WinBook®
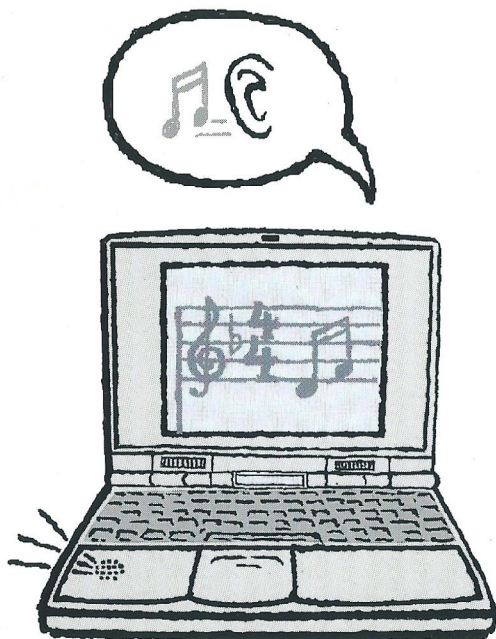**COMPUTER CORPORATION**
a subsidiary of Micro Electronics, Inc.

Audio Hardware Installation Guide

for WinBook XP notebook computers

WinBook XP

WinBook XP
Audio System

Installation Guide

FCC Compliance Statement

The audio board supplied with your system has been certified, when installed in the WinBook XP, to meet or exceed the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. Operation is subject to the following conditions:

This equipment may not cause harmful interference in a residential installation. This equipment must accept any interference received, including interference that may cause undesired operation. These limits are designed to provide reasonable protection against harmful interference in residential installations. 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 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 of the following measures:

- Reorient or relocate the receiving antenna.
- Move the equipment away from the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- If necessary, the user should consult the dealer or an experienced radio/television technician for help.

Note: Only equipment certified to comply with Class B (computer input/output devices, terminals, printers, etc.) should be attached to this equipment and such equipment must have shielded interface cables. Any changes or modifications to the equipment by the user not expressly approved by the manufacturer could void the user's authority to operate this equipment.

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

WinBook XP Audio System

Technical Support Telephone No.: _____
(This number is in the "read-me-first" document which comes with your package.)

Chapter 1: Introduction

1.1 This Manual

This manual describes how to install and setup the WinBook XP Audio System hardware and software. The aim of this book is to help both beginners and experienced users set up and run the audio system as quickly as possible. To this end, the manual is arranged as follows:

To get you started, essential information is highlighted. For most, this will be enough. If you choose to modify the setup, carefully read all of the sections of this manual that apply.

If you have a problem with your computer, first check the system manual. If your problem has to do with software, check the operating system manuals (e.g. MS-DOS, Windows, OS/2), or the manuals for the application software you're using. Chances are the problem is caused by something simple, and not the audio system.

1.2 Conventions

This manual uses the following text conventions:

- Words between angle brackets indicate key strokes.

  For example, <Enter>, means to press the Enter key on your keyboard.
- Words between quotation marks indicate text which appears on your screen.

  For example, "IRQ 5", refers to the text: "IRQ5" which appears on your screen.
- Quoted bold words indicate text which you should type when prompted.

  For example, "**a:\setup**", means that you should type in "a:\setup" at the prompt.

1.3   The WinBook XP Audio System

The WinBook XP Sound System was specifically designed for use with WinBook XP computer systems. The WinBook XP Audio System comes in two versions, monophonic and stereo. Both versions use the computer's built-in monophonic microphone and speaker to record and playback sounds. The computer also has a stereo line input jack and a stereo connection for external speakers or headphones. The stereo volume control adjusts the sound output.

The WinBook XP Audio System is SoundBlaster compatible so you can use it with a host of MS-DOS and Windows multimedia and entertainment applications. For MIDI support or a CD/ROM interface, you will need to purchase separate PCMCIA cards.

Your kit includes the software to get you up and running under Windows: the ESS audio Toolkit, which includes drivers and audio applications. These applications allow you to record, playback and embed sound "objects" in Windows applications documents such as spreadsheets, word-processor documents and presentation graphics. The applications must be compliant with the Microsoft OLE (Object Linking and Embedding) specifications. One nice feature of sound under Windows is that you can share these documents with embedded OLE sound objects with other users who have audio hardware, even if their hardware is not the same as yours. Likewise, you can play back OLE audio objects from documents supplied to you by other users. In addition, The ESS toolkit provides some simple Windows applications for managing and producing sound such as an alarm clock and talking calculator. These tools also include an audio editing system for creating custom sounds.

The ESS software allows you to play back Windows .WAV files (these are digital sound samples which are recorded in "Sampled" format, and .AUD files (these are digital sound samples which are recorded in an ESS compressed format).

1.4   References

If you are new to using sound in the Microsoft Windows environment, you may want to refer to the audio sections of your Windows User's Manual. You can also find helpful tips in the Windows on-line "Help".

Chapter 2: The WinBook XP Audio Kit

The audio kit contains hardware, software and documentation as follows:

- The audio board (printed circuit board)
- WinBook XP Audio System Installation Guide
- ESS MS-DOS Test software
- ESS Audio Toolkit software
- Audio Applications User's Guide

   Note: If you are missing any of these items, please contact the number written on the read-me-first document which you received with your computer.
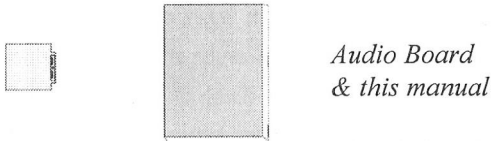
Audio Board
& this manual
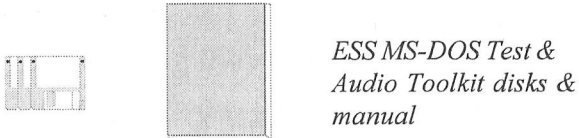
ESS MS-DOS Test &
Audio Toolkit disks &
manual

2.1   Hardware

The Audio hardware consists of a mono or stereo printed circuit board which allows you to record and playback mono or stereo sounds in MS-DOS and Windows.

WinBook XP Audio System

2.2   Software

The Audio software consists of three disks. One disk contains the ESS test software for MS-DOS. The other two disks contain the audio drivers for Windows and OS/2 as well as the audio applications and sample sound files.

2.3   Documentation

The documentation consists of two manuals:

- This manual - contains everything you need to get up and running quickly.
- The Audio Applications User's Guide - describes each of the audio features and their function.

Each manual covers a specific area. If you need help installing the audio board, this is the right book. If you want help with the ESS Toolkit, check that manual.

Chapter 3: Installing Hardware

Caution

Static electricity (sometimes referred to as ESD, Electro Static Discharge) can build up without your being aware of it. *Even a small discharge can damage sensitive components on the Audio Board or in the computer.*

Before you start, protect your audio board and your computer from static electricity damage during installation. You can do this by:

a. not wearing wool or synthetic fabrics which accumulate static

b. touching a grounded object (e.g. a metal water pipe) just before you start or standing on a concrete floor

c. wearing an anti-static wrist strap connected to a grounded object

d. working on an anti-static pad

e. keeping the audio board in its protective anti-static package until you are ready to install it

f. only touching the edges of the board

The best solution is to do all of the above.

Note: Anti-static straps, such as the 3M model 2209, may be purchased at computer supply stores.

3.1   Installing the Audio Board

Please read through all of these steps and look at the diagrams before you begin the installation process.

To install the audio board follow these steps.

1. Turn the WinBook off and disconnect it from all other devices (e.g. AC adapter, docking station).

Line in
Line out
Volume control
Audio access door
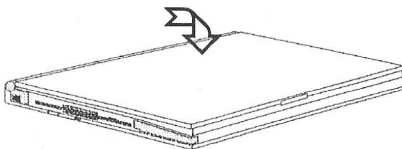
2. Close the lid and turn the computer upside down.
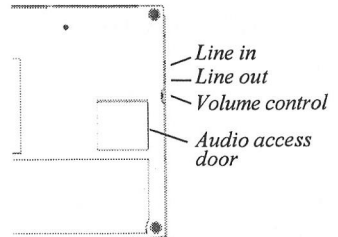
3. Locate the audio access door.

WinBook XP Audio System

Connectors
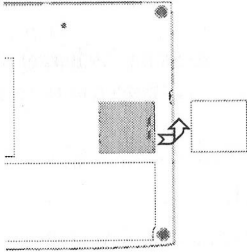
4. Remove the audio access door. You may need to pry it open with a flat-head screwdriver. *Be gentle - you will only need a small amount of force to loosen it.*
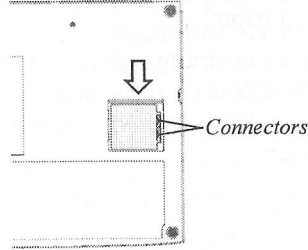
5. Carefully orient the audio board and install it. *Be careful not to touch any electrical components as you do so.*

   (Match the connectors on the underside of the board with the corresponding sockets.) You should hear a slight "click" to assure you the board is securely mounted in place.
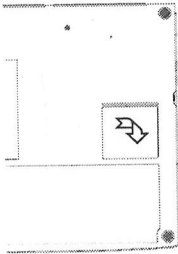
6. Replace and secure the audio access door.
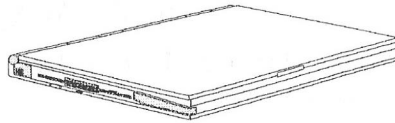
7. Turn your WinBook right-side up, reconnect it, and continue with the software setup.

3.2   WinBook XP System Configuration

Once the audio board is installed, you must configure your WinBook. This is done in the WinBook's Setup program:

1. Turn on the WinBook.

2. Press <Ctrl> <Alt> and <S> simultaneously to start the Setup program.

3. Use the <PgDn> key to go to the "Advanced Setup" screen.

4. Use the down arrow key to scroll to the "Internal Audio" field and make sure it is set to "Enable". Press < + > to change the setting.

5. Use the down arrow key to go to the line, "Audio IRQ". Make sure it is set to "IRQ 7". Press < + > to change the setting. Although most programs will run fine with the audio "IRQ" setting set to "IRQ 5", some older MS-DOS games may require this setting to be set to "IRQ 7". We have provided this option in the WinBook XP since "IRQ 7" is shared by LPT 1 (parallel port 1) and any peripherals you may have connected to this port such as a printer or a CD ROM drive. In these environments, you may have to select "IRQ 5" instead of "IRQ 7" as many of these devices cannot tolerate shared interrupts -- especially in the Windows environment. See section 5.5, under Troubleshooting for more this subject.

```
┌──────────────────────────────────────────────────────────────────┐
│              Phoenix SETUP Utility (Version 1.00)  01              │
│        (c) Phoenix Technologies Ltd. 1985, 1993    All Rights Reserved │
├──────────────────────────────────────────────────────────────────┤
│                                                                    │
│          * Advanced Setup *                           Page 3 of 3  │
│                                                                    │
│   Internal Audio :        Enabled                                  │
│   Audio IRQ:              IRQ 7                                     │
│   External Cache :        Disable                                  │
│   COM Port :              3F8                                      │
│   Internal Modem Port:    2F8                                      │
│   LPT :                   278                                      │
│   PS/2 Pointing Dev :     Enabled                                  │
│   HDD Block Mode :        Disable                                  │
│                                                                    │
│                                                                    │
├──────────────────────────────────────────────────────────────────┤
│  ┌──────┐ ┌──────┐ ┌──────┐ ┌──────┐ ┌──────┐ ┌──────┐ ┌──────┐  │
│  │ Esc  │ │      │ │      │ │      │ │  ↑↓  │ │ +/-  │ │PgUp/Dn│  │
│  │ Menu │ │      │ │      │ │      │ │ Field│ │ Value│ │ Page  │  │
│  └──────┘ └──────┘ └──────┘ └──────┘ └──────┘ └──────┘ └──────┘  │
└──────────────────────────────────────────────────────────────────┘
```

f. Use the <PgUp> key to go to the "Power Management" page.

g. Use the <down arrow> key to scroll to the "Internal Audio" field and disable the audio time-out. (This step is optional if you have the stereo kit.)

h. Press the <Esc> key to go back to the main menu.

i. Save your changes and exit the Setup program.

```
┌─────────────────────────────────────────────────────────────────────┐
│             Phoenix SETUP Utility (Version 1.00)  01                  │
│      (c) Phoenix Technologies Ltd. 1985, 1993    All Rights Reserved  │
├─────────────────────────────────────────────────────────────────────┤
│                                                        Page 2 of 3    │
│        * Power Management Setup *                                     │
│                                                                       │
│  Power Management:      Always        Auto Dim:           Enabled     │
│                                       CPU Clock Throttle:  Enabled     │
│  CPU Doze Timeout:      Enabled       Battery Low Suspend: Disable     │
│  Sleep Timeout:         02 Minutes    Modem Ring Resume:   Disable     │
│  Suspend Timeout:       Disabled                                      │
│  Suspend Data To:       RAM           Alarm Resume:        Disable     │
│  Hard Disk Timeout:     02 Minutes    Alarm Time:          00:00       │
│  Display Timeout:       02 Minutes                                    │
│  FDD Timeout:           02 Minutes                                    │
│  Modem Timeout:         60 seconds                                    │
│  Audio Timeout:         Disable                                       │
│                                                                       │
├────────┬──────┬──────┬──────┬──────────┬──────────┬──────────────────┤
│  Esc   │      │      │      │    ↑↓     │   +/-    │    PgUp/Dn        │
│  Menu  │      │      │      │   Field   │   Value  │    Page           │
└────────┴──────┴──────┴──────┴──────────┴──────────┴──────────────────┘
```

You are now ready to begin using the Audio Board in MS-DOS. If you have an MS-DOS game that supports SoundBlaster™ audio, you can install this now and get started using audio right away. If you want to use the Audio System with Windows, you should proceed to the next section.

> *Warning: Before you run any application which uses sound, make sure the volume of your headphone is turned all the way down. The headphone output of this system may be great enough to damage your hearing.*

Chapter 4: Installing the ESS Software

The ESS Audio Applications User's Guide provides a complete description for installing the audio software in a variety of environments. To get you up and running quickly, we've included the following WinBook XP specific setup procedure. If you require a more custom installation, refer to chapter two of the ESS Audio Applications User's Guide.

4.1   ESS MS-DOS Software Installation

The Audio System comes with one disk labeled ''ESS Driver Disk (3)'' This contains some programs which allow you to test the sound system from MS-DOS or within a MS-DOS session under Windows. While these programs are helpful if you are having trouble with your audio setup or if you need help over the telephone, most likely, you will never need to use them.

These programs install in less than ten minutes. We recommend that you include them in your installation. The following sequence tells you how.

1. Power up the computer.

2. Exit Windows. You should see the command prompt ''C:\>''.

3. Insert the ''ESS MS-DOS Software'' disk into the floppy disk drive slot.

4. Type ''**A:**'' and press the <Enter> button. You should see the prompt ''A:\>''.

5. (1) Typt ''**Install 4**'' if it is mono and press the <Enter> button. The program will install themselves into a directory named: '' BDTST488''.

   (2) Type ''**Install 6**'' if it is stereo and press the <Enter> button. The program will install themselves into a directory named: '' BDTST688''.

6. Follow the on-screen instructions as they appear. Choose the defaults whenever you are prompted.

7. When the installation is complete, you will see the ''A:\>'' prompt again. Type ''**C:**'' and press the <Enter> button to return to the ''C:\>'' prompt.

You are now ready for the ESS Windows Software installation. If you want to test your audio board using the ESS MS-DOS test software, refer to page 21 for further instructions. Otherwise, proceed to the next section.

4.2   ESS Windows Software

The remainder of the ESS software installs from within Windows and should take about 15 minutes for the complete installation depending on which WinBook model you have. We recommend that you choose the complete installation option.

The ESS applications include the following programs:

- Audio Recorder   records and plays back sounds in .WAV and .AUD formats. You can use the built-in microphone, or line input.
- Volume Control   controls the sound level during playback.
- Mixer   combines signals from different sound sources during playback.
- Recording Control   combines signals from different sound sources during recording.
- Extended Recorder   is like the Audio Recorder, but allows even longer audio clips using advanced compression techniques.
- Calculator   announces your operations.
- Chime   makes audio announcements at 15 minute, 30 minute and 1 hour intervals.
- Clock   announces the time.
- Reminder   has two audio announcement alarms.
- Stopwatch   announces elapsed time.
- Timer   announces time remaining.
- Audio Clip Library   helps you organize your audio files, includes sample music, phrase and sound files.

4.3   Installation

The ESS Audio Applications installs like many Windows applications:

1.   Read the Audio Toolkit manual before you begin.
2.   Insert "Audio Toolkit Disk 1" into the floppy disk drive.
3.   Open the Windows program manager.
4.   Click on the "File" menu.

5. Choose "Run".

6. Type **"a:\setup"** in the command line window.

7. Read the on-screen instructions as you install the toolkit.

8. First select "Driver Installation". When prompted, choose the "automatic board configuration" option.

9. After completing the "Driver Installation", proceed to the "Soft ware Installation".

10. When prompted, select "Complete Installation". The software will be installed to the \PCAUDIO directory.

11. Read the on-screen instructions as you install the software.

12. After installation is complete, the setup program will prompt you to restart Windows. This step is necessary for the changes made by the Audio Toolkit to take effect.

When the installation is complete, it will create a program group and you will be ready to use the Toolkit.
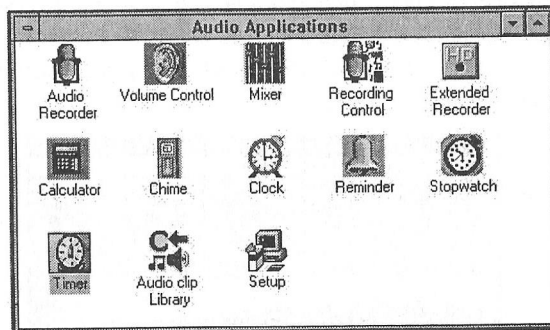
4.4   Quick Test

At this point you may want to check that the audio system is working properly. To do this:

1. Exit the Windows session you are in and restart the system.

2. When Windows comes back on, double-click on the "Audio Applications" program group.

To test sound output try one of the following:

a. Double-click on the Volume Control icon. When the application opens, move the volume bar to the middle of the range.

b. Double-click on the Calculator icon. Enter a few numbers. If the sound level isn't right, go back to the Volume Control and adjust it to a comfortable volume.

c. Double-click on the "Audio clip Library". Double-click on one of the sound "briefcases". When it opens, choose a sound and double-click on it and an "Audio Recorder" window will open. Push the playback arrow to hear the sound. The volume control is in the "Options" menu.

To test the recording capability:

a. Double-click on the Audio Recorder icon. When the application opens, click on the Options menu and choose "Recording Control". When it opens, make sure the "Mic" box is checked.

Click on the Audio Recorder window. Press the red dot (or round dot in the bottom left corner for monochrome units) to record. Speak clearly into the computer's microphone. When you are finished, press the stop button. Then press the playback arrow to check the recording.
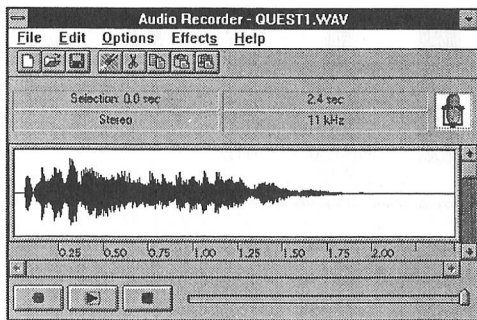
If there is a problem with any of these programs, refer to the following section on troubleshooting and to the Audio Drive User's manual.

The User's Manual also has more detailed information on how to use the Audio Applications.

Chapter 5: Troubleshooting

Most of the suggestions in this section may seem like common sense, but even veteran computer users have been known to miss the obvious.

You should also check the troubleshooting section in the computer's user manual.

5.1   Hardware Troubleshooting

- Check the volume control settings.
- If you are using external speakers, make sure they are properly connected and their power source is operational. External speakers come in two varieties, powered and un-powered. The computer is intended to be used with powered speakers. Speakers can be powered in two ways: battery and AC. Make sure your speakers are either plugged into an AC outlet, or that the batteries are fresh.

    If there is still no sound, check the speakers themselves by connecting them to another audio source (e.g. a portable cassette player or portable CD player).
- Carefully review the System Setup configuration.
- Make sure the Audio Board is properly seated in its compartment.
- If you are using a docking station's sound card, make sure it isn't defective.
- If the Audio Board is damaged, the computer probably won't even start up. In this case, contact the number written on the read-me-first page which came with your audio system.

5.2   Software Troubleshooting - Windows

If you are having problems using the audio system under Windows, and you are sure the hardware is installed and set up correctly, try the following:

- Make sure the ESS Windows Sound software is correctly installed. You may need to re-run the setup utility for that application.
- Make sure you installed the ESS drivers with the default settings.

- Check that the driver is set up to match your hardware environment. The ESS driver should be set up as follows: "I/O Port = 220", "DMA Channel = 1" and "IRQ = 7" (or 5 if you chose this in the BIOS Advanced Setup section).

- Make sure the ESS driver is enabled. This is especially important if you are using the computer with a docking station that has a different sound card installed and requires a different driver. In this case, you must change drivers each time you switch between the two audio boards.

- If the ESS driver is not enabled:

  1) Open the "Main" window.
  2) Double-click on the "Control Panel" icon.
  3) Double-click on the "Drivers" icon.
  4) Highlight the ESS AudioDrive line and click on the "Setup" button.
  5) Make sure the settings are correct, then click on the "OK" button.

- If your Windows application does not support OLE, you will not be able to cut and paste sound objects into the application until the vendor updates the application to be OLE compliant.

- If you are using a docking station, remove the computer from the docking station, restart Windows and retry the application.

- If you are using a multi-media application in Windows, check the troubleshooting guide that came with the application.

5.3   Software Troubleshooting - MS-DOS

If you are having problems using the audio system in MS-DOS applications, and you are sure the hardware is installed and set up correctly, try the following:

- Check the configuration of the applications you are using. Unlike Windows, where one driver works with all software, audio applications which run under MS-DOS have specific drivers for specific hardware configurations. You must select and configure these drivers when you install MS-DOS audio applications. The WinBook XP is SoundBlaster compatible, so this is the option you should select when installing MS-DOS-based audio applications.

- Check that the driver is set up to match the WinBook XP hardware environment. Notice that even if you selected SoundBlaster, there are still several configuration options within the SoundBlaster settings. The software should be set to match the WinBook XP as follows:

  I/O Port = 220   DMA Channel = 1   IRQ = 7

  See the section on Windows System Setup for details on how to change this if the software you are installing expects the SoundBlaster board to be set to "IRQ 5".

- Review the troubleshooting guide for the application.

- Check that there is no conflict with a sound card installed in your docking station:

  Review the section below, "Docking Station Considerations".

- Most MS-DOS games have an auto-detect function which determines your audio board type and location so it will work with either "IRQ 7" or "IRQ 5" selected. Some older games require "IRQ 7". If your board is set up for "IRQ 5", try changing it to "IRQ 7".

5.4   Docking Station Considerations

In most cases your computer can support both the audio board and an ISA-type sound or multimedia card installed in your docking station. Run the Windows setup for the card and follow its instructions. When the setup asks you which settings you want to use, remember the audio card already uses

I/O port 220   IRQ 7 or IRQ 5   DMA Channel 1

If you need to run the audio card at the same time as the docking station's sound card, you will need to use different settings for the card in the docking station. The computer's audio option allows you to select a different setting for the IRQ lines. The computer's BIOS software also has plug-and-play capability which should make it easy to configure your system with an internal and external audio card at the same location (provided you don't want to use both at the same time).

When you enable the "Audio" setting in the BIOS Advanced Setup screen, each time the computer is booted, it checks to see if it can detect an external sound card at the same location. If it can, it leaves the internal audio board temporarily disabled and switches to use the external sound card. The next time you start up, if

you are not plugged into the docking station, the internal audio board will be re-enabled. The BIOS Advanced Setup also allows you to permanently disable the computer's audio system if you need to.

If you want to use both internal and external cards at the same time, choose different settings for the card in your docking station.

If there is a conflict:

1. Stop the setup and exit Windows.
2. Go back to the "Advanced Setup" page of the BIOS Setup and disable the Internal Audio setting.
3. Go to the "Power Management" page of the BIOS Setup and disable the "Audio Timeout", if you haven't done so before.
4. Re-run the setup for the ISA card.

If you only want to use the sound card in the docking station, keep the "internal Audio" setting on "Disabled".

In general, you shouldn't have to worry about this. However, you may run into some fussy applications. If this happens, you'll have to turn off the internal audio card. This means checking steps 2 and 3 whenever you use the docking station and that application.

5.5   Parallel Port Considerations

The PC architecture was designed many years ago and since then has undergone significant evolution with the advent of multimedia products and PCMCIA devices. In addition, before PCMCIA existed, many products appeared on the market which allowed notebook users to quickly add devices by connecting them to the parallel port (LPT1). These devices included network adapters, SCSI adapters, CD-ROM drives, tape drives, hard drives and floppy drives. Each one of these devices comes with a set of software drivers which allows them to work in both the MS-DOS and Windows environment.

As a result of this explosion in new peripheral products, the PC architecture is showing signs of outdatedness, including conflicts in system requirements. The most troubling area is IRQ level assignment conflicts. Most of these parallel port devices expect to use "IRQ7" and are not tolerant of other devices sharing the port with them. For this reason, the WinBook XP, like the SoundBlaster, allows you to

select IRQ5 as an alternate. This is fine for the desktop world, but presents another problem in the notebook world.

Some of the PCMCIA card client driver software (sometimes called "enablers") and Windows itself, assume that IRQ5 is available to be used exclusively for other peripherals such as network adapters and extra COM ports. Again, these drivers are not necessarily tolerant of other devices sharing this line.

Most WinBook XP users will probably never have a problem with too many devices trying to share IRQ lines, but, if you do, you may have to reconfigure your WinBook XP to use "IRQ5" instead of "IRQ7" for the audio system. If you do this, any application you installed in MS-DOS which supports audio must be reconfigured to support IRQ5. Under Windows the situation is simpler since you can simply reset the ESS audio driver to "IRQ5". See page 16 for details on configuring the audio driver in the Windows control panel.

5.6   Test Procedure

When installed, the ESS Audio Toolkit includes tests of the audio board. However, you should not need to run them unless you enabled the audio option in the BIOS Setup and your audio system is not working. These tests run under MS-DOS, so it may be easier if you run them from the MS-DOS prompt.

Note: They will also work in a Windows session if you prefer this method.

At the MS-DOS prompt:

Type "**cd**"   to get out of the Windows directory.

Type "**cd\bdtest**" to go to the ESS Test directory.

Type "**setup**"   to run the setup test.

The highlight bar will indicate the current settings. If you need to change a setting, use the arrow keys to scroll to your selection. Press the <Enter> key to go to the next test level. When you are finished choose "Exit Program".

Note: the "Joystick Test Option" default is "No Joystick Test".

The default system settings are listed in the Technical Specifications.

For a more complete test, type "**run**".

This command will initiate an automatic test of the entire audio hardware system.

For this test, you should have:

- a microphone (built into the computer).
- a line-in source (e.g. CD-player or tape player).
- a speaker (the computer's internal speaker or an external speaker attached to the output jack).
- a printer assigned to LPT1.

If you want to test a particular function, you can use:

record.com   to test the microphone record program.
> Type: **\<record filename.raw hardware.ess\>**
> This will record about 30 seconds of sounds from the microphone to the file "filename.raw" using the hardware settings.

rec-line.com to test the line-in record program.
> Type: **\<rec-line filename.raw hardware.ess\>**
> This will record about 30 seconds of sounds from the line-in to the file "filename.raw" using the hardware settings.

vplay.com   to test the sound play program.
> Type: **"vplay filename.raw hardware.ess"**
> This will playback the contents of "filename.raw" using the hardware settings.

The other files in the "Bdtest" directory are:

run.exe	the main test program.
setup.exe	puts results of the setup hardware test in the hardware.ess file.
vplay.com	sound play program.
record.com	microphone record program.
rec-line.com	line-in record program.
test.raw	sound/voice file
test2.raw	sound/voice file
temp.raw	a temporary record file created after the first test.
sumprint.exe	summary print program.
hardware.ess	hardware test setup information file, not readable.

There may be additional ".txt" or ".doc" files included in this directory with more information.

Chapter 6: Technical Specifications:

Following are the default and recommended settings for the WinBook XP Audio System:

System Resources:

I/O address:	220
IRQ:	5 or 7
DMA channel:	1
DMA buffer size:	32

Relevant BIOS Settings:
Advanced Setting Page   Internal Audio : Enable
Power Management Page   Audio Timeout: Disabled

	Mono	Stereo
Line Input level	.5 V - 4.5 Vpk-pk	.5 V - 4.5 Vpk-pk
Line Input impedance	80 Kohms	80 Kohms
Max Line output level	4 V pk-pk	4 V pk-pk / channel
Line Output impedance	8 ohms (nom.)	8 ohms (nom.)
Typical Output power	250 mW	250 mW/channel
Max frequency response	100 Hz - 11 KHz	100 Hz - 22 KHz
Sampling rates supported	4 KHz - 22KHz	4 KHz - 44KHz
Sampling sizes supported	8-bit, 12-bit mono	8-bit, 16-bit mono/stereo
Compression supported	PCM, ADPCM, ESPCM	PCM, ADPCM, ESPCM
Sound files supported	.WAV, .AUD	.WAV, .AUD

WinBook
COMPUTER CORPORATION

Printed in Taiwan