Name

If you wish to send Windows™ messages the profile must contain a line that determines Window Class Name of the automation system main window. See WINCLASS= in example below.

Sending Windows Messages

The file must contain a line that determines Window Class Name of the automation system main window. See WINCLASS= in example below.

Every event is represented by string in format DEV<d>.<e>, where <d> is audio device number (0-7), and <e> is event number (0-4) as specified in example below.

Example:

Event constants:

0 ON

1 OFF

2 PREV

3 START

4 STOP

WINCLASS=TPlayerMainForm

DEV0.3 MSG=0x40A WPARAM=0 LPARAM=1

DEV0.4 MSG=0x40A WPARAM=0 LPARAM=0

DEV1.3 MSG=0x40A WPARAM=1 LPARAM=1

DEV1.4 MSG=0x40A WPARAM=1 LPARAM=0

[…]

Sending UPD messages

The file must contain a line that determines destination UDP port (UDP_DSTPORT=<port>).

Every event is represented by string in format DEV<d>.<e>, where <d> is audio device number (0-7), and <e> is event number (0-4) as specified in example below.

Example:

Event constants:

0 ON

1 OFF

2 PREV

3 START

4 STOP

UDP_DSTPORT=2002

DEV0.3
COMMAND="<DADCMD><ID>99999</ID><COMMAND>play pbk1</COMMAND></DADCMD>"

DEV0.4
COMMAND="<DADCMD><ID>99999</ID><COMMAND>stop pbk1</COMMAND></DADCMD>""<DADCMD><ID>99999</ID><COMMAND>next pbk1</COMMAND></DADCMD>"

NOTES:

Specifications & Warranty

IP AUDIO DRIVER SYSTEM REQUIREMENTS

Operating System

- Windows 2000 Professional
- Windows XP

AXIA SYSTEM SPECIFICATIONS

Microphone Preamplifiers

- Source Impedance: 150 ohms
- Input Impedance: 4 k ohms minimum, balanced
- Nominal Level Range: Adjustable, -75 dBu to -28 dBu
- Input Headroom: >20 dB above nominal input
- Output Level: +4 dBu, nominal

Analog Line Inputs

- Input Impedance: >40 k ohms, balanced
- Nominal Level Range: Selectable, +4 dBu or -10dBv
- Input Headroom: 20 dB above nominal input

Analog Line Outputs

- Output Source Impedance: <50 ohms balanced
- Output Load Impedance: 600 ohms, minimum
- Nominal Output Level: +4 dBu
- Maximum Output Level: +24 dBu

Digital Audio Inputs and Outputs

- Reference Level: +4 dBu (-20 dB FSD)
- Impedance: 110 Ohm, balanced (XLR)
- Signal Format: AES-3 (AES/EBU)
- ES-3 Input Compliance: 24-bit with selectable sample rate conversion, 32 kHz to 96kHz input sample rate capable.
- AES-3 Output Compliance: 24-bit
- Digital Reference: Internal (network timebase) or external reference 48 kHz, +/- 2 ppm
- Internal Sampling Rate: 48 kHz
- Output Sample Rate: 44.1 kHz or 48 kHz
- A/D Conversions: 24-bit, Delta-Sigma, 256x oversampling
- D/A Conversions: 24-bit, Delta-Sigma, 256x oversampling
- Latency <3 ms, mic in to monitor out, including network and processor loop

Frequency Response

- Any input to any output: +0.5 / -0.5 dB, 20 Hz to 20 kHz

Dynamic Range

- Analog Input to Analog Output: 102 dB referenced to 0 dBfs, 105 dB "A" weighted to 0 dBfs
- Analog Input to Digital Output: 105 dB referenced to 0 dBfs
- Digital Input to Analog Output: 103 dB referenced to 0 dBfs, 106 dB "A" weighted
- Digital Input to Digital Output: 138 dB

Equivalent Input Noise

- Microphone Preamp: -128 dBu, 150 ohm source, reference -50 dBu input level

Total Harmonic Distortion + Noise

- Mic Pre Input to Analog Line Output: <0.005%, 1 kHz, -38 dBu input, +18 dBu output
- Analog Input to Analog Output: <0.008%, 1 kHz, +18 dBu input, +18 dBu output
- Digital Input to Digital Output: <0.0003%, 1 kHz, -20 dBFS
- Digital Input to Analog Output: <0.005%, 1 kHz, -6 dBfs input, +18 dBu output

Crosstalk Isolation and Stereo Separation and CMRR

- Analog Line channel to channel isolation: 90 dB isolation minimum, 20 Hz to 20 kHz
- Microphone channel to channel isolation: 80 dB isolation minimum, 20 Hz to 20 kHz
- Analog Line Stereo separation: 85 dB isolation minimum, 20Hz to 20 kHz

- Analog Line Input CMRR: >60 dB, 20 Hz to 20 kHz
- Microphone Input CMRR: >55 dB, 20 Hz to 20 kHz

Power Supply AC Input

- Auto-sensing supply, 90VAC to 240VAC, 50 Hz to 60 Hz, IEC receptacle, internal fuse
- Power consumption: 35 Watts

Operating Temperatures

- -10 degree C to +50 degree C, <90% humidity, no condensation

Dimensions and Weight

- Microphone node: 1.75 inches x 17 inches x 10 inches, 6 pounds
- Analog Line node: 1.75 inches x 17 inches x 10 inches, 6 pounds
- AES/EBU node: 1.75 inches x 17 inches x 10 inches, 6 pounds
- Router Selector node: 1.75 inches x 17 inches x 10 inches, 6 pounds
- GPIO node: 1.75 inches x 17 inches x 13 inches, 8 pounds
- Studio Mix Engine 3.5 inches x 17 inches x 15 inches, 10 pounds

All specifications (c) 2004 Axia / TLS Corp, all rights reserved. Subject to change without notice.

AXIA NODE LIMITED WARRANTY

This Warranty covers "the Products," which are defined as the various audio equipment, parts, software and accessories manufactured, sold and/or distributed by TLS Corp., d/b/a Axia Audio (hereinafter "Axia Audio").

With the exception of software-only items, the Products are warranted to be free from defects in material and workmanship for a period of one year from the date of receipt by the end-user. Software-only items are warranted to be free from defects in material and workmanship for a period of 90 days from the date of receipt by the end-user.

This warranty is void if the Product is subject to Acts of God, including (without limitation) lightning; improper installation or misuse, including (without limitation) the failure to use telephone and power line surge protection devices; accident; neglect or damage.

EXCEPT FOR THE ABOVE-STATED WARRANTY, AXIA AUDIO MAKES NO WARRANTIES, EXPRESS OR IMPLIED (INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE).

In no event will Axia Audio, its employees, agents or authorized dealers be liable for incidental or consequential damages, or for loss, damage, or expense directly or indirectly arising from the use of any Product or the inability to use any Product either separately or in combination with other equipment or materials, or from any other cause.

In order to invoke this Warranty, notice of a warranty claim must be received by Axia Audio within the above-stated warranty period and warranty coverage must be authorized by Axia Audio. If Axia Audio authorizes the performance of warranty service, the defective Product must be delivered, shipping prepaid, to: Axia Audio, 2101 Superior Avenue, Cleveland, Ohio 44114.

Axia Audio at its option will either repair or replace the Product and such action shall be the full extent of Axia Audio's obligation under this Warranty. After the Product is repaired or replaced, Axia Audio will return it to the party that sent the Product and Axia Audio will pay for the cost of shipping.

Axia Audio's authorized dealers are not authorized to assume for Axia Audio any additional obligations or liabilities in connection with the dealers' sale of the Products.

Axia Audio's products are to be used with registered protective interface devices which satisfy regulatory requirements in their country of use.

10-28-04 rev 0.9

11-08-04 rev 1.0 RKT

1490-00042-000