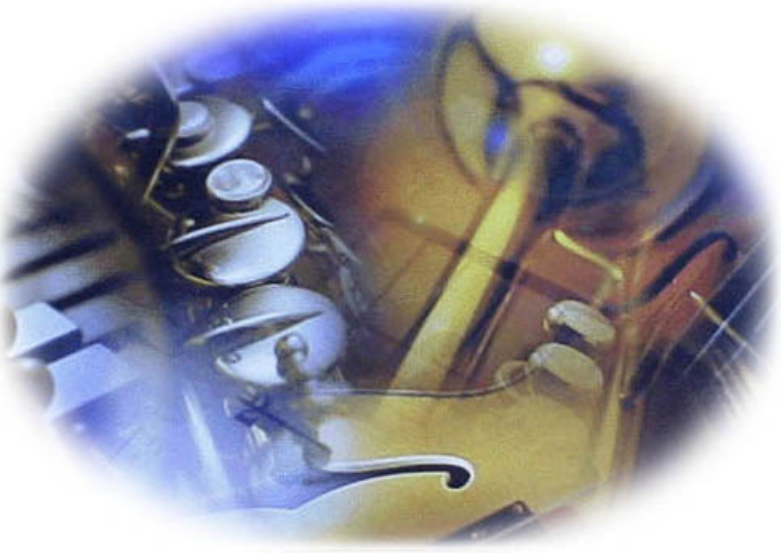
SoundTrack



ST Audio DSP24 MK II

User's Guide

Revision 1.1

Contents

Introduction of the SoundTrack Audio DSP24MK II

Congratulation on your decision to choose the SoundTrack Audio DSP24 MK II. SoundTrack Audio DSP24 MK II is just a pure hard disk recording system with up to 10 inputs and 10 outputs and 24 bit / 96Khz support. It does not offer the sampler function but it is possible to connect it to the SoundTrack Digital Audio in the same system internally. And it can be installed up to 4 card in a system which offer the 40 ins/outs.

Ultimate multi-track audio quality

With 8 In and Outputs high-performance audio-equipment, a handling of audio data with 24bit and up to 96Khz resolution. This brand new Audio card offers breaking barriers in the digital recording industries price policy.

SoundTrack Audio DSP24 MK II supports external 8 inputs of the ADC box, 8 outputs of the DAC box, 8 inputs/ 8 outputs of the Digital modulator & ADAT box at the same time.

Perfect expandability

Audio DSP24 MK II comes with Rack-mountable ADC III and DAC III as well as all the current external boxes and it can be used with Digital audio card by connecting the internal flat cable.

Multi-card system

It is possible to stack up to four Audio DSP24 MK II within one System for using 40 input and 40 output channels in high resulting 24 bit and 96Khz sample rates without any jumper setting. All drivers have the capability to convert 24-bit audio data into 32-bit audio data for the recording software. This feature allows the main processor to free up it's resources, because different to the common "packet-byte"-protocol, 24-bit data will not be sent through the 32-bit wide bus stacked. This means less processor overhead and optimal PCI bus utilization.

24-bit, 96Khz Rack-mountable box

120dB, rack-mountable **ADC III** supports 48V Phantom Power and MIC, Line-In pre amp supporting the Balanced In. ADC III demonstrated it's maximum performance when it is connected with the SoundTrack Audio DSP24 MK II or Digital Audio card but as a stand-alone product, there is no other Audioc cards in this range supporting 96Khz 24-bit 8CH ADC. 120dB, rack-mountable **DAC III** demonstrated it's maximum performance when it is connected with the SoundTrack Audio DSP24 MK II or Digital Audio card. DAC III converts the digital outputs from the Audio DSP24 MK II to the balanced and stereo outputs which allow to connect with various analog devices. As a stand-alone product, Coaxial, Optical and AES/EUB inputs from the front panel are available for the professional use.

Remarks) The priority of the digital Input is as followings:
AES/EBU > Optical > Coaxial > Audio DSP24 MK II

Digital Modulator III accepts from 33Khz to 96Khz frequency rates and change them what you want to use when recording with Audio DSP24 MK II or Digital Audio card. It is useful when you need various digital inputs such as 44.Khz, 48Khz and 96Khz.

ADAT/TASCAM box outputs the digital signals from the ADAT/TASCAM as S/PDIF format or vice-versa. It can also be used as stand-alone product and when using with the "Audio DSP24 MK II", it allows to record 8CH wave outputs to the ADAT/TASCAM or vice-versa. Without the Audio DSP24 MK II, it can be connected with ADC III, Digital Modulator III or DAC III.

Intuitive program Interface

User-friendly 'External Links' is core of the Audio DSP24 MK II that allows you to control the card easily in a quick time.

Components

Please check out the components of the Audio DSP24 MK II before installation.

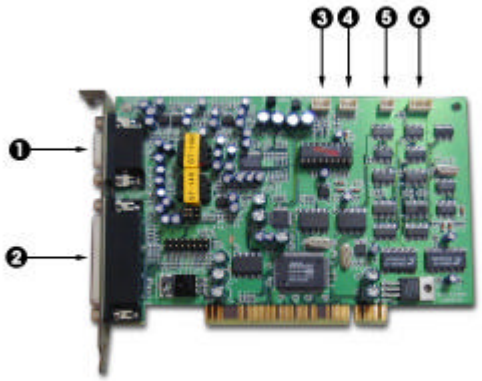
The product package contains the following items:

1. Hoontech SoundTrack Audio DSP24 MK II board
2. Digital I/O board(XG DB I)
3. 4*4 pin S/PDIF I/O Cable connecting Audio DSP24 MK II and XG DB I
4. 2*2 pin CD-ROM drive digital output wire cable
5. 4*3 pin CD-ROM drive Analog output wire cable
6. 10-pin flat cable for the Digital Audio
7. Joystick/MIDI port (optional)
8. Driver & Installation CD
9. English Manual

SoundTrack Audio DSP24 MK II Specification

- Hard disk recording system for PC
- PCI 2.1 Interface with busmastering board and rack-mountable boxes for external use
- 24-bit resolution audio format support
- Sampling rates up to 96Khz
- 10 input and 10 output-channels in total
  Up to 10CH 96Khz 24-bit Digital or Analog Ins,
  Up to 10CH 96Khz 24-bit Digital or Analog Outs
- 20 channel mixer with 36 bit internal resolution
- Up to 4 Audio DSP24 MK II
- Simultaneous recording and playback of 16 channels up to 24-bit / 96Khz
- 2 channels digital in/out
  (Optical, Coaxial, AES/EBU I/O using the digital I/O board and CD digital In)
- Additional analog monitor out 16-bit / 48Khz
- Internal CD In, Line In, Line Out with AC97 Codec
- Sampling Rates : 33Khz, 44.1Khz, 48Khz, 88.2Khz, 96Khz
- Converter Resolution : 16-bit, 20-bit, 24-bit
- Output DATA : 24-bit
- MPU-401 compatible MIDI interface up to 32CH(optional)
- Joystick port(optional)
- Compatible with SoundTrack Digital Audio
- Windows™ 95/98, Windows™ NT4

Diagram of the Audio DSP24 MK II



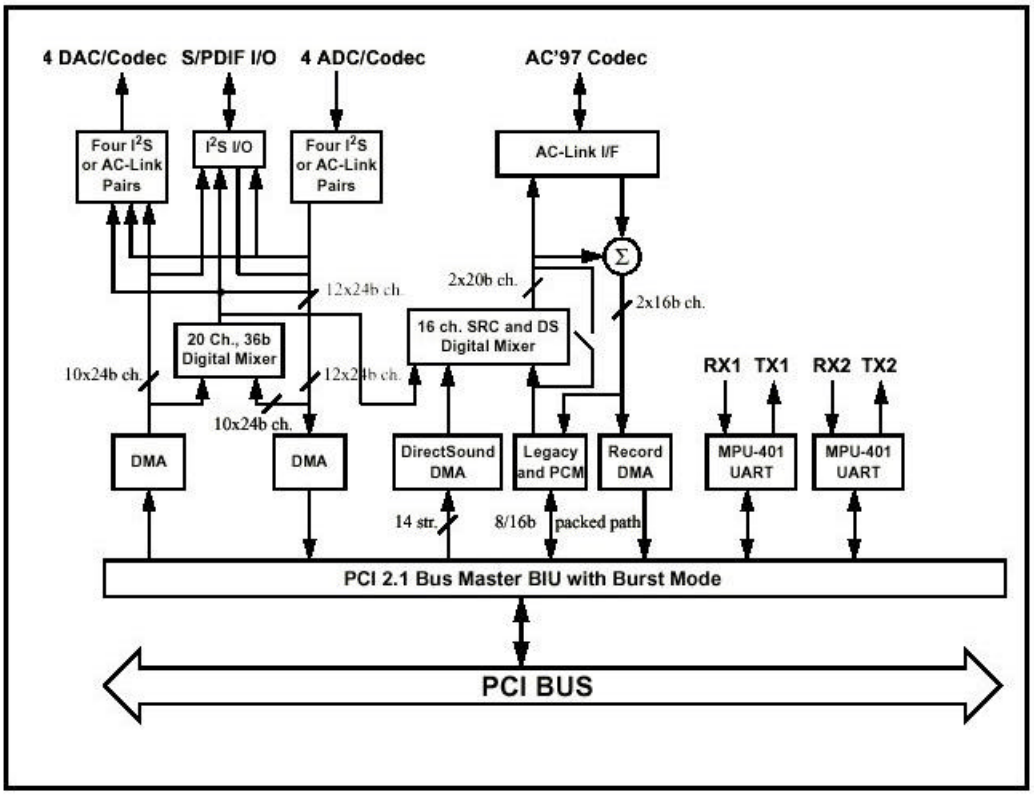
① 15pin D_SUB connector : Connect to included cable
② 44pin D_SUB connector : Connect to external boxes
③ CD-In : Connect the analog output from the CD-ROM drive. Please use the CD digital input connector if you have CD-ROM drive support digital output.
④ AUX : Connect with the analog output from the TV or other analog sources which can be controlled by Internal Mixer.
⑤ CD digital Input : Connect the digital output from the CD-ROM drive. XG DB I also offer this connector.
⑥ Digital I/O : Connect to Digital Amplifier or External (rack-mountable) boxes. Connecting cables are optional.

Input Cable

① Balance input XLR : 1
② Balance input XLR 2
③ Balance output XLR 1
④ Balance output XLR 2
⑤ Lineout & Wave 1/2 Out
⑥ D_SUB

* When the S/PDIF connector is occupied, CD-digital in connector will not work or vice-versa.

Block-Diagram of the Audio DSP24 MK II



Above block diagram shows the signal flow of the SoundTrack Audio DSP24 MK II. AC'97 Codec is connected with the MIC In, Line-In, Line-out, AUX, and CD-In and it can be controlled by the Internal Mixer.

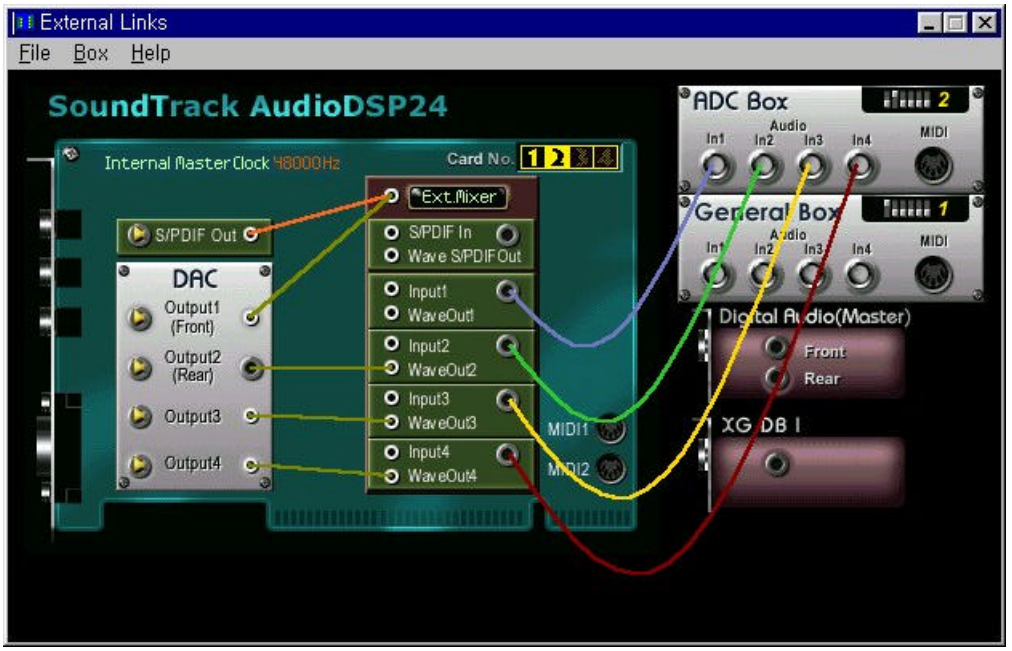
S/PDIF I/O is connected with the digital I/O board(XG DB I) by the S/PDIF connecor from the "External Links".
Setting the S/PDIF Master Clock from the 'Hardware Settings', Audio DSP24 MK II is synchronized by the external S/PDIF frequency rates. If there is no external signals, the frequency rate would be set as 44.1khz.

Remarks) All the other products built-in the same chipset like the Audio-DSP24 doesn't offer this function. Hence, when stopping the Audio CD playback, the noise will occur.

4 DAC, 4 ADC are for the external boxes through the digital I/O connector.

Connection between Audio DSP24MK II and Rack-mountable boxes

Audio DSP24 MK II can be connected with the all SoundTrack Box series using the 44*44 pin D-Sub cable as well as rack-mountable ADC III/DAC III. To ensure that audio is not compromised by the computer's internal noise, all the boxes was designed as external type or rack-mountable chassis. The connection options for the Audio DSP24 MK II are numerous as well as all of high-quality and in order to configure the boxes, proper settings must be done in the 'External Links'.



Driver & Program Installation

1. Driver Installation
2. Program Installation

1. SoundTrack Audio DSP24MK II driver installation

SoundTrack Audio DSP24 MK II comes with driver for Windows 95(OSR2) and Windows 98. The guide was written Windows 98 as standard.

When the SoundTrack Audio DSP24MK II is installed, Windows98 recognizes the card as a new hardware component and displays the following screen.

Click **next.**

Select *Search for the best driver for your device and click Next.*

Enter the path <CD\Sound\dsp24\driver and Click **Next.**

You could also use the mouse to select the path for the best driver for the card by clicking Browse..

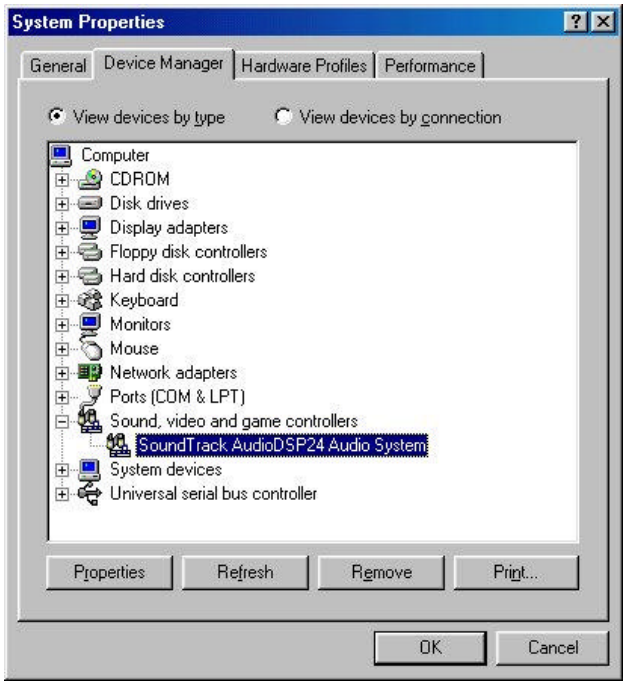
You should also click **Next** when this screen is reached.

To complete the installation click **Finish.**

Windows now installs the driver for you, documenting the process with several install screens. At this point nothing else should occur. If during this process you are prompted to do something and you are unsure how to proceed, it is usually best to just press the Enter key.

Driver is installed - this is what it looks like.

After a successful installation of the driver, you should verify that all systems are going with your Windows 9x system. In the Device Manager you get an overview of the installed and recognized hardware components on your computer. The Device Manager is found in the Control Panel under system.

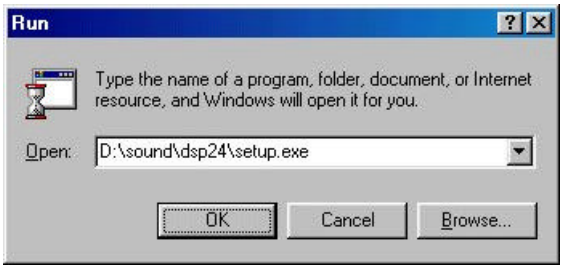


2. SoundTrack Audio DSP24 MK II Program installation

After the driver has been successfully installed, the setup for the program should be done.

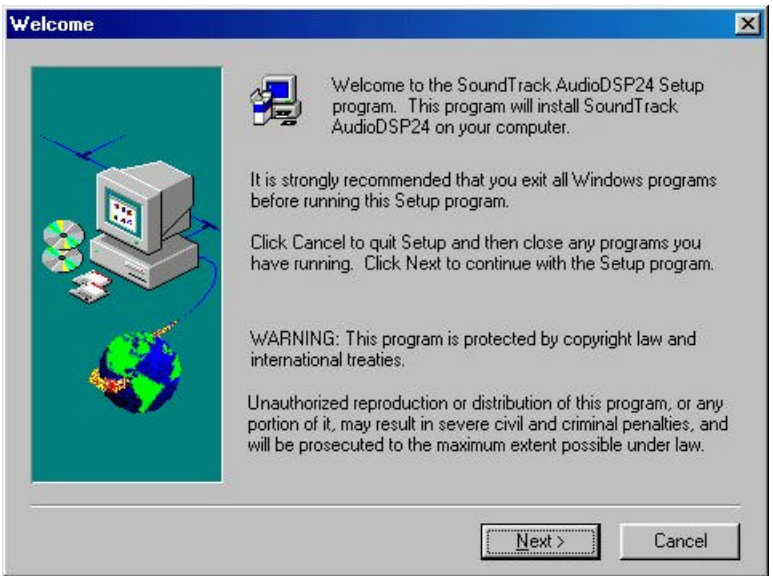
① Insert the installation CD to the CD-ROM drive.

② Run D:\SOUND\DSP24\SETUP.EXE.

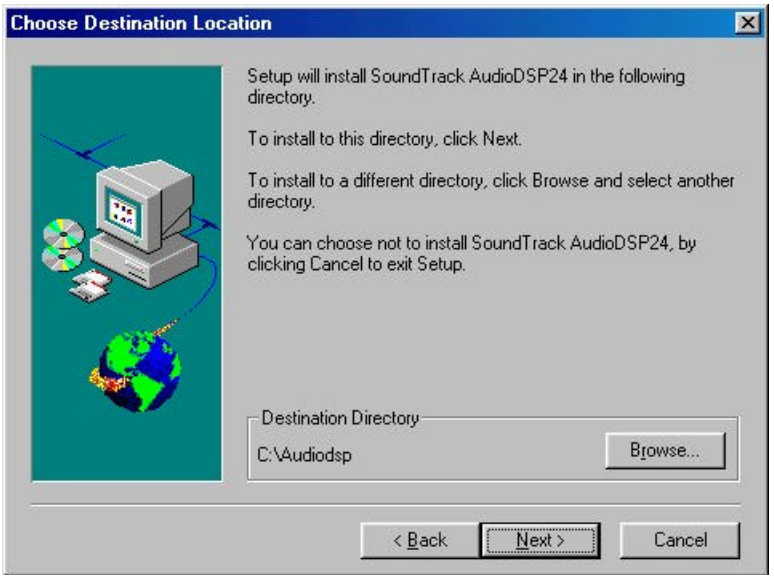


③ Preparing the installation of the SoundTrack Audio DSP24 MK II Program.

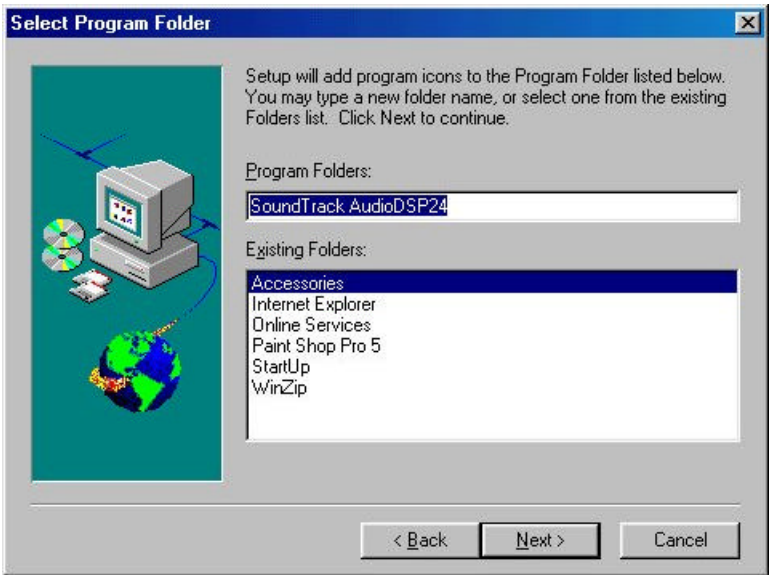
④ Click **Next.**



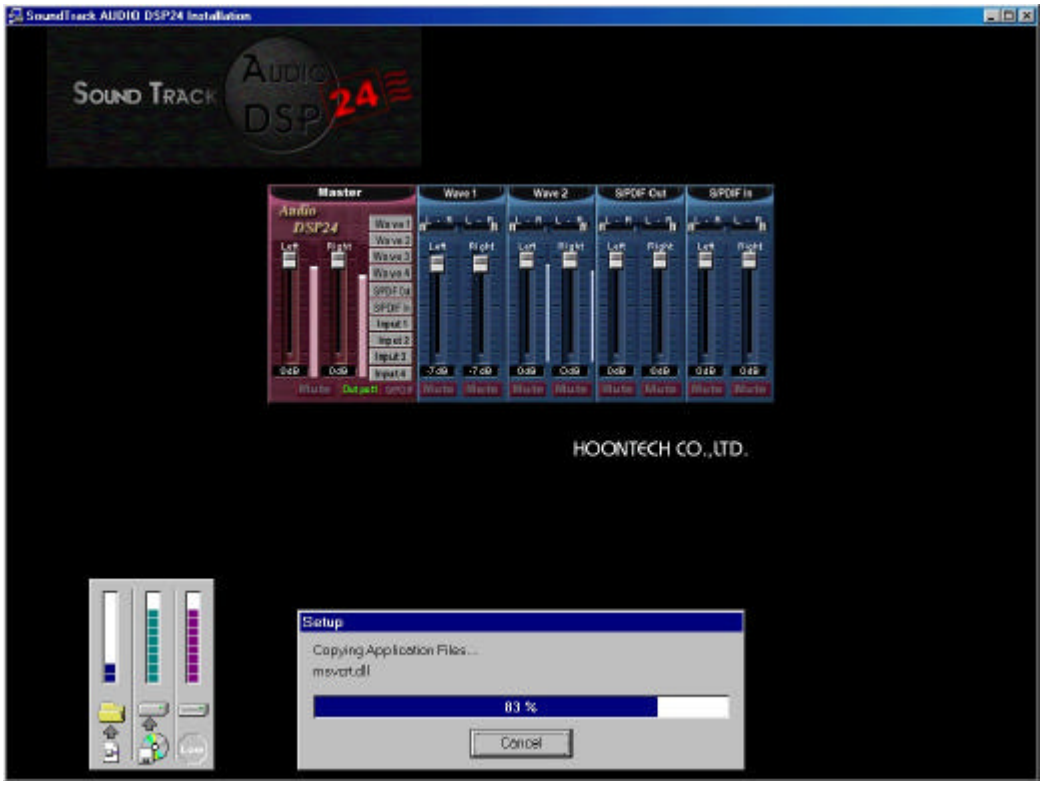
⑤ Choose the destination Directory to install.



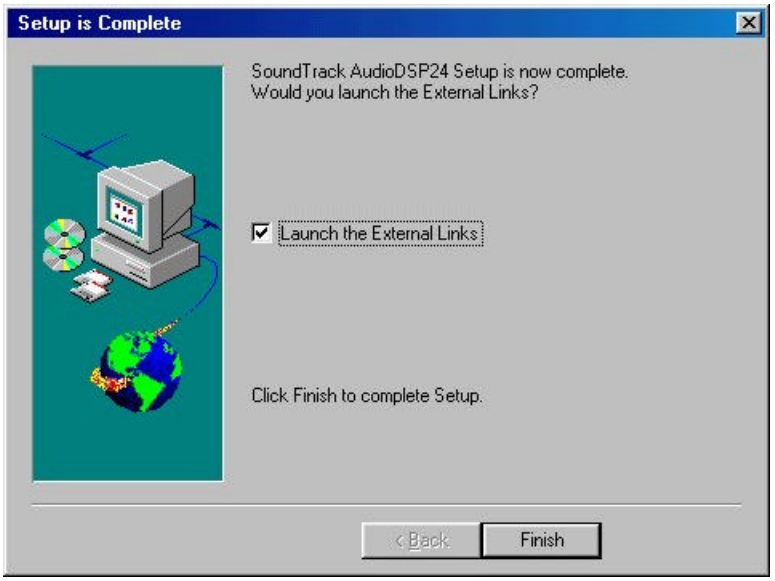
⑥ Type the Program folder name and click Next to continue.



⑦ Installing the SoundTrack Audio DSP24MK II program.



⑧ Complete the program installation. You don't have to reboot the system.

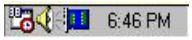


Checking the 'Launch the External Links', loads the External Links like this picture.

External Links

External Links make it easy to control the input signals from the external devices or Audio DSP24 MK II. And it is the most important program of SoundTrack Audio DSP24 MK II.
You should comprehend this program correctly in order to use the SoundTrack Audio DSP24 MK II perfectly.

1. External Links



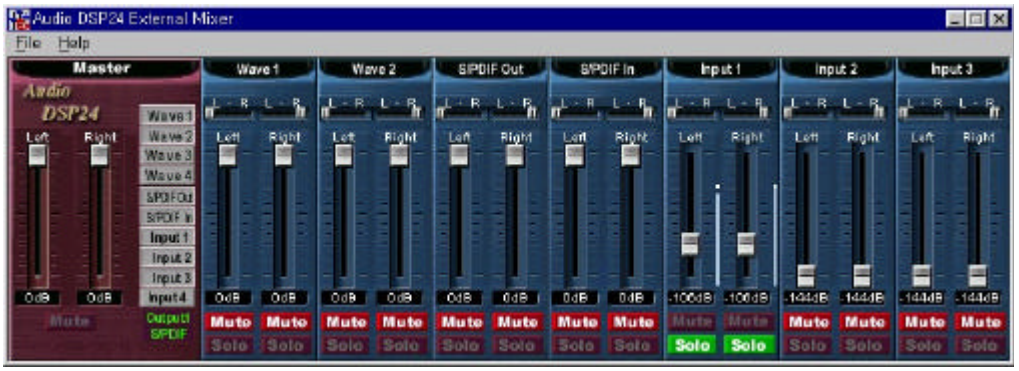
↑

The program 'External Links' is the command center of the card. It loads itself into the task-bar of the windows. Clicking the right button of the mouse, you can see the following menu.

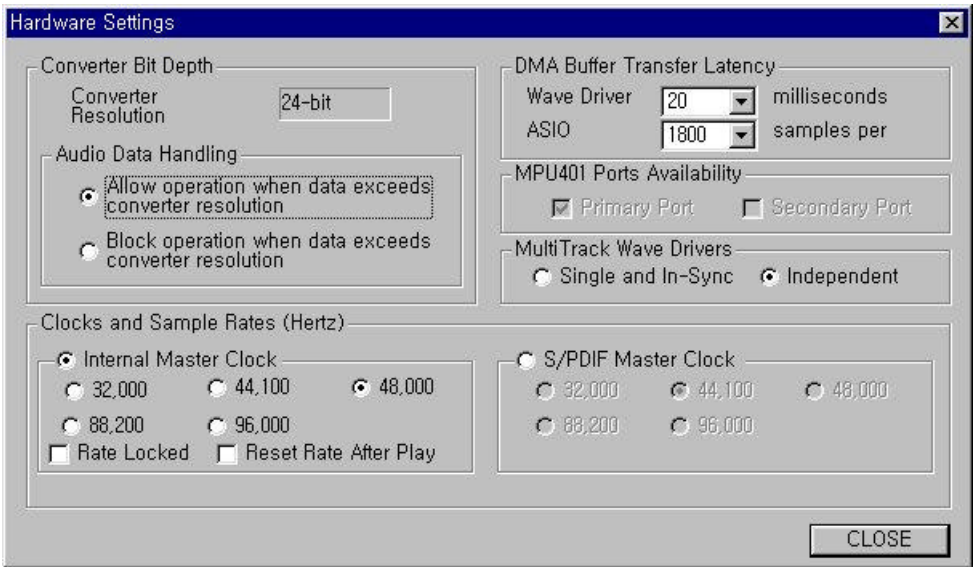
· Checking the 'Open External Links' loads the External Links.

· Checking the 'Call Internal Mixer' loads the Internal Mixer.

· Checking the 'Call External Mixer' loads the External Mixer according to the card NO.



· Hardware Setting : You can setup the Audio DSP24MK II Card.



Hardware Settings deals with the sample rate which you use to operate the Audio DSP24 MK II. This is very important point because the card can be synchronized from an external devices or set its own rate(internal) and impose this rate on other devices. You can choose between sample rates of 32Khz and 96Khz with the Digital amplifiers.

Internal Master Clock displays the internal frequency rate of the "Audio DSP24 MK II" according to the external boxes, digital amplifier and brackets. Namely, when you output wave file with 44.1Khz, you should set the Internal Master Clock as 44.1khz. For the 96Khz MK II-bit hard recording or output, set the Internal Master Clock as 96Khz.

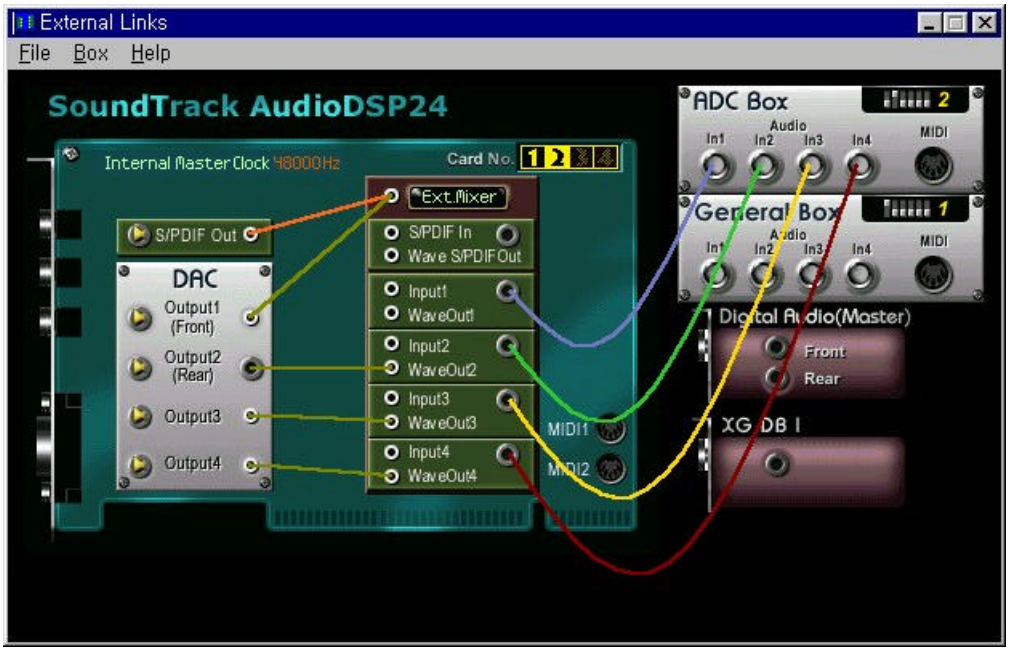
S/PDIF Master Clock is synchronized by the external frequency rate of the digital devices and allow to use the "Audio DSP24 MK II". In the case of accepting the digital

output from the CD-ROM drive, Audio DSP24 MK II works at 44.1khz.
Checking the 'Rate Locked' support marked frequency rate only. And checking the 'Reset Rate After Play' mode change the frequency rate according the frequency rate of the player and automatically back to marked frequency rate.

2. Introduction of External Links

User-friendly 'External Links' is core of the Audio DSP24 MK II that allows you to control the card easily in a quick time. External Links or routing of the Audio DSP24 MK II is basically easy to comprehend - mostly it depends a little on the past knowledge with the SoundTrack Digital Audio card. The intuitive Signal routing is the most important and interesting parts of the Audio DSP24 MK II program. This is where you can set which signal you want to hear on the outputs and whether a signal should be heard through a mixer attached to a card or not. All signals are always assigned to the 'Ext.Mixer'

Usually, an audio signal or several signals are initially played by a specific audio program. This is carried out by the Windows drivers which are called Waveout 1,2,3,4 and S/PDIF out. Therefore, you can set it so that a signal being played by a program on Waveout 1 is heard through output 1.



You can also route an input signal (not a signal from a Waveout driver) directly to an output. This make sense if you wanted to record using your audio sequencer, for example, and at the same time hear the live input signal.

① Ext.Mixer : Loads the external mixer which allows to control the Input1 ~4, Wave Out 1 ~4, S/PDIF In, Wave S/PDIF Out in the External mixer.
② Card No. : Select the Audio DSP24MK II what you want to use.

Up to 4 Audio DSP24 MK II can be installed and operated together in a system using

the single IRQ per card without any internal connection among the cards. For the proper operation, each card should be set as same Master Clock.

③ Internal Master Clock : Display the current Internal Master Clock.

④ S/PDIF Master Clock : Display the current S/PDIF Master Clock.
(XG DB I, Digital Audio card, CD digital In)

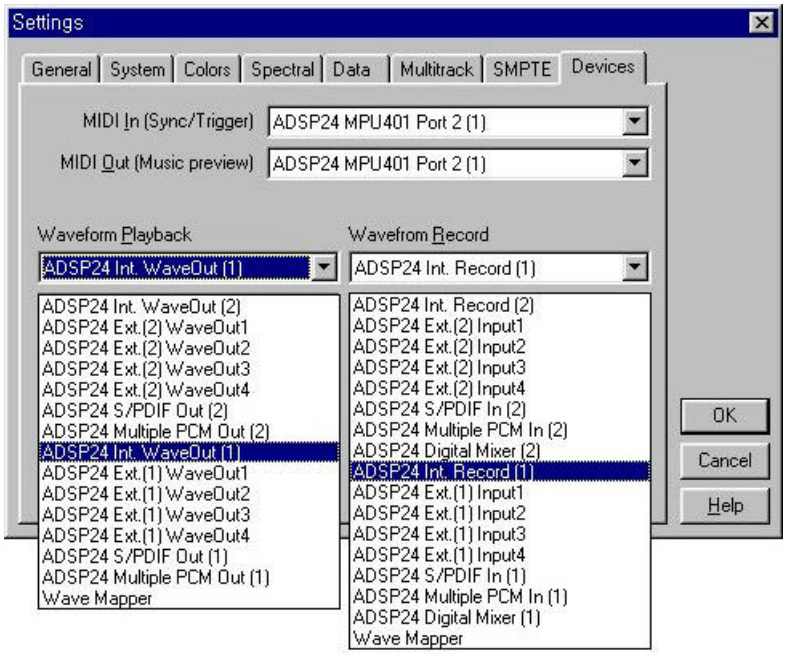
⑤ Output1(Front) : Output to the front speakers.
Output2(Rear) : Output to rear speakers. Real 4CH outputs could be realized by the ST Digital Audio.
Output3 : Output to the 'Out3' of the DAC box.
Output4 : Output to the 'Out4' of the DAC box.

※ When the DAC Box was connected with the Audio DSP24 MK II, it is possible to output from 'OUT1' to 'OUT4' of the DAC box. And you can choose between
sample rates of 32Khz and 96Khz with DI 2000 or Digital Amplifiers.

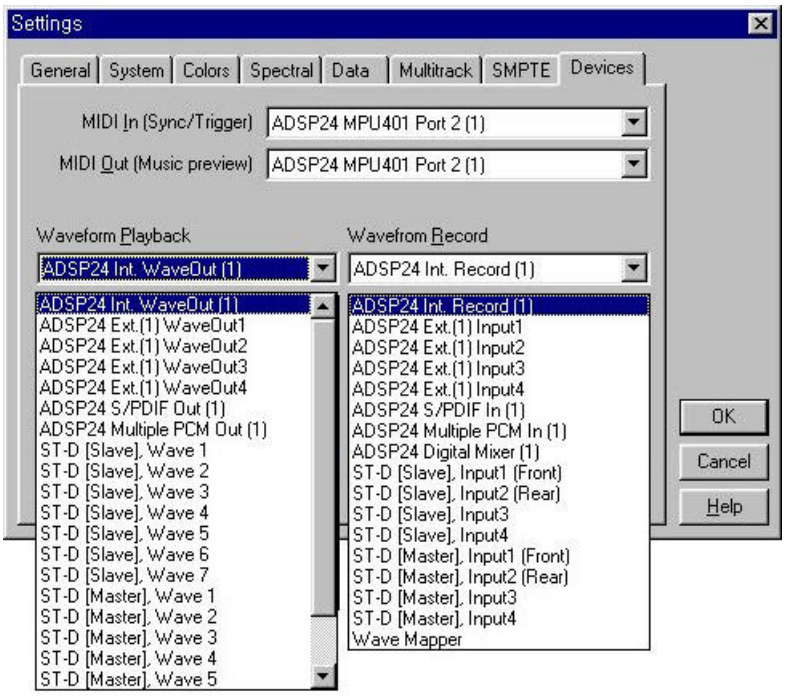
⑥ S/PDIF In : Accept the S/PDIF digital signal from the Digital I/O board (XG DB I) or CD digital output.

⑦ S/PDIF Out : Use the Output device as 'Auid DSP 24 MK II S/PDIF out'.

⑧ Input1~4 : Accept the digital signal from the External devices like the external boxes according to the input No. In the case of Input1, it is possible to accept the Front signal from the SoundTrack Digital Audio Card.



③ WaveOut1 ~4 : Use the Output device as 'ADSP24MK II Ext. WaveOut 1 ~4'.

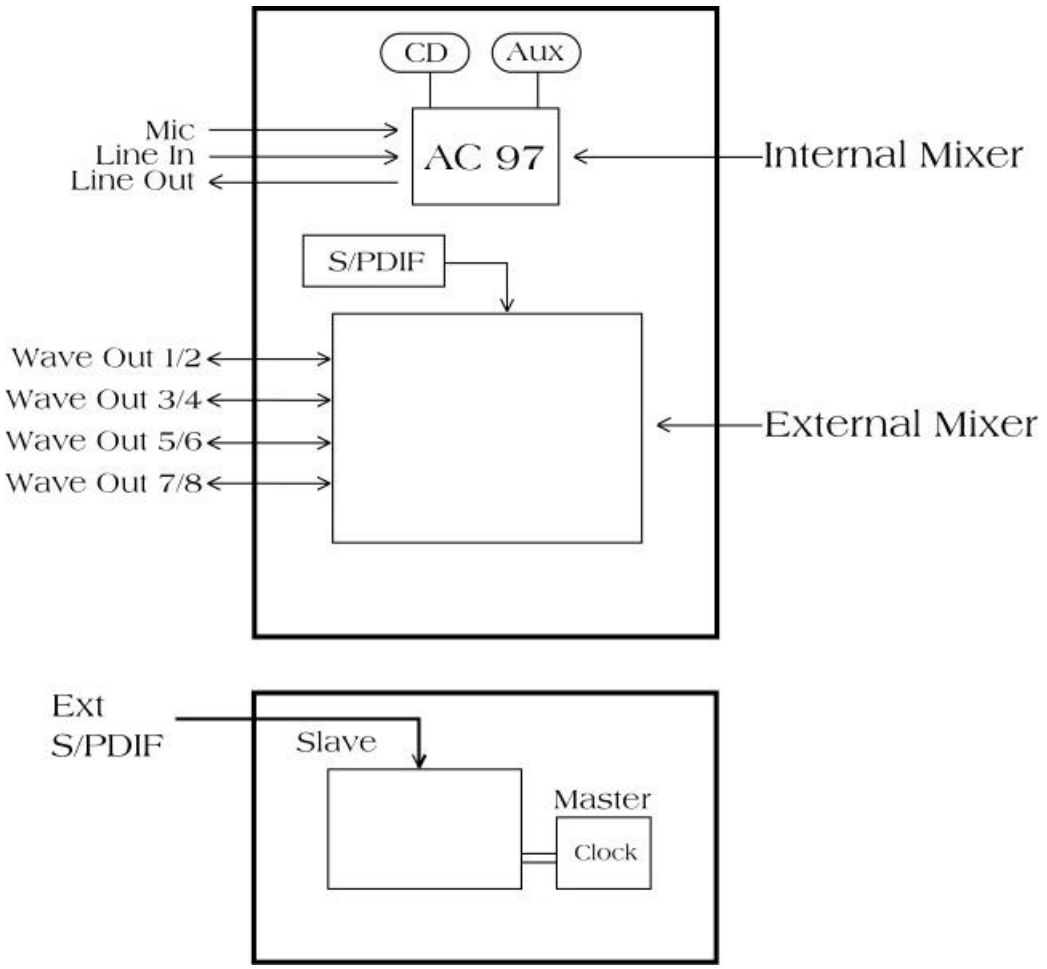


DSP24 MK II Int WaveOut is for the AC'97 codec of the Audio **DSP24 MK II** line-out. **DSP24 MK II Int Record** is for the AC'97 codec of the Audio **DSP24 MK II MIC** In, line-in, **AUX** in and **CD**-audio In.

Mixer

1. Internal Mixer
2. External Mixer

1. Diagram of the Internal Mixer & External Mixer



* As showed above block-diagram, AC97 CODEC controls the In/Out signals in the Internal Mixer. Volume control of the Line-Out, MID, Line-In, CD-IN and AUX input from the external devices are carried by Internal Mixer.

* External Mixer controls the WAVE OUT 1~4, inputs from the external boxes and S/PDIF I/O signals.

* Internal Clock displays the internal frequency and S/PDIF Clock display the external signal frequency.

2. Internal Mixer

◎ Master Mixer

① Control the balance of the Left/Right volume.

② Control master volume.

③ Mute the whole sound.

④ Execute the proper mixer.

◎ Wave Mixer

① Control the balance of the Left/Right volume.

② Control the wave volume.

③ Mute the wave sound.

◎ Record Mixer

① Control the record level from the inputs.

② Control the balance of the Left/Right input.

③ Control the input level.

◎ Microphone Mixer

① Output to microphone with +20dB.

② Control the output level of microphone.

③ Mute the microphone sound.

◎ Line-IN Mixer

① Control the balance of the Left/Right volume.

② Control the volume.

③ Mute the sound.

◎ CD-IN Mixer

① Control the balance of the Left/Right volume.

② Control the volume level.

③ Mute the CD-Audio sound.

◎ Aux Mixer

① Control the balance of the Left/Right volume.

② Control the volume level.

③ Mute the sound.

ⓞ MIDI Mixer

① Control the balance of the Left/Right volume.

② Control the volume level.

③ Mute the MIDI sound.

* In the case of Internal Mixer, to use more than two card, the card number what you want to use should be checked in the option menu. But the External Mixer offer the each mixer windows according to the Card No.

2. External Mixer

◎ Master Mixer

① Control the left volume level.

② Control the right volume level.

③ Mute the whole sound.

④ Execute the proper mixer.

⑤ Display the current setting of the 'External Links'. When the Output1 and S/PDIF item is off, Volume control will not work.

◎ Wave Mixer (1-4)

① Control the balance of the left volume.

② Control the balance of the right volume.

③ Control the Left volume level.

④ Control the Right volume level.

⑤ Mute the wave sound.

◎ S/PDIF Out Mixer

① Control the balance of the left volume.

② Control the balance of the right volume.

③ Control the left volume level.

④ Control the right volume level.

⑤ Mute the sound.

◎ S/PDIF IN Mixer

① Control the balance of the left volume.

② Control the balance of the right volume.

③ Control the left volume level.

④ Control the right volume level.

⑤ Mute the sound.

◎ INPUT Mixer (1-4)

① Control balance on the left volume.

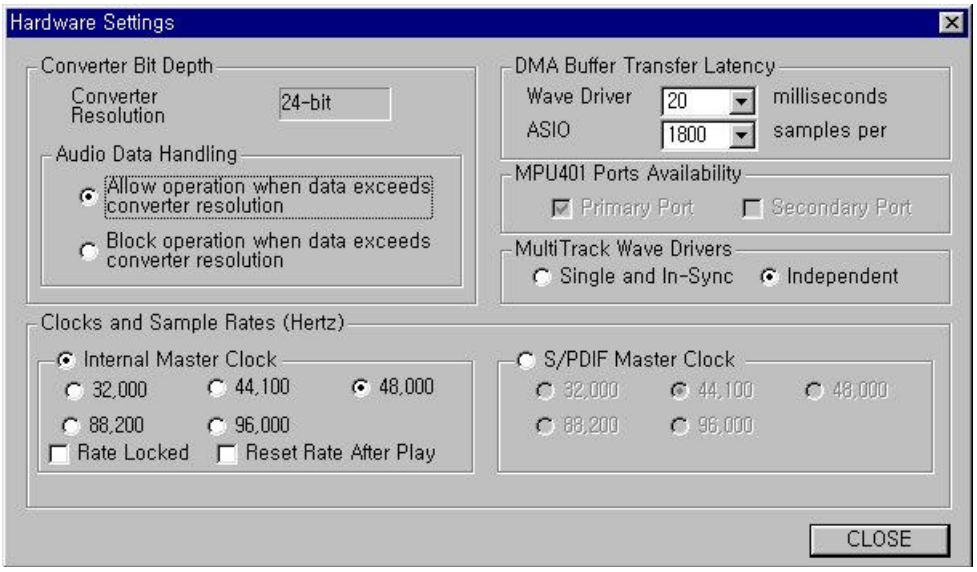
② Control balance on the right volume.

③ Control the left volume.

④ Control the right volume..

⑤ Mute the whole sound.

Ⅳ. Hardware Setting



Audio Data Handling

This item allow or block the operation when the data exceeds the converter resolution.

Clock and Sample Rates, S/PDIF Sample Rate

Hardware Settings deals with the sample rate which you use to operate the Audio DSP24 MK II. This is very important point because the card can be synchronized from an external devices or set its own rate(internal) and impose this rate on other devices. You can choose between sample rates of 32Khz and 96Khz with the Digital amplifiers.

DMA Buffer Transfer Latency

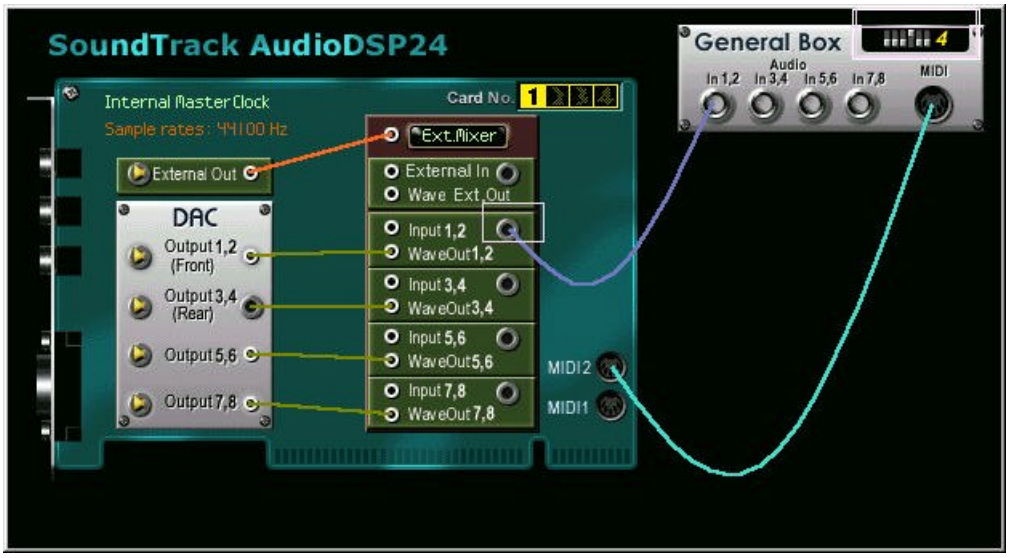
This is where you can determine how fast an application like Soft Synthesizer can access the Windows driver. You would think the faster the better but settings are system-dependent and this is shown - in a slow computer - by audible deviations in recordings and playback. If you notice so-called DropOuts during playback of audio tracks with your hard disk recording program, then you must increase the DMA buffer transfer latency. In this situation, it is also important to tune your application. Many programs provide you with setting options for an audio buffer.

V. Apply on External Links

You can recording 2ch mono input and 2ch output on SoundTrack Audio DSP24 MK II without external box..

You can recording the signal from included cable under Balanced signal. And monitoring this signal from Wave Device 1/2 immediately on stereo out of this cable.

When you want recording, you must setup the box number to 4 on EL program.



And this connector can input until 2 mono channel

.

VI. Connecting with devices & external boxes

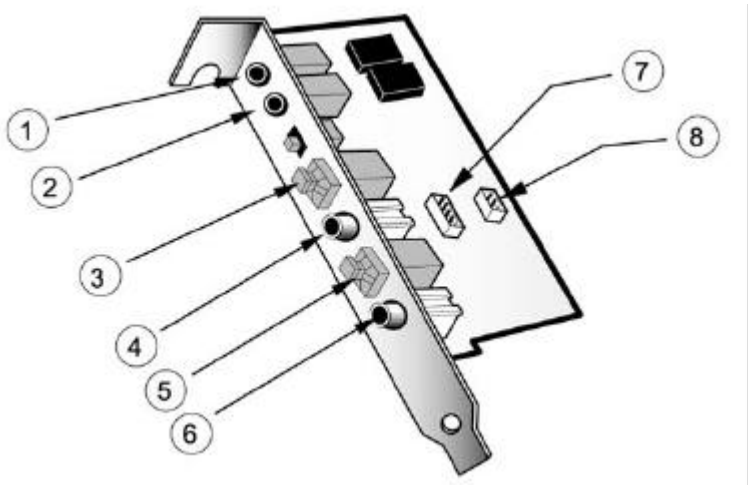
SoundTrack Audio DSP24 MK II can be connected with the Digital Audio, External box as well
as Digital I/O board(XG DB I) bundled just by linking the line in the External Links.
It is possible to connect the two items simultaneously among the Digital Audio,
Digital I/O board and external boxes.

1. **Introduction of the Digital I/O board(XG DB-I)**
2. **Connection with XG DB-I**
3. **Connection with Digital Audio**
4. **Connection with external boxes**

1. Introduction of the XG DB-I

Digital I/O board(XG DB I) enables the CD digital In, Optical IN/OUT, Coaxial In/Out & AES/EBU In/Out for the SoundTrack Audio DSP24 MK II.
Digital I/O board bundled with the Audio DSP24 MK II which supports Digital recording and Digital Output for the Digital equipments having Coaxial In/Out, Optical In/Out or AES/EBU In/Out.
It has a 2-pin socket connecting with S/PDIF output from the CD-ROM drive and provides a dynamic CD audio sound without noise and offers automatic digital signal selection function;
The priority of the digital signals are; AES/EBU => Optical or Coaxial => CD Digital.

Specification
- Digital Input (Coaxial, Optical, AES/EBU)
- Digital Out (Coaxial, Optical, AES/EBU)
- CD Digital In



① AES/EBU IN/OUT
Connects to the AES/EBU connector of the external digital devices with the proper cable.

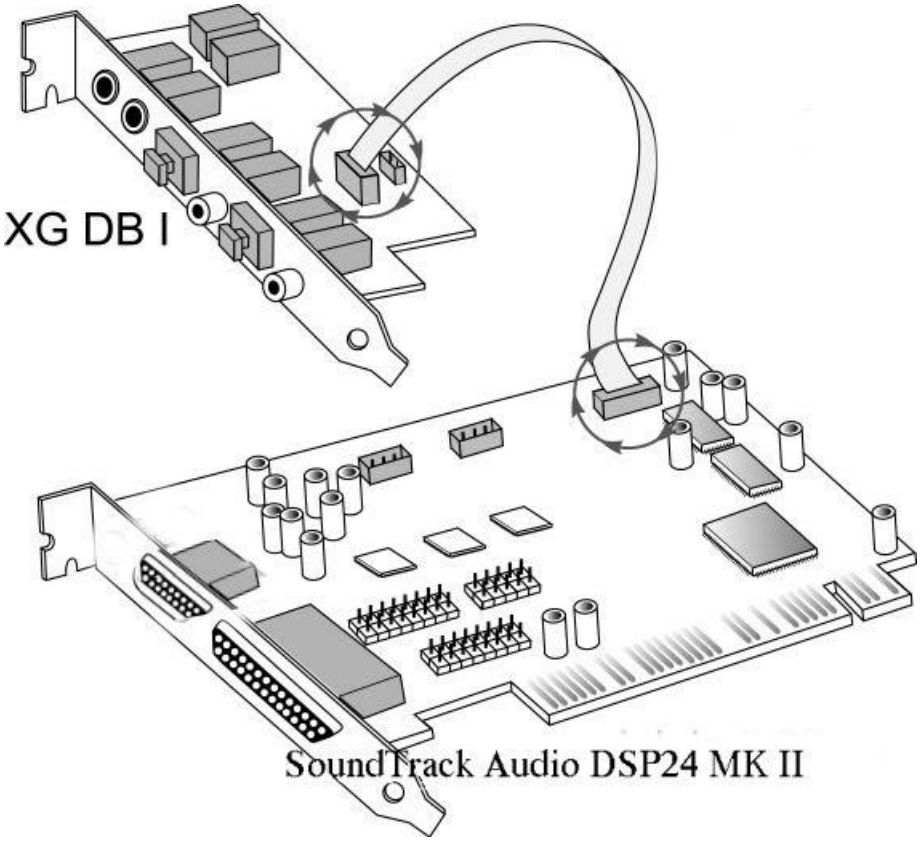
② COAXIAL-IN/OUT
Connects to the RCA connector of the external digital devices.

③ OPTICAL-IN/OUT
Connects to the Optical connector of the external digital devices with the Optical cable.

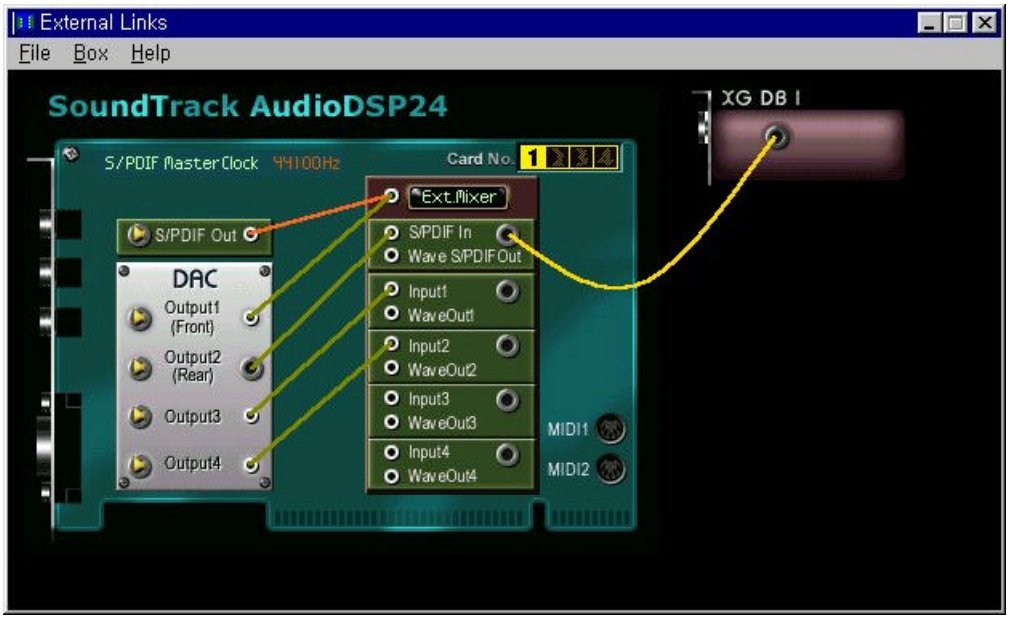
④ 4-pin Connecter
Using the provided cable, plug one end in the Digital XG, and another into to this.

⑤ CD digital IN
Connects the 2-pin wire cable from the digital-output of the CD-ROM drive.

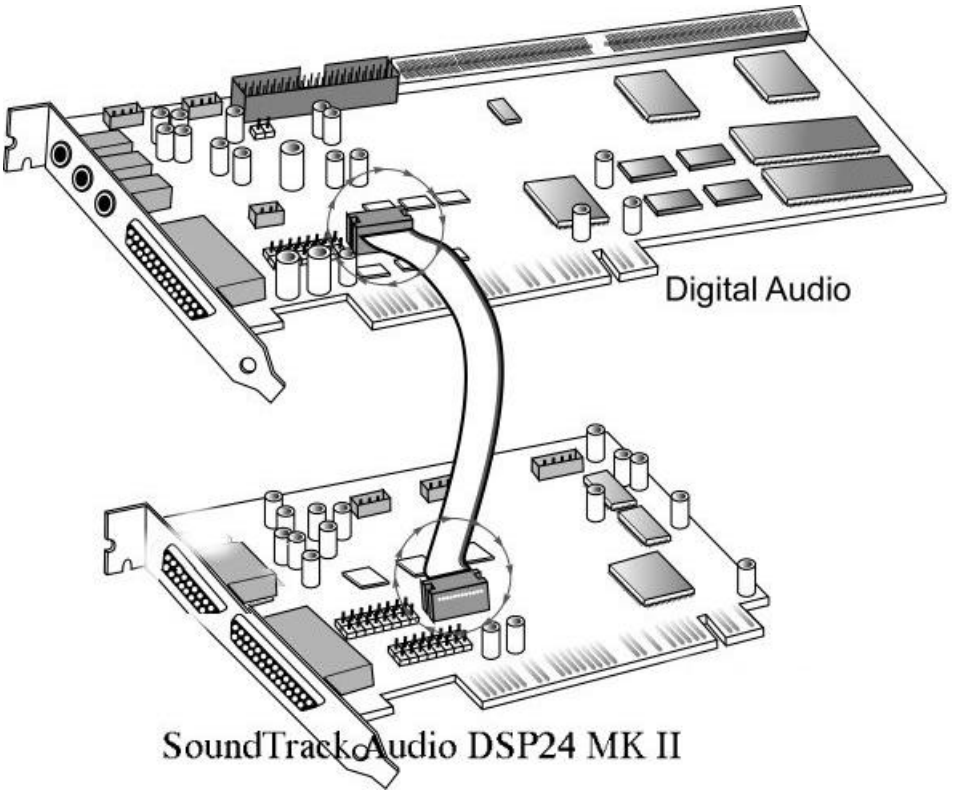
2. With XG DB-I



· Setting the External Links

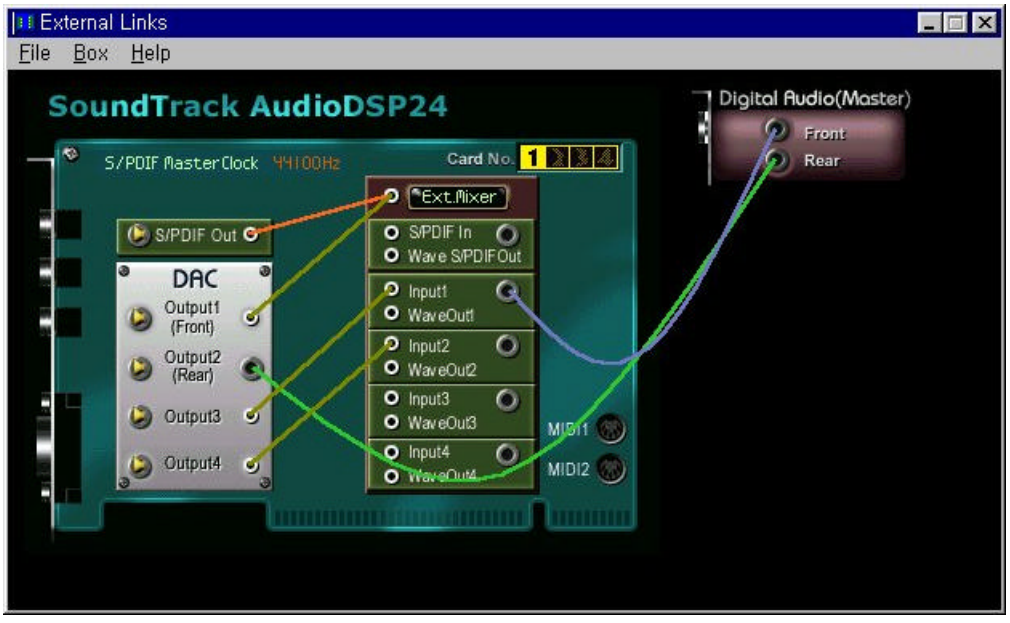


2. With the Digital Audio

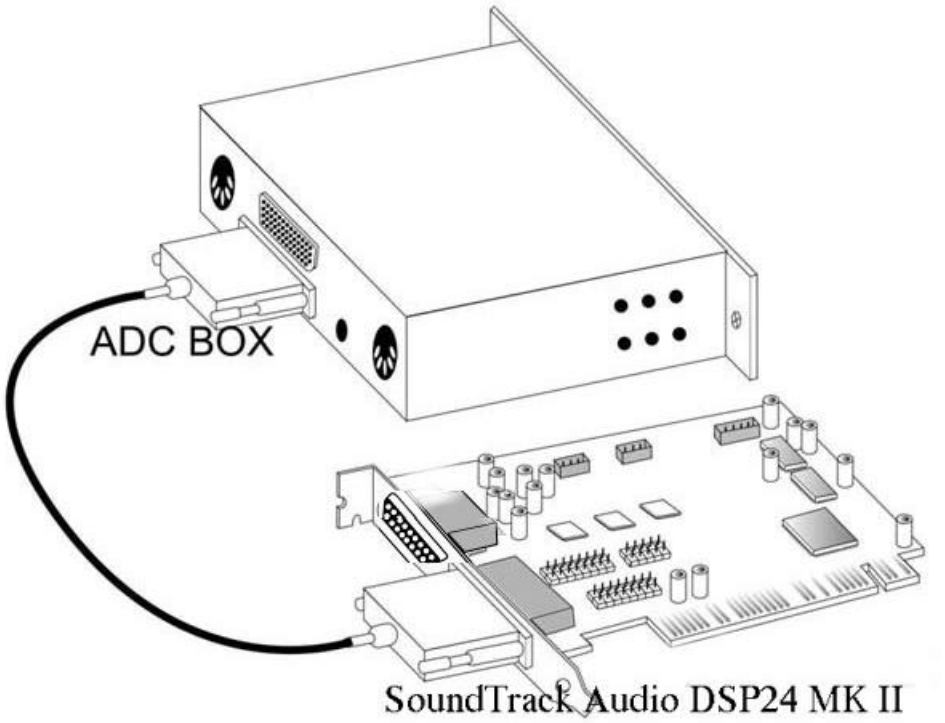


※Allign red line of the flat cable to the triangle mark of the board.

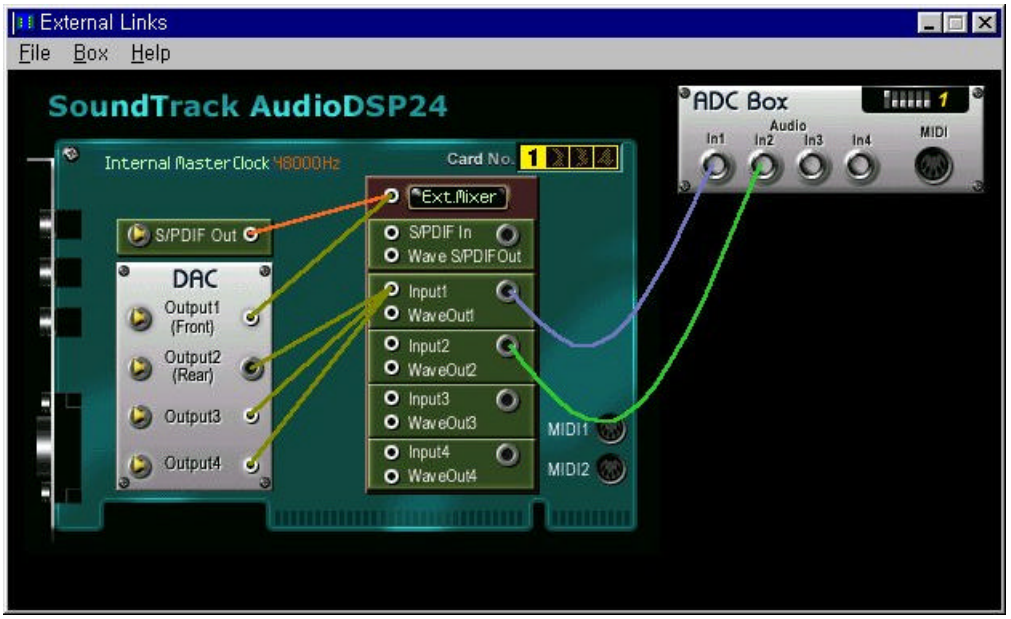
· Setting the External Link



3. ADC Box 연결



Setting the External Links



FCC

PRODUCT NAME: Sound Card

MODEL NUMBER: ST Audio DSP24 MK II

FCC RULES: TESTED TO COMPLY WITH FCC PART 15, CLASS B

OPERATING ENVIRONMENT: FOR HOME OR OFFICE USE

FCC COMPLLANCE STATEMENT:

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.

INFORMATION TO USER:

This equipment has been tested and found to comply with the limits of 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, may cause harmful interference to radio 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:

1. *Reorient / Relocate the receiving antenna.*
2. *Increase the separation between the equipment and receiver.*
3. *Connect the equipment into an outlet on a circuit difference from that to which the receiver is connected.*
4. *Consult the dealer or an experienced radio/TV technician for help.*

CAUTION: Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment

THE PARTY RESPONSIBLE FOR PRODUCT COMPLIANCE
HOONTECH CO.,LTD
332, Songnae-dong, Sosa-gu, Puchon, Korea
TELEPHONE NO : (032)611-1998

For E.C Countries

CE

PRODUCT NAME: Sound Card

MODEL NUMBER: ST Audio DSP24 MK II

The product complies with EC directives :
-EMC 89/336"

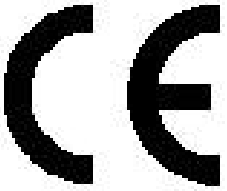
Dieses instrument entspricht folgenden EG-Richtlinien :
-EMC 89/336"

Cet instrument est conforme aux directives CE suivantes:
-EMC 89/336"

Questo prodotto è conforme alle seguenti direttive CEE :
-EMC 89/336"

Dit instrument beantwoordt aan de volgende EG-richtlijnen :
-EMC 89/336"

Este producto cumple con las siguientes de la CE :
-EMC 89/336"



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