

# SPEA MEDIA XTC

## Hardware User Manual

### Hardware-Benutzerhandbuch



Teilenummer 1740 9040.1  
Rel. 0895  
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## **FCC Radio Frequency Interference Statement**

This equipment has been tested and found to comply with the limits for a Class "B" digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate 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:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment has been certified to comply with the limits for a Class "B" device, pursuant to Subpart B of the FCC Rules, it should be used only with equipment certified to comply with the Class "B" limits. Operation with non-certified equipment is likely to result in interference to radio and television reception.

This device complies with Part 15 of the 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.

Changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

## **Trademarks**

SPEA MEDIA XTC is a trademark of SPEA V7.

Windows is a trademark of Microsoft Corporation.

All other trademarks within this manual are the property of their respective companies and are hereby acknowledged.

# Part 1

## Introduction

Congratulations on your purchase of the SPEA MEDIA XTC card! The SPEA MEDIA XTC provides the very latest in sound card technology, offering unparalleled sonic quality far exceeding that of previous sound cards, along with powerful facilities for the recording, playback, and synthesis of sound. The SPEA MEDIA XTC comes bundled with a selection of software programs designed to help you get the most out of its extensive capabilities. With the SPEA MEDIA XTC, you can add stunning sound to games, multimedia presentations, musical compositions, or any other applications that use sound.

## What is the SPEA MEDIA XTC?

The SPEA MEDIA XTC is an expansion card which adds extensive sound recording and playback capabilities to your PC, as well as providing an interface for many popular CD-ROM drives. Its embedded microprocessor utilizes custom synthesis technology developed by ENSONIQ, one of the leading manufacturers of professional synthesizers and samplers.

When used with Windows applications, the SPEA MEDIA XTC meets or exceeds all MPC (Multimedia PC) Level-3 requirements. When used with DOS applications, the SPEA MEDIA XTC offers two operational modes so as to provide the maximum level of compatibility with games and other software products currently on the market. These two modes are:

### **General MIDI mode**

In this mode, the SPEA MEDIA XTC provides an MPU-401 compatible General MIDI synthesizer, along with Sound Blaster compatible digital audio (For more information about MIDI and General MIDI, see *Appendix A*).

### **MT-32 mode**

In this mode, the SPEA MEDIA XTC offers emulation of the popular Roland MT-32 synthesizer, along with Sound Blaster compatible digital audio.

## **SPEA MEDIA XTC Features**

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Here's a brief overview of the many features provided by the SPEA MEDIA XTC:

### **Plug & Play**

The SPEA MEDIA XTC can be installed without setting jumpers. The configuration of the boards is done by the software drivers exclusively. If you use an operating system that supports Plug & Play, the configuration will be done automatically.

### **Synthesizer**

- Provides up to 32 voices of wavetable synthesis.
- On-board sound ROMs contain 1 megabyte of sound samples.
- Includes General MIDI and Roland MT-32 sound sets as well as AdLib / Sound Blaster FM synthesizer emulation.

### **Digital Audio**

- Allows the recording of CD-quality stereo sound (up to 16 bits, 44.1 kHz sampling rate) from Mic/Line, CD/Aux, TV Tuner and Modem inputs as well as from the internal synthesizer.
- Enables playback of standard PC Wave files (e.g., .VOC, .WAV, ...).

### **MIDI**

- Provides an MPU-401 compatible MIDI interface, including MIDI In and MIDI Out/Thru.
- Adds an external MIDI In/Out port to your PC.
- Allows the recording of MIDI events from an external MIDI keyboard controller.
- Enables playback of standard PC MIDI files (e.g., .MID, .ROL, ...) to either the on-board synthesizer or to an external synthesizer.

### **Mixer**

Provided software mixer allows synthesizer and digital audio output to be mixed with signal arriving at the card's 'CD/Aux', 'TV', 'Modem' and 'Mic/Line' inputs.

## **Included Software**

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The SPEA MEDIA XTC comes supplied with installation software, configuration and initialization utilities, device drivers, and a number of applications for both DOS and Windows. See the software applications manual included with this package for details on the DOS and Windows applications.

## **SPEA MEDIA XTC Technology**

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The technology from ENSONIQ Corp. which is used in this board is a combination of hardware and software that provides the highest quality in PC sound and the greatest compatibility with current standards. SPEA MEDIA XTC's driver compatibility enables continued software support as new standards emerge.

## About this Manual

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We recognize that many people do not read manuals; however, an ounce of caution is worth a pound of prevention, so we do strongly recommend that you take a few moments to go through these pages before installing your SPEA MEDIA XTC hardware and software. In particular, we recommend that you carefully read the information preceded by the following two words, which have these special meanings:

### **Warning!**

This is a warning. It lets you know that if you fail to heed the accompanying message, you could damage your system or software. Be sure to read these!

### **Note:**

This is a hint, tip, or other piece of valuable information that can save you valuable time and energy, especially during initial installation.

## README File

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Our software is constantly being improved and updated. This means that it may not have been possible to document the most current changes in this manual. The latest information is contained in a file named README on the diskette coming with your SPEA MEDIA XTC.

## Warranty

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You have a 3 year warranty for your SPEA MEDIA XTC card and 1/2 year warranty for the corresponding software. To ensure your warranty, it is necessary that you keep the invoice of the sound card. If your sound card is damaged, contact your local retailer first.

## Customer Support

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If you have problems when installing or using your SPEA MEDIA XTC card, you can contact the SPEA V7 Bulletin Board.

Read more about the contents and how to use this service in *Appendix D Service and Technical Assistance*.

## Part 2

# Installing the SPEA MEDIA XTC

### What You Need

To use the SPEA MEDIA XTC, your computer system should meet the following requirements:

- 20MHz 80386 processor or better
- VGA or SVGA graphics adapter and monitor
- Mouse
- DOS 6.0 or higher
- Windows 3.1x or higher or Windows® 95
- One open expansion slot
- At least 5 Mb of free hard disk space (to install all software)

### What You Should Have

Check to see that your SPEA MEDIA XTC package contains all of the following items:

- SPEA MEDIA XTC sound card in antistatic bag
- SPEA MEDIA XTC hardware manual (this manual)
- SPEA MEDIA XTC software manual
- Warranty/registration card
- 3 1/2" floppy disks or CD ROM

## Preparing Your Computer

### Warning!

Static electricity can damage your equipment, but can be easily avoided. Before installing any internal optional equipment such as the SPEA MEDIA XTC card, make sure that your computer system is turned OFF and that you observe the following antistatic precautions:

Make sure that the AC cable is securely connected to the computer and is plugged into a surge protector or grounded AC wall outlet. (If you are using a surge protector, be sure to plug it into a grounded AC wall outlet.) Don't try to use a two-pronged electrical outlet or attempt to defeat the power cord's electrical ground!

### Warning!

Always consult your system manual before opening your computer to avoid any damage.

1. Switch off your computer and all external options (printer, display, and others). Be sure to leave the computer's power cord connected to a grounded surge protector or AC outlet with the computer's power OFF! Follow the anti-electrostatic discharge procedure described on the preceding pages.
2. If it is necessary to disconnect peripheral equipment cables from the back of the computer, be sure to note cable positions for proper reconnection later.
3. Remove the cover from your computer. Save the mounting screws for reinstalling the cover.

## Installation via a Plug & Play System or Utility (ICU)

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### Configuration of the I/O Addresses, Interrupts and DMA Channels

Under Windows® 95 the configuration of the SPEA MEDIA XTC will be done automatically, see also Part 4 in this manual.

Under DOS/Windows the configuration is executed via a Plug & Play driver and the corresponding configuration program ICU from Intel.

With the ICU utility the configuration mostly is carried out automatically. In some cases it may occur, that ICU reports a conflict which has to be corrected manually.

The SPEA MEDIA XTC is divided into 3 logical devices:

- Device 1: SPEA MEDIA XTC Gameport/  
Joystick Port
- Device 2: SPEA MEDIA XTC Plug & Play
- Device 3: SPEA MEDIA XTC  
Sound Blaster Emulation

Joystick and SB emulation are hard coded and already configured to an address. They can only be enabled or disabled.

The Wave & MIDI Device can be disabled or set to three different configurations.

More information about the ICU utility can be found in Part 2, Section Utilities in this manual.

## Configuring Your SPEA MEDIA XTC Card

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If you use a Plug & Play Operating System, the configuration of the SPEA MEDIA XTC board will be done automatically, otherwise the configuration is executed via the drivers of the board.

Only for the microphone connection configuration you have to set a jumper:

1. If you will be connecting an electret condenser microphone without a built-in battery (that is, a microphone that requires 2.5 Volts of phantom power) to the SPEA MEDIA XTC Mic/Line input.
2. If you use a stereo microphone.

As you configure and install the SPEA MEDIA XTC card, follow these basic precautions:

- Handle the card by the edges only, being careful not to touch edge connectors or exposed circuitry.
- Keep the board inside its protective antistatic packaging until you are ready to install it.
- Never place the board on a metal surface.

## Jumper Locations and Functions

Do not change the SPEA MEDIA XTC default jumper settings unless you are certain it is necessary (that is, if one or more of the four conditions listed above are met) - and if you do change a jumper location, be sure to make a note of it so that you can make appropriate selections when installing the software. To remove a jumper, grip it with a small pair of needlenose pliers and lift straight up (you can gently rock it back and forth if you meet any resistance). To replace it, position it over the desired pin(s) and press down gently but firmly until it is seated in place.

Following is a description of the SPEA MEDIA XTC jumper.

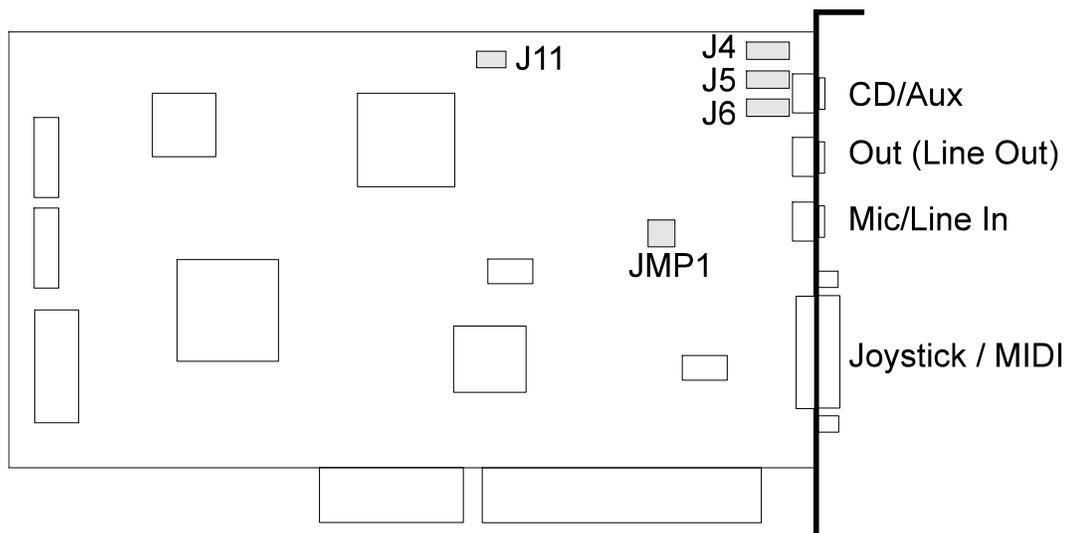
### JMP1 Phantom Power Supply for Microphone & Stereo / Mono Microphone

This jumper is used to connect 2.5 volt phantom power to the Mic/Line input jack and for configuring a Stereo or mono microphone. Leave this jumper off when using a dynamic microphone or a battery powered electret condenser microphone. Place the jumper on pins 1-2 when using an electret condenser microphone without a built-in battery.

Jumper on:	None:	Phantom supply not connected (default)
	Pins 1-2:	Phantom supply connected

When using a Stereo microphone remove the jumper from the pins 3-4.

Jumper on:	None:	Stereo microphone
	Pins 3-4:	Mono microph. (default)



*SPEA MEDIA XTC connection possibilities*

## External Audio Connectors

Below is a listing of the external connectors found on the back of the SPEA MEDIA XTC card. Consult the illustration on the preceding page for connector locations.

### CD/Aux:

This is a line level input which accepts a 1/8" TRS stereo plug. It can be used as a source for digital sound recording, a source to be mixed with the output, or both.

### Out:

This is a stereo line level output through which the combined signal of all internal and external audio sources on the board is output. It can be connected to Walkman-type (1/8" TRS stereo) headphones or to amplified speakers.

### Mic/Line In:

This is a 1/8" mono jack which provides a switchable line or microphone level input (select one or the other in the SSINIT.EXE program Mixer module). It can be used as a source for digital sound recording, a source to be mixed with the overall output signal, or both.

### Note:

Using the Mic/Line input in 'Mic' mode provides an additional 20 dB of input signal gain.

### Joystick/MIDI:

This is a 15-pin D-sub connector. It can be used with standard MIDI adapters and joystick connectors. The joystick interface will support both single and dual joysticks.

### Tip

When connecting a stereo system to your PC make sure that both devices use the same mains circuit (use a multi-socket). This eliminates the potential risk of mains noise.

## Internal Audio Connectors

The following describes all internal audio connectors of the SPEA MEDIA XTC board. The internal audio connectors can be used to make a connection e.g. to a TV Tuner board or an MPEG playback board within the PC. For the positioning of the connectors please have a look at the illustration one page before.

### TV / Sony CD/ATAPI-CD (J4):

Input with Line Level. An audio connector is used which is used for Sony and many ATAPI drives.

The pinout is:

If you look at the SPEA MEDIA XTC, so that the bus connector is below (and the labelling of the board is readable), then the right pin is pin #1 and the left pin is #4.

pin 1	right
pins 2,3	ground
pin 4	left

### Mitsumi CD (J5)

Input with Line Level. An audio connector used by Mitsumi is used.

The pinout is:

If you look at the SPEA MEDIA XTC, so that the bus connector is below (and the labelling of the board is readable), then the right pin is pin #1 and the left pin is #4.

pin 1	right
pins 2,4	ground
pin 3	left

### Matsushita CD (J6)

Input with Line Level. An audio connector used by Matsushita is used.

The pinout is:

If you look at the SPEA MEDIA XTC, so that the bus connector is below (and the labelling of the board is readable), then the right pin is pin #1 and the left pin is #4.

pins 1,3	ground
pin 2	left
pin 4	right

## Modem In (J11)

Input with Line Level. Here you can connect a Line Output of a modem.

Thus, you can control the volume of the modem via the mixer and, if necessary, you can record signals from the modem input.

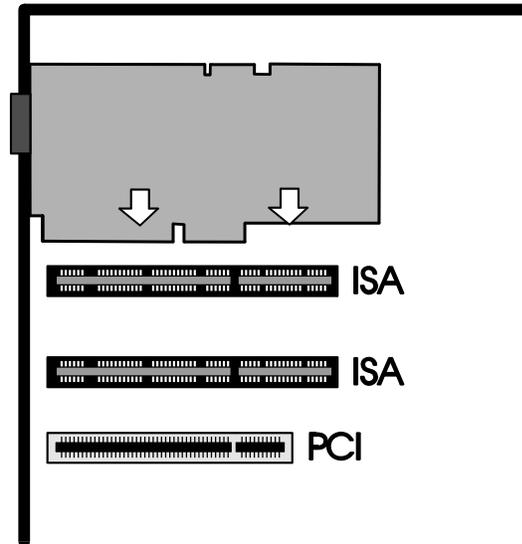
The pinout is:

If you look on the SPEA MEDIA XTC, so that the bus connector is below (and the labelling of the board is readable), then the right pin is pin #1 and the left pin is #2.

pin 1	signal
pin 2	ground

## Installing the SPEA MEDIA XTC Card

1. Remove the cover to your computer. Your SPEA MEDIA XTC card can be installed in any available 16-bit expansion slot. A 16-bit expansion slot can be identified by its double connector:
2. Remove the metal expansion slot cover for the selected slot. Save the screw for installing the board.



*Installation of the SPEA MEDIA XTC in an ISA expansion slot*

3. Hold the SPEA MEDIA XTC card by the edges and press the connector gently but firmly into the expansion slot.
4. Align the notch in the mounting bracket of the SPEA MEDIA XTC card with the screw hole in the rear panel of the computer case. Use the screw that you removed from the metal expansion slot cover to secure the SPEA MEDIA XTC card in place. This step is important for proper grounding of the card.
5. Secure all internal cables before you replace the computer cover. If you are installing an internal CD-ROM drive, make sure you connect it properly.
6. Replace the computer cover.
7. Reconnect any peripheral equipment cables that you may have previously disconnected.
8. Make the audio connections you desire to SPEA MEDIA XTC's inputs and outputs.
9. If you wish to use a joystick, a MIDI device, or both, connect an adapter cable to the SPEA MEDIA XTC Joystick/MIDI port.

## Software Installation

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After fitting the SPEA MEDIA XTC card, it is necessary to install the software. We recommend that you make a copy of your master disks and put the originals away in a safe place, using the copies for the rest of this procedure (consult your DOS manual for disk copying instructions). Approximately 5 megabytes of space on your hard disk is required to install all of the SPEA MEDIA XTC software.

Be sure to read the section titled *Tips for Successful Installation* later in this section prior to making any changes to the default selections. Doing so will save you time and ensure proper operation.

### Software Installation Procedure for DOS / Windows 3.1xx

The following installation procedure must be executed from the Windows Program Manager:

1. Insert SPEA MEDIA XTC Installation Disk 1 into your floppy disk drive.
2. From the Windows **File** menu, choose **Run**.
3. If your system's 3.5" floppy drive is configured as drive A, type **A:SETUP** in the **Run** dialog box; if it is configured as drive B, type **B:SETUP** in the **Run** dialog box.
4. Follow the instructions on the screen. Click on the **Cancel** button to abort the installation procedure, or click on the **Exit** icon at the bottom right of the screen at any time to exit the Setup program.

5. After a few moments, you will be prompted to insert the SPEA MEDIA XTC Installation Disk 2 into your floppy disk drive. Do so and then click on **OK** or press the **Enter** key.
6. You will be returned to the Windows Program Manager and a dialog will ask you if you wish to add a Level Control Utility to your startup program group. If you click on **Yes** (or press the **Enter** key, a SPEA MEDIA XTC level control slider (which allows you to adjust the SPEA MEDIA XTC overall master volume) will appear onscreen each time you start up Windows. If you click on **No**, this Level Control Utility will be added instead to the SPEA MEDIA XTC program group and can be activated any time it is required.

#### **Note:**

If you do opt to place the Level Control Utility in your startup group and later change your mind, you can always move it out of the startup program group and into the SPEA MEDIA XTC program group; this will have precisely the same effect as if you had selected **No** in the first place.

7. Be sure to look at the README file at the end of the installation procedure for up-to-date changes in the SPEA MEDIA XTC software.
8. The computer must be re-booted after installation in order for the SPEA MEDIA XTC card to work.

## Standard Modifications

The installation procedure makes the following modifications to your start-up files:

### AUTOEXEC.BAT

The following lines will be inserted into your AUTOEXEC.BAT file:

```
SET BLASTER=A220 Ixx Dx T1
SET MEDIAXTC=dirname
dirname\SSINIT GM
```

Where:

SET BLASTER is included for Sound Blaster compatibility and should not be removed. The x's in this entry will be dynamically altered by the SPEA MEDIA XTC configuration program.

### Note:

During the installation, you will be asked if you have a SoundBlaster or similar card installed in your system. If you answer yes, the SET BLASTER line will not be written to your AUTOEXEC.BAT file.

SET MEDIAXTC is included so that your SPEA MEDIA XTC configuration program knows where to find certain files. *dirname* corresponds to the SPEA MEDIA XTC directory i.e., C:\MEDIAXTC.

*dirname*\SSINIT GM initializes the SPEA MEDIA XTC card to General MIDI mode at boot time. *dirname* corresponds to the SPEA MEDIA XTC directory, i.e., C:\MEDIAXTC.

### Note:

If any of the above entries are removed, your system will not be able to properly initialize your SPEA MEDIA XTC card.

### SYSTEM.INI

The SPEA MEDIA XTC installation modifies the SYSTEM.INI file in your WINDOWS directory, adding [sndscape.driv] sections as well as adding the following lines to the [drivers] and [386Enh] sections.

[drivers]

```
Wave= C:\SPEA\MEDIAXTC\SNDSCAPE.DRV
Aux= C:\SPEA\MEDIAXTC\SNDSCAPE.DRV
Mixer= C:\SPEA\MEDIAXTC\SNDSCAPE.DRV
MIDI= C:\SPEA\MEDIAXTC\SNDSCAPE.DRV
```

[386Enh]

```
device=VVDMAD.386
```

### Note:

Do not edit or alter this file unless you are absolutely certain you know what you are doing!

In both the [386Enh] and [drivers] section, there may be drivers installed that conflict with SPEA MEDIA XTC. If the install program detects these, it will comment them out (showing you that the modification has been made).

### MIDIMAP.CFG

The SPEA MEDIA XTC installation places a new MIDIMAP.CFG file in your WINDOWS\SYSTEM directory and renames your old MIDIMAP.SND file. To restore the MIDI Mapper to its prior state, simply delete the new MIDIMAP.CFG file and rename the MIDIMAP.SND file MIDIMAP.CFG. For more information, see *Part 4* in this manual.

## Tips for Successful Installation

Here are some additional things to be aware of when installing the SPEA MEDIA XTC software:

- Do not change default IRQ and DMA settings unless you are aware of an immediate conflict and have a thorough understanding of what they do and how they work.

## Part 3

# Configuring the SPEA MEDIA XTC

If you need to alter one or more of the SPEA MEDIA XTC settings, then use the utilities described in the following sections.

## Configuring Your SPEA MEDIA XTC Card under DOS

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The SPEA MEDIA XTC contains the hardware and software necessary to support the following popular music options:

- General MIDI - provides an MPU-401 compatible General MIDI synthesizer
- MT-32 provides Roland MT-32 emulation utilizing the on-board synthesizer.

**Note:**

Some games apply custom programming to the MT-32 sounds. The MT-32 emulation of the SPEA MEDIA XTC cannot accommodate all custom programming. Therefore, some sounds may sound different than when played back using a real MT-32 and, in extreme cases, some sounds may not be heard at all.

**Note:**

Games and multimedia applications should not be run from Windows unless they are specifically Windows of MPC compatible. Similarly, DOS games and multimedia applications should not be run from a DOS session under Windows - run them from DOS only.

There are many versions of the Sound Blaster card. For programs that offer separate Sound Blaster and Sound Blaster Pro selections, use the Sound Blaster option.

The SPEA MEDIA XTC is not compatible with games (very few) that require Sound Blaster ADPCM (Adaptive Differential Pulse Code Modulation).

## Using SSInit

### **Note:**

The SSInit program cannot be run from Windows, nor can it be run from a DOS session under Windows.

The SPEA MEDIA XTC DOS configuration program is called SSINIT.EXE, located in the SPEA MEDIA XTC installation directory (normally C:\MEDIAXTC). SSInit allows you to set the operating mode, configure the SPEA MEDIA XTC hardware parameters, and adjust mixer controls. To launch SSInit:

1. Go to the SPEA MEDIA XTC installation directory. E.g., type:  
CD C:\MEDIAXTC
2. Launch SSInit by typing  
SSINIT

At this point, a graphical user interface (described in the following section), will appear.

### **Notes:**

Typing SSINIT /I will initialize the SPEA MEDIA XTC to its default state without presenting the hardware configuration interface

In order to take advantage of all the SSInit configuration options, a mouse should be installed under DOS.

The SSINIT program cannot be run from Windows, nor can it be run from a DOS session under Windows.

## Hardware Configuration Interface (SSINIT)

The SSInit program provides four screens for configuring the SPEA MEDIA XTC: Quick Setup, Hardware, Mixer, and Synth. On-line help is available for any screen by simply pressing **F1** on your keyboard while viewing the screen with which you need help.

## Quick Setup Screen

The Quick Setup screen, shown below, is the first screen that appears after launching SSInit. This screen allows you to quickly configure some of the SPEA MEDIA XTC volume settings and to set the operating mode.

The following configuration options are available in the Quick Setup Screen:

### Master Volume

simultaneously adjusts the level of all playback sources (a mouse is required to adjust this parameter). The default is 127.

### Synth/Music Volume

sets the playback volume of the synthesizer only (a mouse is required to adjust this parameter). The default is 100.

### Wave/Sound

sets the digital audio playback volume only (a mouse is required to adjust this parameter). The default is 127.

## Using Advanced Settings

When you select **Advanced** from the Quick Setup screen, the values selected in Quick Setup are entered and you can now access any of four additional screens - Hardware, Mixer, Synth, or Exit - by clicking the menu selection at the top of the screen or by holding down the **Alt** key and typing the highlighted letter corresponding to the menu you wish to select. When the menu appears, click on the setting you wish to change or type the highlighted letter to select it, and adjust as required.

### Note:

Most menu selections can be altered using a combination of key sequences. The **Tab** key will move you between fields of the menu. The **Up Arrow** and **Down Arrow** keys will let you select items in a field. The **Space** key will select or deselect items in a check box. Sliders (i.e. Volume controls) can only be adjusted with your mouse.

When you finish making adjustments and you wish to save them, click **OK** (or type **O**). If you wish to discard your changes, click **Cancel** (or type **C**). After you finish making all necessary adjustments, click the **Exit** selection in the menu bar (or type **Alt+X**) to exit SSInit.

## Hardware Settings Screen

The Hardware Settings screen configures the hardware settings that determine how SPEA MEDIA XTC communicates with your computer.

### MIDI Interface

This box enables you to set the basic hardware parameters for your SPEA MEDIA XTC card.

**Port** selects the MIDI interface port address used by SPEA MEDIA XTC—this also corresponds to the MPU-401 MIDI interface base port address. The default is 330.

**IRQ** selects the interrupt request line that the SPEA MEDIA XTC synthesizer and MPU-401 compatible MIDI interface will use for basic communications. The default is 2. This IRQ value must be different than the IRQ value selected in the Sound Blaster/Wave section of the Hardware Settings screen.

#### Note:

IRQ 2 is the default IRQ setting for an MPU-401 in many DOS applications. Some applications may not work with a different selection.

#### Note:

Setting the IRQ value to 10 will cause SSInit to generate a warning message since IRQ 10 is not a legitimate MPU-401 IRQ for some DOS applications. However, this will not affect SPEA MEDIA XTC's operation under Windows.

### Joystick

Joystick enables or disables the Joystick port on your SPEA MEDIA XTC card. The default is Disabled. Enable the Joystick port only if your system has no other joystick card.

### Sound Blaster/Wave

This box enables you to set SPEA MEDIA XTC's Sound Blaster compatibility parameters.

#### Note:

The SPEA MEDIA XTC Sound Blaster emulation uses a fixed base port address of 220. Therefore, if you are running a DOS game or multimedia program that provides only for Sound Blaster compatibility, make sure that program expects to find a "Sound Blaster" card at Base Port address 220.

**SB Emulation** enables or disables Sound Blaster mode. This option should be turned off only if you have a Sound Blaster or Sound Blaster-compatible card in your system. The default is Enabled.

#### Note:

During the installation, you will be asked if you have a Sound Blaster or similar card installed in your system. If you answer yes, the SET BLASTER line will not be written to your AUTOEXEC.BAT file and SB Emulation will be disabled. If you later turn this switch on, make sure you add the following line to your AUTOEXEC.BAT file: SET BLASTER=A220 lxx Dx T1.

**IRQ** selects the interrupt that will be used for Sound Blaster digital audio emulation. The recommended IRQ setting is either 7 or 5. This IRQ setting is also used by SPEA MEDIA XTC's wave device under Windows.

**DMA** selects the DMA (Direct Memory Access) channel that SPEA MEDIA XTC uses for board initialization and digitized sound transfer. This setting also determines the DMA selection for Sound Blaster digital audio emulation and the DMA channel for SPEA MEDIA XTC's wave device under Windows. The default is 1.

#### Note:

Settings changed in the 'MIDI Interface and Sound Blaster/Wave' boxes will be reflected in your Windows Driver setup box. See "Configuring SPEA MEDIA XTC under Windows" in the SPEA MEDIA XTC manual. Conversely, changes made to your configuration in the Windows driver setup box will be reflected in the Hardware Settings screen.

## Hardware Test Screen

This screen allows you to resolve conflicts in your system that may affect proper operation of the SPEA MEDIA XTC card. From this screen you can perform either an IRQ or a DMA test on your system to help resolve any conflicts. The tests use information obtained from the Hardware settings page to test the current IRQ and DMA selections. If you make an IRQ or DMA change in the Hardware settings page, you can test them from this screen. To run the IRQ test, select "IRQ test". To run the DMA test, select "DMA test".

## IRQ and DMA Test Screens

Running the IRQ test displays the current IRQ settings reflected in the Hardware page. After the test is complete, you can make changes on the Hardware Settings screen.

Running the DMA test displays the current DMA channel settings reflected in the Hardware page. After the test is complete, you can make changes on the Hardware Settings screen.

## Mixer Settings Screen

This screen allows you to adjust all of the audio levels on the SPEA MEDIA XTC card.

### Master Volume

adjusts the overall output volume of the sound card. The default is 127.

### CD/Aux Volume

Adjusts output level of the CD or Auxiliary audio input. The default is 96.

### Mic/Line Volume

**Mode** allows you to choose either line-level or mic-level input. Select **line** when connecting a device such as a cassette deck, tape recorder, or when routing signal from a home stereo amplifier. Select **mic** when a connecting a microphone.

**Left** adjusts the left output level of the Mic/Line input. The default is 32. **Right** adjusts the right output level of the Mic/Line input. The default is 32.

### Synthesizer Volume

adjusts the output level of the SPEA MEDIA XTC synthesizer. The default is 127.

### Wave/Sound Volume

adjusts the digital audio output level. This setting will also affect the Sound Blaster digital audio emulation. The default is 96.

### Note:

For parameters with separate left and right controls (i.e. CD/Aux Left Volume/ Right Volume), both controls will move together when either one is moved. Either control may be moved independently by holding down the **SHIFT** key while moving it.

## Exit Screen

When you have finished making changes and wish to leave SSInit, select the **Exit** item on the top of the screen, or type **Alt+X**. If any configuration values have been changed, the Exit screen shown below will appear.

### Change Sound Card Settings

When this box is checked, the changes you just made in SSInit will be applied to the SPEA MEDIA XTC card.

### Change Default Settings

When this box is checked, the changes you just made in SSInit will be applied to the SPEA MEDIA XTC card and also will be saved to an initialization file so that they are reflected in subsequent uses of SSInit.

Selecting **OK** will perform the changes indicated by the check box selections and then exit SSInit. If you would like to quit SSInit without applying any of your changes, deselect both check boxes and select **OK**.

Selecting **Cancel** will abort the Exit screen and allow you to continue making configuration changes in SSInit.

## MT32 Patch-change Utility

The MT-32 was a popular sound module in the late 1980's (prior to the General MIDI standard) which provided superior sound over the PC sound systems that were available at that time. During that period, many game manufacturers supported the MT-32 as their high-end sound device.

SPEA MEDIA XTC provides two sets of patches: a General MIDI compatible patch set and a patch set which emulates a Roland MT-32 sound module. These patches cannot be used simultaneously, so a utility called MT32 is provided to allow you to easily switch from one patch set to another. Use this utility whenever a game supports MT-32 as a music/sound option. The usage for MT32 is as follows:

Type this (from a DOS prompt)	To have this effect
MT32	
or	
MT32 ON	switches patches to Roland MT-32 Patch Set
MT32 OFF	switches patches to General MIDI Patch Set

*How to use the MT32 Patch-change Utility*

## SPEA MEDIA XTC Digital Audio/MIDI Test Utility

The SPEA MEDIA XTC Digital Audio/MIDI Test Utility is a resource you can use to help identify common problems related to DMA, IRQ and port settings. To run the test, simply type

DMTEST.EXE

from within your SPEA MEDIA XTC directory.

The test sequence begins with initialization of the board followed by a test of the digital audio hardware. If you get a "Board not detected" message during initialization, check the port settings on the Hardware Settings screen of SSinit and make adjustments as needed.

The two possible error messages during the digital audio hardware test are "DMA error" and "IRQ error". If either occurs, use the Hardware Settings screen to evaluate and/or reassign DMA and IRQ settings.

Upon completion of the hardware test, you are prompted to press any key to initiate the digital audio test. As soon as you press a key, you will hear a sound effect, indicating that the test was successful.

After completing the digital audio test, you can either run the MIDI hardware portion of the test or repeat the first test. Pressing the letter "c" initiates the MIDI hardware test. A "MIDI port not detected" message means that the board was not initialized, in which case you should reinitialize it by typing:

SSINIT/I

from within the SPEA MEDIA XTC directory (this is different from the initialization

performed at the beginning of the test sequence).

The only other possible error message for this test is the "IRQ error" message. If it appears, use the Hardware Settings screen of SSinit to re-evaluate your IRQ selections.

Upon completion of the MIDI hardware test, you will be prompted to press any key to initiate the MIDI audio test. As soon as you press a key, you will hear a sound effect, indicating that the test was successful. Like the digital audio test, you can repeat this test as often as you like. Once the test sequence is completed, the "SPEA MEDIA XTC Digital Audio Test Complete" message appears.

## S2KStat Diagnostic Utility

S2KStat is a diagnostic utility that can be used to simplify the process of setting up games. This utility keeps track of commands that are sent to the SPEA MEDIA XTC and, when run, will display a list of these commands. You can use S2KStat to determine if SoundBlaster, FM or MPU-401 (GM) commands are being received by the SPEA MEDIA XTC.

To use S2KStat, type S2KStat from the MEDIAXTC directory. The utility will respond by displaying a list of commands and the status, either **Activity** or **No Activity**. You can then use this information to help you decide which of these modes is working with a particular game. If you use S2KStat, be sure to run it immediately after running a program to insure that the data it displays is accurate.

A typical usage of the S2KStat utility would be as follows. You are running a game but hear no sound. You then run S2KStat and see that the card was not receiving any SoundBlaster

commands. When you check the game's Sound Blaster settings, you see that they change the game's setting to match those of the SPEA MEDIA XTC to correct the problem.

## Using the Intel ISA Configuration Utility (ICU)

The ICU is provided to allow you to view and change the hardware configuration of plug & play devices such as SPEA MEDIA XTC. You can change:

- the MIDI IRQ
- Wave IRQ
- DMA1
- DMA2

MIDI Interface Port address

Since SPEA MEDIA XTC comes pre-configured, it will not be necessary to alter these basic settings in most cases. However, if you feel that it is necessary to make changes to the hardware configuration of the SPEA MEDIA XTC, you can use the ICU to do so. It is located in the \PLUGPLAY\ICU directory. Help files are included. Be sure to carefully read this information before attempting to reconfigure your card. Following is a brief summary of how the ICU works. Again, consult the ICU help files for more detailed information.

When the ICU runs, you are presented with a screen listing of all of the known devices installed in your system. To view the SPEA MEDIA XTC settings, double click in the SPEA MEDIA XTC device.

The SPEA MEDIA XTC setup is divided into three logical devices:

Logical device 0 is the SPEA MEDIA XTC hardware settings (MIDI IRQ, DMA, etc.)

Logical device 1 is the SoundBlaster emulation

Logical device 2 is the joystick.

Logical device 0 defaults the most common settings. You can use the ICU to change these settings. If you change them, consider also locking them (that is protecting them from reassignment) to make setting up games easier. Within logical device 0 are four choices, each containing a configuration set. The configuration sets are as follows:

Choice	MIDI IRQ	Wave IRQ	DMA1	DMA2	Address
1	9	5	1	3	330-33F
2	7	5	1	3	330-33F
3	10	9	1	3	330-33F
4	7	5	0	1	350-35F
Disabled (never select this as an option)					

Choices 1-3 are hard-coded and the individual components cannot be changed. Choice 4, however, is not hard-coded, and the individual components within can be reconfigured. To enable/disable the joystick and SoundBlaster emulation, use logical devices 1 and 2 respectively.

## Configuring Your SPEA MEDIA XTC Card under Windows

The SPEA MEDIA XTC software installation process installs all required Windows wave and MIDI drivers. These drivers allow you to run standard Windows Multimedia applications. Note that, under Windows, the SPEA MEDIA XTC card will operate in General MIDI (GM) mode only (see *Part 4* in this manual for more information).

Because Windows provides a standardized method of communicating with sound devices, the following two rules must be obeyed.

- Do not run any DOS based sound applications (e.g., games, DOS sequencers, etc.) under Windows.
- Do not run any applications under Windows that are not Windows Multimedia compliant. Applications that are compliant will usually be referred to as 'Multimedia for Windows', 'MPC (Multimedia PC)', or something similar.

The SPEA MEDIA XTC Windows driver inherits all the hardware settings made by SSInit and also offers some additional configuration functionality that is not addressed by the SSInit program. If you will be using SPEA MEDIA XTC with Windows applications, we recommend that you run the Windows driver setup routine following installation in order to view all hardware configuration settings and to make any necessary changes. To open the SPEA MEDIA XTC Windows driver setup display:

1. Open the **Main** program group under the Windows Program Manager.
2. Open the **Control Panel** applet inside the **Main** program group.
3. Inside the **Control Panel** double click on the SPEA MEDIA XTC symbol.

The SPEA MEDIA XTC Windows driver setup display is shown below in its default state.

The top half of the setup display presents the configuration options for the **Primary Wave Record/Playback** device. This is the area of the SPEA MEDIA XTC used for the recording of digital audio soundfiles and the playback of monophonic digital audio soundfiles.

The bottom half of the setup display presents the configuration options for the **MIDI Synth and Secondary Wave Playback** device. The Secondary Wave Playback device is a unique feature of SPEA MEDIA XTC which extends the sound-file playback capability of Windows, allowing up to three wave files (instead of just one) to be played back simultaneously. The

SPEA MEDIA XTC is fully compatible with Windows Multimedia applications even without this extended capability. By default, Secondary Wave Playback is disabled since it requires the use of additional DMA resources. However, if you know that your system has additional DMA resources available, you can enable one or both of the Secondary Wave Playback devices, as described below.

### Primary Wave Record/Playback Setup

#### Port

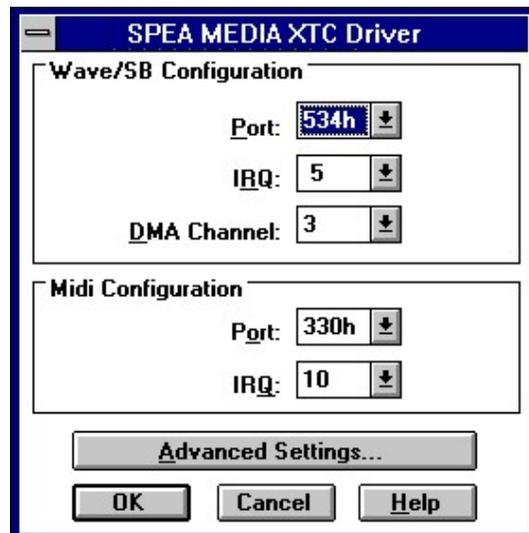
selects the base port address of the SPEA MEDIA XTC Primary Wave Record/Playback device. This corresponds to the WavePort selection made in the Hardware Setup screen of SSInit (SPEA MEDIA XTC DOS configuration utility).

#### Interrupt

selects the interrupt request line (IRQ) of the SPEA MEDIA XTC Primary Wave Record/Playback device. This value corresponds to the IRQ selection made in the SB IRQ/Wave section of the Hardware Setup screen of SSInit. The default is 5.

#### DMA Channel

selects the DMA channel that the SPEA MEDIA XTC Primary Wave Record/Playback device will use for wave (digital audio) data transfer. This value corresponds to the DMA selection made in the Hardware Setup screen in SSInit and is also the DMA channel that is used when the SPEA MEDIA XTC emulates Sound Blaster digital audio under DOS. The default is 1.



*SPEA MEDIA XTC Wave and MIDI Configuration*

## MIDI Synthesizer

### Port

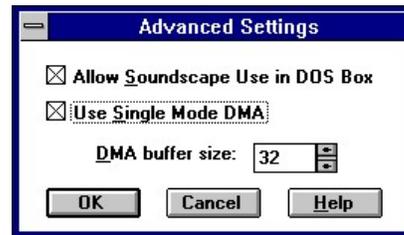
selects the base port address of the SPEA MEDIA XTC synthesizer and MPU-401 compatible MIDI interface. This value corresponds to the BasePort selection made in the Hardware Setup screen in SSInit.

### Interrupt

selects the interrupt request line that the SPEA MEDIA XTC synthesizer and MPU-401 compatible MIDI interface use for basic communications. This value corresponds to the IRQ selection made in the Base Values section of the Hardware Setup screen of SSInit. The default is 2.

## The Advanced Settings Display

The Advanced Settings display can be used to make additional adjustment to the SPEA MEDIA XTC driver.



*Advanced Settings Dialogue Box*

### Allow SPEA MEDIA XTC Use in DOS Box

enables or disables the SPEA MEDIA XTC card in a DOS shell under Windows (allowing you to play DOS games under Windows). It is a good idea to leave this option enabled. Disable it if you are using a DOS program that uses sound in conjunction with a Windows program that also uses sound.

**Use Single Mode DMA** toggles the DMA mode from Single to Demand mode. Demand mode DMA is used for compatibility with certain mother boards. If digital audio playback is not working, turn off Single mode DMA.

**DMA buffer size** allows you to change the size of the DMA buffer allocated to the SPEA MEDIA XTC driver. Generally, a DMA buffer size of 32 is sufficient. If you are doing large amounts of digital audio playback or video playback, increasing this value may improve performance.

**OK** saves any changes you have made and exits the display.

The **Cancel** button exits the Advanced Settings display without applying changes.

The **Help** button brings up help screens explaining the display.

## PART 4 Configuration of the SPEA MEDIA XTC under Windows® 95

The SPEA MEDIA XTC is easiest to use when installed in a plug-and-play system, i.e. When installed in the Windows® 95 operating environment, SPEA MEDIA XTC requires a minimal amount of configuration by the user.

### Installing the SPEA MEDIA XTC in a Windows® 95 System

To install the SPEA MEDIA XTC in a Windows® 95 system, follow these steps:

1. Shut down your computer.
2. Place the card into your computer. Refer to the installation section earlier in this manual for details.
3. Restart your computer. Windows® 95 will automatically detect the presence of the new hardware and prompt you for the location of the driver for the SPEA MEDIA XTC hardware.
4. Insert the SPEA MEDIA XTC disk #1 or SPEA CD and click OK or press Enter. The installation program will place the SPEA MEDIA XTC driver and other software onto the selected drive. The driver will be installed with the best possible configuration for your particular system. This configuration will be selected based on other devices in your computer.
5. Be sure to select the Windows® 95 joystick driver to ensure proper function of the joystick, if you are using one.

### Using the SPEA MEDIA XTC with DOS games

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There are two ways to launch DOS games in Windows® 95: from a DOS box or from the DOS Exclusive Mode. The DOS box method of launching games will yield the best SPEA MEDIA XTC performance.

#### To use a game in a DOS box:

1. Start by viewing SPEA MEDIA XTC's current DOS Settings (DMA, IRQ, and Address settings). This information will allow you to make appropriate choices when you set up the game.
2. To view the current settings, right click on the 'My Computer' icon. The System properties page appears.
3. Click on the Device Manager tab to display the list of devices in your computer.
4. Double click on the 'Sound, video and game controllers' icon to see the list of devices.
5. Double click on the 'SPEA MEDIA XTC' device icon. The SPEA MEDIA XTC Properties page appears.
6. Click on the DOS settings tab to view the settings. It may be helpful to make a note of them for future reference.
7. Start a Virtual Machine Session (DOS Session) by clicking on Start in the Taskbar, the Programs from the subsequent pop-up menu, and finally the MS DOS Prompt from the next pop-up menu.
8. Again, be sure to set up your game based on the DOS Settings Property page of the SPEA MEDIA XTC driver to ensure proper performance.

#### To use a game in DOS Exclusive Mode:

Again, the DOS Box method is preferred.

1. Bring up the Properties page for the game's executable (.EXE).
2. Select the Program Properties page.
3. Select **Advanced**.
4. Check **MS-DOS Mode**.
5. Check **Specify a new MS-DOS Configuration**. If the game is set up for MT-32 mode, click the configuration button and select **SPEA MEDIA XTC MT-32 Mode**.

This will build a CONFIG.SYS and AUTOEXEC.BAT file that is associated with that .EXE. When you double click on the program's icon, it will restart the system using these new settings and run the game. When it is finished, Windows will reload. Be aware that the DWCFGMG.SYS driver must load in order

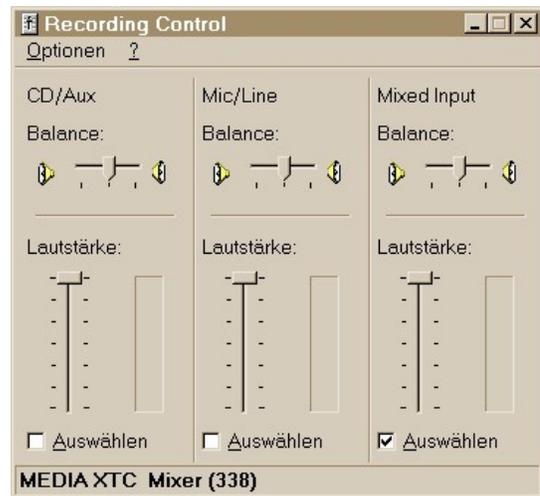
for the SPEA MEDIA XTC card to work in DOS  
Exclusive Mode.

## Using the Mixer

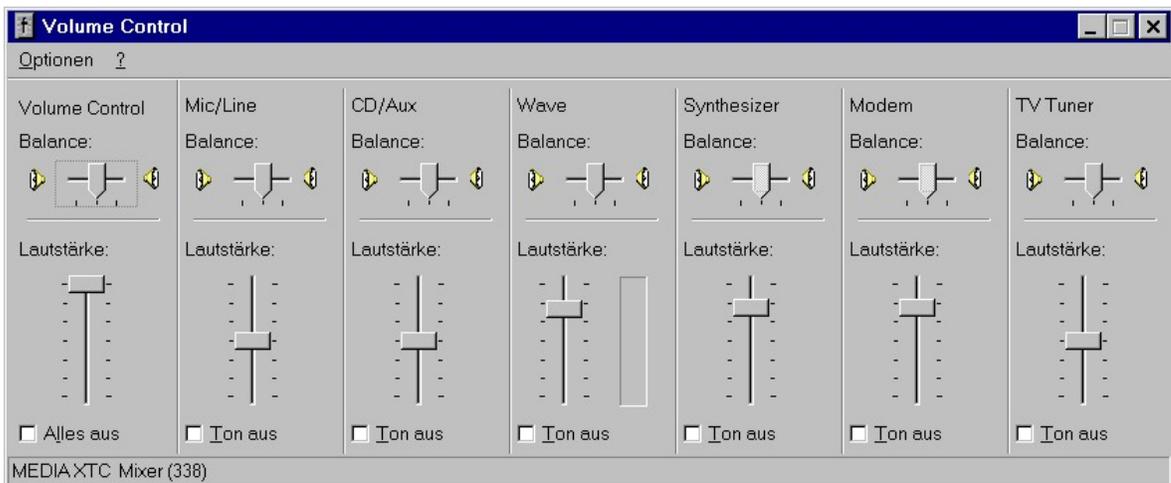
The Mixer is a feature of Windows® 95 that lets you make a variety of adjustments to the audio levels and balance of the SPEA MEDIA XTC. To view the mixer, work your way through the hierarchy of pop-up menus beginning with the Start button of the task bar. The sequence is **Programs, Accessories, Multimedia, and Volume control (mixer)**. Rather than going through this sequence each time you want to make an adjustment of SPEA MEDIA XTC's audio levels, you can place the mixer in the task bar by following these steps:

1. Open the Control Panel.
2. Double click on the Multimedia icon. The multimedia properties page appears,
3. In the playback section, check the box marked Show volume control in the task bar. The mixer can now be invoked by double clicking on the small speaker icon located on the right side of the taskbar next to the clock. Single clicking on this icon will bring up a smaller page that lets you adjust the volume.

The mixer, shown below, can display all sections or only a portion of them. Which sections are displayed can be changed by choosing the **Properties** item of the **Options** menu. In addition to controlling the audio performance of the SPEA MEDIA XTC for Windows applications, the mixer can also control DOS volumes. If you are running a game and want to adjust the volume, simply switch back to Windows by pressing Alt + Tab (you must be in a DOS box) and adjust the mixer.



*Mixer for the SPEA MEDIA XTC while recording*



*Mixer for the SPEA MEDIA XTC*

## Locking Configurations under Windows® 95

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In some situations, it may be a good idea to lock your SPEA MEDIA XTC configuration. For example, you may want to insure that a particular DOS game is compatible with the SPEA MEDIA XTC. DOS games usually have a setup program which is run prior to playing the game. In the setup program, you tell the game what type of sound card you have as well as what resources the sound card uses. Due to the dynamic nature of a plug & play system, you can't always guarantee that the settings the operating system assigns to the card will be the same from session to session.

To lock settings:

1. Right click on the **'My Computer'** icon. The System Properties page appears.
2. Click on the Device Manager tab to display the list of devices in your computer.
3. Double click on the **'Sound, video and game controllers'** to see the list of devices.
4. Double click on the **'SPEA MEDIA XTC'** device icon. The SPEA MEDIA XTC Properties page appears.
5. Click on the Resources tab and then remove the check mark from the box next to **Use automatic settings**. The current settings are now locked. You can also select and lock a different configuration from the **Setting based on list**, which is enabled as soon as the **Use automatic settings** box is unchecked.

## The Multimedia Properties page

Additional changes can be made to the way your sound card performs by making changes on the Multimedia properties page. To view this page, double click on the Multimedia icon located in the control panel. Use the help feature of Windows to learn about the elements within the various tabs.

## Uninstalling the SPEA MEDIA XTC Software

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The SPEA MEDIA XTC Software can be removed at any time by using the Add / Remove Programs Control Panel applet. This program will launch the SPEA MEDIA XTC uninstaller. All SPEA MEDIA XTC software elements will be removed unless the uninstall program cannot remove a particular element or elements for some reason, in which case you will be notified with an on-screen message. To remove the SPEA MEDIA XTC driver, bring up the System Properties page and select the Device Manager property page. Look on the hardware tree for **Sound, video and game controllers**. Underneath that branch is where you will find the SPEA MEDIA XTC drivers. Click each device and then click **remove**.

### Note:

If you shut down the system and remove the board and afterwards restart Windows® 95, also all SPEA MEDIA XTC drivers and the corresponding references and entries are removed automatically.

## **SPEA MEDIA XTC devices**

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The SPEA MEDIA XTC installation routine installs three software devices onto your drive at the time of installation. View these devices by right clicking on the **My computer** icon. The System properties page appears. Then click on the Device Manager tab to see the list of devices. Double click on **the Sound, video and game controllers** to display the 'tree' of SPEA MEDIA XTC related devices. If installation was successful, there should be three devices in the tree:

- SPEA MEDIA XTC Gameport / Joystick
- SPEA MEDIA XTC Plug & Play
- SPEA MEDIA XTC SoundBlaster Emulation

If you install the software and do not see the above three devices in the tree, or see a small '?' over any of them, it means the device was not installed properly.

Devices can be configured to control how your board behaves. Double clicking on any of the devices, or selecting them and pressing the Properties button, will display the device's property page. Each page is composed of one or more tabs, each tab corresponding to a group of related properties.

Help is available by pressing the '?' button and then pointing and clicking on portion of the display with which you need help.

## **Troubleshooting**

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Windows® 95 comes with a variety of tools for troubleshooting various devices. Consult your Windows documentation for details. Also open and read the README file included with your SPEA MEDIA XTC software.

It contains late-breaking troubleshooting tips and other important information.

## **Using DOS Utilities Under Windows® 95**

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SPEA MEDIA XTC's three primary DOS utilities (MT32 Change, DM Test, and S2KStat) can all be run from a DOS session under Windows. See their respective sections in Part 2 of this manual for details how to use them.

# PART 5—Using SPEA MEDIA XTC

## Using SPEA MEDIA XTC under DOS

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### Using SPEA MEDIA XTC with Games

Most DOS-based games that provide sound have some procedure for sound setup. These procedures generally present you with a list of popular sound cards or sound devices. The SPEA MEDIA XTC card will work with one or more of the available options.

There are, however, differences in the way games present sound options. Some may present a single option that corresponds to a particular sound device. (e.g., SPEA MEDIA XTC, Sound Blaster, Roland Sound Canvas, etc.). Others will provide a separate music and digital audio option, either as a single menu selection or as two separate menus (e.g., General MIDI music with Sound Blaster digital audio, etc.).

Some game programs allow you to set the MIDI port address and IRQ for music and sound. Make sure that these settings correspond to the selections made in the Hardware Settings screen of SSInit. If the game offers MPU-401 General MIDI or MT-32 as options and allows you to set the MIDI port address and/or IRQ, make sure they match the MIDI Port Address and IRQ settings in the MIDI Interface section of the Hardware Settings screen. If the game offers Sound Blaster settings, make sure that they correspond to the Sound Blaster/Wave settings in Hardware Settings screen. Remember that SPEA MEDIA XTC emulates a Sound Blaster only at a fixed base port address of 220H.

### Music Options

Most DOS games offer a menu choice for sound when they start up. SPEA MEDIA XTC supports all of the popular music options. The only time you will need to provide “instructions” to SPEA MEDIA XTC is when MT-32/LAPC-1 is offered and Sound Canvas/General MIDI is not.

Because General MIDI provides the highest quality sound, the majority of today’s popular games offer it as an option. Those that do not almost always offer MT-32 in its place. If you have a choice between General MIDI and MT-

32, always choose General MIDI, since it will provide you with the best sound quality. If you need to use MT-32, you must first switch from the General MIDI patch set (the default) to the MT-32 patch set. When you’re finished using the MT-32 patch set, be sure to switch back to the General MIDI set. See “MT32 Patch-change Utility” in Part 3 in this manual.

### Digital Audio Options

SPEA MEDIA XTC supports the Soundscape digital audio (applications that provide this option, are commonly denoted by a Soundscape logo someplace on the package) and Sound Blaster digital audio emulation. If an application provides both as options, specify Soundscape digital audio as your first choice. Soundscape does not support Sound Blaster ADPCM (very few games offer this as an option).

## Using the SPEA MEDIA XTC with Windows

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Under Windows, the SPEA MEDIA XTC card will operate in GM mode only.

### Multimedia Applications

The SPEA MEDIA XTC software includes a set of easy-to-use Windows based multimedia applications that allow you to get the most out of your card. These applications are documented in the SPEA MEDIA XTC software manual.

### MIDI Devices under Windows

The SPEA MEDIA XTC card includes three MIDI devices in the Windows environment. These three device are classified as 'MIDI Out' and 'MIDI In', as follows:

#### MIDI Out

##### SPEA MEDIA XTC Synthesizer

is a MIDI Output device provided by the SPEA MEDIA XTC Windows driver for routing MIDI data from Windows applications to the on-board synthesizer on your SPEA MEDIA XTC card.

##### SPEA MEDIA XTC MIDI Output

is another MIDI Output device provided by the SPEA MEDIA XTC Windows driver for routing MIDI data from Windows applications to the SPEA MEDIA XTC external MIDI Out port.

Most MIDI applications will send MIDI output data through the Windows MIDI Mapper (see the *Using the MIDI Mapper with the SPEA MEDIA XTC* section below for more information). The MIDI Mapper has the

capability to route this data to any MIDI output device connected to your system. Some applications have the capability to select a particular MIDI output device directly, bypassing the MIDI Mapper.

## **MIDI In**

### **SPEA MEDIA XTC MIDI Input**

is a MIDI Input device provided by the SPEA MEDIA XTC Windows driver for routing MIDI data received at the SPEA MEDIA XTC external MIDI port to Windows applications.

Normally, the synthesizer in your SPEA MEDIA XTC card will respond to MIDI data arriving at the external MIDI input. However, under Windows, when an application opens the SPEA MEDIA XTC MIDI Input device, external MIDI input data will bypass the onboard synthesizer, and go directly to the application that opened the MIDI Input device. This is done so that the application can route the data through the MIDI Mapper, and back out to either the onboard synthesizer or an external synthesizer (via an external MIDI out port). Many applications that handle MIDI In will automatically route the data out to the MIDI Mapper. Other applications require this capability to be enabled by the user.

#### **Note:**

If you are playing notes on an external synthesizer, and you are not hearing anything, you may have to actively turn on the application's 'MIDI Thru' or 'MIDI Merge' capability in order for the Incoming MIDI data to be sent back out to the MIDI Mapper, or directly to a MIDI Out device. Make sure that you are monitoring the device to which the MIDI data is being directed.

## **Using the External MIDI Connector**

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The external MIDI port (available from the MIDI/Joystick connector on the rear panel) allows you to connect an external MIDI device (such as a MIDI keyboard) to your SPEA MEDIA XTC card for sending and receiving MIDI data to and from your computer. If you are going to use an external MIDI connector, make sure it complies with the specification for an external MIDI connector described in *Appendix C* of this manual. Make sure that the cable with the 'In' label is connected to the external keyboard's MIDI 'Out' jack, and that the cable with the 'Out' label is connected to the external keyboard's MIDI 'In' jack.

## Using the MIDI Mapper with the SPEA MEDIA XTC

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This section describes how to use the Windows MIDI Mapper with SPEA MEDIA XTC. For more information about MIDI, see *Appendix A* in this manual.

The MIDI Mapper is one of the multimedia extensions provided by Windows 3.1x and higher. It is installed by using the **Add** command in the Drivers applet (in the Windows Control Panel) - once installed, it is also located in the Windows Control Panel. The MIDI Mapper enables channel mapping (sometimes called channelizing), patch mapping and key mapping, as well as allowing outgoing MIDI data to be routed to either a sound card synthesizer or to an external MIDI port.

### Setups

The MIDI Mapper allows you to create and store any number of MIDI setups, so that you can call up different routings as required. These setups are stored in a configuration file called MIDIMAP.CFG, located in your WINDOWS\SYSTEM directory. The SPEA MEDIA XTC installation process (as described in *Part 2* of this manual) automatically creates a new MIDIMAP.CFG file and renames your old file MIDIMAP.SND. To view the SPEA MEDIA XTC MIDI Mapper setups:

1. Locate and open the **Main** group window, then double-click on the Control Panel icon.
2. Double-click the **MIDI Mapper** icon.
3. Click **Setups** in the **Show** section if it is not already selected. Next to **Name:** it should say **MEDIAXTC Synth**, as shown below. This is the default setup.
4. Click on the arrow at the right of the setup name. A drop-down menu will appear. The other available setups are **MEDIAXTC MPort** and **Vanilla**.
5. Close the Name box by clicking on the arrow, making sure that **MEDIAXTC Synth** is still selected. Now click on the **Edit...** button. Here's the screen you'll see:

The two columns on the left (**SrcChan** and **DestChan**) show the channelizing functions of the setup. Here, each source MIDI channel is mapped to the equivalent destination channel. However, this could be changed if required so that, for example, data being played over MIDI channel 10 could be rerouted to MIDI channel 16 or any other channel.

The column in the middle (**Port Name**) shows the output routing for each of the 16 MIDI channels. In this default **MEDIAXTC Synth** setup, data transmitted on channels 1-10 is being routed to the **SPEA MEDIA XTC Synthesizer** device - in other words, to the onboard synth on the **SPEA MEDIA XTC** card. Data transmitted on channels 11-16 is routed nowhere (the Port Name is **None**) and will not be heard. This enables the **SPEA MEDIA XTC** to act as what Windows terms an Extended Synthesizer (one which can play at least nine different instrument sounds plus eight drum sounds simultaneously (over MIDI channels 1-10), with at least 16-note polyphony), as opposed to a Base-Level Synthesizer (one which can play just three different instrument sounds plus three different drum sounds (over MIDI channels 13-16), with 6-note polyphony). In fact, the **SPEA MEDIA XTC** capabilities go far beyond that of an Extended Synthesizer, but this MIDI Mapper setup will allow you to easily play 'hybrid' MIDI files which contain both Extended and Base-Level MIDI data (many commercially available MIDI files use this format in order to make them compatible with the widest range of sound cards). If you want to use all 16 MIDI channels with your **SPEA MEDIA XTC** card, simply change the Port Name for channels 11-16 to **SPEA MEDIA XTC Synthesizer** - this will automatically make those channels active (see below for more information).

The **Patch Map** column indicates whether or not a custom MIDI Mapper Patch Map is to be used for any or all of the 16 MIDI channels. For more information, see the *Patch Maps* section below.

Finally, the **Active** column indicates which of the 16 MIDI channels are active (as shown by a box with an **X**) and which are inactive (as shown by a gray box). Since the default **MEDIAXTC Synth** setup has no Port Name for MIDI channels 11-16, these channels are currently inactive. To activate/deactivate any MIDI channel, simply click on the box.

## Routing MIDI Data to the External MIDI Out Port

As we've seen, the **SPEA MEDIA XTC** Windows driver provides another MIDI output device, called **SPEA MEDIA XTC MIDI Output**. This device is used when you wish to route outgoing MIDI data for a particular channel to the **SPEA MEDIA XTC** external MIDI Out port. You can modify the default **MEDIAXTC Synth** setup so that any or all of the 16 MIDI channels utilizes this output device, but an easier way is to call up another setup created during the **SPEA MEDIA XTC** installation called **MEDIAXTC MPort**.

If you are using an external synthesizer, make sure it is connected to the **SPEA MEDIA XTC** as described in the previous section before proceeding.

1. Open the MIDI Mapper and click **Setups** in the **Show** section if it is not already selected. Click on the arrow at the right of the setup name. A drop-down menu will appear. Choose **MEDIAXTC MPort**.
2. Click on the **Edit...** button. Here's the screen you'll see:

As you can see, this setup is identical to the **MEDIAXTC Synth** default setup except for the Port Name output device assigned to MIDI channels 1-10. Here, all MIDI data on channels 1-10 is routed to the **SPEA MEDIA XTC** external MIDI port - and, again, MIDI channels 11-16 are unused. To make them active, simply select the **SPEA MEDIA XTC MIDI Output** Port Name for channels 11-16.

The third and final MIDI Mapper setup provided by the **SPEA MEDIA XTC** installation is simply called **Vanilla**. This is simply a 'scratch' setup with no output device assignments.

### Note:

Be sure to restore the original MIDI Mapper setup (**MEDIAXTC Synth**), or the **SPEA MEDIA XTC** internal synthesizer will not respond to MIDI data.

## Patch Maps

The MIDI Mapper also allows you to create custom patch maps that enable Windows to locate various sounds ('patches') on different 'Destination' devices such as sound cards and external MIDI synthesizers. For example, if you use the MPU-401 compatible MIDI interface in your SPEA MEDIA XTC card to connect to an external synthesizer that does not support the General MIDI standard, you must tell Windows where to find the sounds on that synthesizer. Windows has internal 'Source' patch numbers and names that cannot be changed (for example, Source patch number 'Zero' is always an Acoustic Grand Piano), but an external synthesizer may assign any patch name to any patch number (for example, patch Zero on your external synthesizer could be a Saxophone). To resolve this potential conflict, create an original patch map:

1. Open the MIDI Mapper and click on **Patch Maps** in the **Show** section.
2. Click on the **New...** button and name your patch map something useful (such as the name of your synthesizer). Click on **OK**, and the patch map editor will appear:

This patch map editor shows the list of Source Patches and the corresponding Destination Patch. If you are using an external MIDI synthesizer, you may have to change the destination patch number to match the sounds on your synthesizer. For example, if the Acoustic Grand Piano on your external synthesizer is patch number 118, make the Destination Patch 118, as shown above. After you have changed all of the patches to match your keyboard, click **OK**. In your MIDI Mapper setup (as described above), you can assign the same patch map to each MIDI channel, or you can assign a different patch map to each MIDI channel.

## Key Maps

In addition to 'melody' sounds, most synthesizers (including the SPEA MEDIA XTC onboard synth) are capable of playing special sounds called 'drum' or 'percussion' sounds. These are unique in that each key of a keyboard plays an entirely different sound, as opposed to simply playing the same sound at a different pitch. General MIDI deals with drum sounds by specifying that certain keys play specific sounds - in other words, specific keys are 'mapped' to specific sounds. However, if you wish to use a non-standard drum sound mappings with Windows applications, the MIDI Mapper allows you to create custom key maps:

1. Open the MIDI Mapper and click on **Key Maps** in the **Show** section.
2. Click on the **New...** button and name your patch map something useful (such as the name of your synthesizer). Click on **OK**, and the key map editor will appear:

The key map editor works similarly to the patch map editor, showing a list of Source Keys and Destination Keys. If you are using an external MIDI synthesizer, you may have to change the Destination Key numbers to match the Source Key Names of the synth's drum sounds. In the patch map editor, you can assign any key map to any source patch.

For further information on the various MIDI Mapper functions, consult your Windows Reference Manual.

# Appendix A

## About MIDI

### What is MIDI?

---

MIDI (an acronym for the Musical Instrument Digital Interface) is a hardware and software specification that allows electronic musical instruments and a wide variety of related equipment (such as personal computers) to communicate with each other. MIDI carries information that describes a performance rather than sound. Think of it as being the modern equivalent of the player piano roll: the roll itself is just paper with holes punched in it, but, played back on the proper instrument, the 'holes' (which represent a performance) are turned into 'music'.

In MIDI, the 'holes' are messages that indicate when a note has been played (indicated by a Note On message), which note it was (indicated by a MIDI note number), and how hard it was played (indicated by a velocity value). There are 128 possible notes in MIDI, which translates to nearly an 11 octave range. Other messages carry gestural information from continuous controllers (such as pitch bend or sustain switch), timing information for synchronizing systems, or program change information that tells an instrument which of its sounds to use.

Just as your television set has different channels to carry separate programs, MIDI uses a system of 16 channels to allow a number of instruments to be independently controlled. Unlike television channels, however, the only difference between MIDI channels is a number carried in the first byte of most MIDI messages. This means that information for all 16 channels can be simultaneously carried on a single cable.

Personal computers came into being around the same time as MIDI, which was no accident, since it was the development of microprocessors that enabled both to happen. Personal computers can record, play back, and perform sophisticated manipulations of MIDI data. A personal computer can be used to record information about a performance and can even be used to simplify the programming of sounds on a synthesizer. Recorded MIDI data can be stored in a Standard MIDI File (SMF) format which, in Windows, is called a '.MID' file.

### General MIDI

---

General MIDI (GM) is an enhancement to the original MIDI specification designed to make it easy to play back a Standard MIDI File on a variety of instruments, with some assurance that the proper sounds will be heard. General MIDI assigns specific sounds to individual program change numbers, (for example, sending MIDI program change 1 message to a GM instrument will always call up a Grand Piano sound). The exact quality of the Grand Piano sound always depends on the capabilities of the particular synthesizer.

The General MIDI specification divides sounds into instrument groupings, each of which represents a family of instruments or class of sounds. MIDI channel 10 is defined in General MIDI as being used for percussion, with each percussion sound being assigned to a specific note number.

General MIDI instruments respond to a number of controllers, specifically: Modulation Wheel (MIDI Continuous Controller #1), Main Volume (CC#7), Expression (CC#11), and Sustain Pedal (CC#64).

### SPEA MEDIA XTC General MIDI Sound Set and MT-32 Sound Set

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The following pages show the Level 1 General MIDI Sound Set and Percussion Map as implemented in SPEA MEDIA XTC. Also included are the SPEA MEDIA XTC MT-32 Sound Set and Percussion Map Sets.

	A	B	
<b>P I A N O</b>	1	0 8 16	Piano1 Piano 1w Piano 1d
	2	0 8	Piano 2 Piano 2w
	3	0 8	Piano 3 Piano 3w
	4	0 8	Honky-tonk Honky-tonk w
	5	0 8 16 24	E. Piano 1 Detuned EP1 E. Piano 1v 60'S E. Piano
	6	0 8 16	E. Piano 12 Detuned EP2 E. Piano 2v
	7	0 8 16 24	Harpsichord Coupled Hps. Harpsi. w Harpsi o
	8	0	Clav.
<b>Chro- matic</b>	9	0	Celesta
	10	0	Glockenspiel
	11	0	Music Box
<b>Percu- ssion</b>	12	0 8	Vibraphone Vib. w
	13	0 8	Marimba Marimba w
	14	0	Xylophone
	15	0 8 9	Tubular-bell Church Bell Carillon
	16	0	Santur

	A	B		
<b>O R G A N</b>	17	0 8 16 32	Organ 1 Detuned Or. 1 60's Organ 1 Organ 4	
	18	0 8 32	Organ 2 Detuned Or. 2 Organ 5	
	19	0	Organ 3	
	20	0 8 16	Church Org. 1 Church Org. 2 Church Org. 3	
	21	0	Reed Organ	
	22	0 8	Accordian Fr Accordian It	
	23	0	Harmonica	
	24	0	Bandoneon	
	<b>G U I T A R</b>	25	0 8 16 32	Nylon-str. Gt. Ukulele Nylon Gt. o Nylon Gt. o
		26	0 8 16	Steel-str. Gt. 12-str. Gt. Mandolin
27		0 8	Jazz Gt. Hawaiian Gt.	
28		0 8	Clean Gt. Chorus Gt.	
29		0 8 16	Muted Gt. Funk Gt. Funk Gt. 2	
30		0	Overdrive Gt.	
31		0 8	Distortion Gt. Feedback Gt.	
32		0 8	Gt. Harmonics Gt. Feedback	

	A	B	
<b>B A S S</b>	33	0	Acoustic Bass
	34	0	Fingered Bass
	35	0	Picked Bass
	36	0	Fretless Bass
	37	0	Slap Bass 1
	38	0	Slap Bass 2
	39	0	Synth Bass 1
		1	Synth Bass 101
<b>S</b>		8	Synth Bass 3
	40	0	Synth Bass 2
		8	Synth Bass 4
		16	Rubber Bass
<b>Strings/</b>	41	0	Violin
<b>Orches- tra</b>		8	Slow Violin
	42	0	Viola
	43	0	Cello
	44	0	Contrabass
	45	0	Tremelo Str
	46	0	Pizzicato Str
	47	0	Harp
	48	0	Timpani
<b>E N S E M B L E</b>	49	0	Strings
		8	Orchestra
	50	0	Slow Strings
	51	0	Syn. Strings 1
		8	Syn. Strings 3
	52	0	Syn. Strings 2
	53	0	Choir Aahs
		32	Choir Aahs 2
54	0	Voice Oohs	
55	0	Syn Vox	
56	0	Orchestra Hit	

	A	B	
<b>B R A S S</b>	57	0	Trumpet
	58	0	Trombone
		1	Trombone 2
	59	0	Tuba
	60	0	Muted Trumpet
	61	0	French Horn
		1	French Horn 2
	62	0	Brass 1
		8	Brass 2
	63	0	Synth Brass 1
		8	Synth Brass 3
		16	Analog Brass 1
	64	0	Synth Brass 2
		8	Synth Brass 4
	16	Analog Brass 2	
<b>R E E D</b>	65	0	Soprano Sax
	66	0	Alto Sax
	67	0	Tenor Sax
	68	0	Baritone Sax
	69	0	Oboe
	70	0	English Horn
	71	0	Bassoon
	72	0	Clarinet
	73	0	Piccolo
	74	0	Flute
<b>P I P E</b>	75	0	Recorder
	76	0	Pan Flute
	77	0	Bottle Blow
	78	0	Shakuhachi
	79	0	Whistle
	80	0	Ocarina

	A	B		
<b>Synth</b>  <b>Lead</b>	81	0	Square Wave	
		1	Square	
		8	Sine Wave	
	82	0	Saw Wave	
		1	Saw	
		8	Doctor Solo	
		83	0	Syn. Calliope
		84	0	Chiffer Lead
85	0	Charang		
86	0	Solo Vox		
87	0	5th Saw Wave		
88	0	Bass & Lead		
<b>Synth</b>  <b>pad</b>  <b>etc.</b>	89	0	Fantasia	
	90	0	Warm Pad	
	91	0	Polysynth	
	92	0	Space Voice	
	93	0	Bowed Glass	
	94	0	Metal Pad	
	95	0	Halo Pad	
	96	0	Sweep Pad	
<b>Synth</b>  <b>SFX</b>	97	0	Ice Rain	
	98	0	SoundTrack	
	99	0	Crystal	
	100	0	Atmosphere	
	101	0	Brightness	
	102	0	Goblin	
	103	0	Echo Drops	
104	0	Star Theme		

	A	B		
<b>E</b> <b>T</b> <b>H</b> <b>N</b> <b>I</b> <b>C</b>	105	0	Sitar	
	106	0	Banjo	
	107	0	Shamisen	
	108	0	Koto	
		8	Taisho Koto	
	109	0	Kalimba	
	110	0	Bag Pipe	
	111	0	Fiddle	
	112	0	Shanai	
	<b>P</b> <b>E</b> <b>R</b> <b>C</b> <b>U</b> <b>S</b> <b>S</b> <b>I</b> <b>V</b> <b>E</b>	113	0	Tinkle Bell
		114	0	Agogo
		115	0	Steel Drums
8			Woodblock Castanets	
117		0	Taiko	
		8	Concert BD	
118		0	Melo Tom 1	
		8	Melo Tom 2	
119		0	Synth Drum	
		8	808 Tom	
120	0	Reverse Cym.		
<b>Sound</b> <b>Effects</b>	121	0	Gt. Fret Noise	
	122	0	Breath Noise	
	123	0	Seashore	
	124	0	Bird	
	125	0	Telephone 1	
	126	0	Helicopter	
	127	0	Applause	
	128	0	Gun Shot	

### General MIDI Level-1 Percussion Map

35. Ac Bass Dm	51. Ride Cym 1	67. Hi Agogo
36. Bass Dm 1	52. Chinese Cym	68. Lo Agogo
37. Side Stick	53. Ride Bell	69. Cabasa
38. Ac Snare	54. Tambourine	70. Maracas
39. Hand Clap	55. Splash Cym	71. Short Whistle
40. Elec Snare	56. Cowbell	72. Long Whistle
41. Lo Floor Tom	57. Crash Cym 2	73. Short Guiro
42. Closed Hi-Hat	58. Vibraslap	74. Long Guiro
43. Hi Floor Tom	59. Ride Cym 2	75. Claves
44. Pedal Hi-Hat	60. Hi bongo	76. Hi Woodblock
45. Lo Tom	61. Lo bongo	77. Lo Woodblock
46. Open Hi-Hat	62. Mute Hi Conga	78. Mute Cuica
47. Low-Mid Tom	63. Open Hi Conga	79. Open Cuica
48. Hi-Mid Tom	64. Lo Conga	80. Mute Triangle
49. Crash Cym 1	65. Hi Timbale	81. Open Triangle
50. Hi Tom	66. Lo Timbale	

The SPEA MEDIA XTC also supports the following extensions to the General MIDI Percussion Map:

82. Shaker
83. Jingle Bell
84. Bell Tree
85. Castanets
86. Mute Suirdo
87. Open Suirdo

### MT-32 Sound Set

0. Accuo Piano 1	33. Harmo Pan	66. Elec Bass 1	99. Syn Mallet
1. Accuo Piano 2	34. Chorale	67. Elec Bass 2	100. Windbell
2. Accuo Piano 3	35. Glasses	68. Slap Bass 1	101. Glock
3. Elec Piano 1	36. Soundtrack	69. Slap Bass 2	102. Tube Bell
4. Elec Piano 2	37. Atmosphere	70. Fretless 1	103. Xylophone
5. Elec Piano 3	38. Warm Bell	71. Fretless 2	104. Marimba
6. Elec Piano 4	39. Funny Vox	72. Flute 1	105. Koto
7. Honkytonk	40. Echo Bell	73. Flute 2	106. Sho
8. Elec Org 1	41. Ice Rain	74. Piccolo 1	107. Shakuhachi
9. Elec Org 2	42. Oboe 2001	75. Piccolo 2	108. Whistle 1
10. Elec Org 3	43. Echo Pan	76. Recorder	109. Whistle 2
11. Elec Org 4	44. Doctor Solo	77. Pan Pipes	110. Bottleblow
12. Pipe Org 1	45. School Daze	78. Sax 1	111. Breathpipe
13. Pipe Org 2	46. Bellsinger	79. Sax 2	112. Timpani
14. Pipe Org 3	47. Square Wave	80. Sax 3	113. Melodic Tom
15. Accordion	48. Str Sect 1	81. Sax 4	114. Deep Snare
16. Harpsi 1	49. Str Sect 2	82. Clarinet 1	115. Elec Perc 1
17. Harpsi 2	50. Str Sect 3	83. Clarinet 2	116. Elec Perc 2
18. Harpsi 3	51. Pizzicato	84. Oboe	117. Taiko
19. Clavi 1	52. Violin 1	85. Engl. Horn	118. Taiko Rim
20. Clavi 2	53. Violin 2	86. Bassoon	119. Cymbal
21. Clavi 3	54. Cello 1	87. Harmonica	120. Castanets
22. Celesta 1	55. Cello 2	88. Trumpet 1	121. Triangle
23. Celesta 2	56. Contrabass	89. Trumpet 2	122. Orche Hit
24. Syn Brass 1	57. Harp 1	90. Trombone 1	123. Telephone
25. Syn Brass 2	58. Harp 2	91. Trombone 2	124. Bird Tweet
26. Syn Brass 3	59. Guitar 1	92. Fr Horn 1	125. One Note Jam
27. Syn Brass 4	60. Guitar 2	93. Fr Horn 2	126. Water Bell
28. Syn Bass 1	61. Elec Gtr 1	94. Tuba	127. Jungle Tune
29. Syn Bass 2	62. Elec Gtr 2	95. Brs Sect 1	
30. Syn Bass 3	63. Sitar	96. Brs Sect 2	
31. Syn Bass 4	64. Accou Bass 1	97. Vibe 1	
32. Fantasy	65. Accou Bass 2	98. Vibe 2	

**MT-32 Percussion Set**

34. Drum Sound	51. Drum Sound	68. Drum Sound
35. _ _ _ _	52. Accou High Tom	69. Low Timbale
36. Accou Bass Drum	53. Ride Cymbal	70. High Agogo
37. Accou Bass Drum	54. _ _ _ _	71. Low Agogo
38. Rim Shot	55. _ _ _ _	72. Cabasa
39. Accou Snare Drum	56. Tambourine	73. Short Whistle
40. Hand Clap	57. _ _ _ _	74. Long Whistle
41 Elec Snare Drum	58. Cowbell	
42. Accou Low Tom	59. _ _ _ _	
43. Closed Hi-Hat	60. _ _ _ _	
44. Accou Low Tom	61. _ _ _ _	
45. Open Hi-Hat 2	62. High Bongo	
46. Accou Middle Tom	63. Low Bongo	
47. Open Hi-Hat 1	64. Mute High Conga	
48. Accou Middle Tom	65. High Conga	
49. Accou High Tom	66. Low Conga	
50. Crash Cymbal	67. High Timbale	

## Appendix B

# Troubleshooting

If your SPEA MEDIA XTC card is not functioning as it should, don't panic. The problem is probably very simple to find and fix as long as you remain calm and approach the situation methodically.

The secret to troubleshooting is to examine the evidence you have, gain as much information as you can, and eliminate possibilities one by one. In most cases, the source of the problem will soon become clear.

For example, if the SPEA MEDIA XTC works fine when you remove all other cards from your computer, but it stops working when you replace your fax-modem, a conflict between the sound card and the fax-modem (such as port address or IRQ ) may be indicated. Often, problems are extremely simple; things like bad cables, things not plugged in or turned on, etc. Check the obvious first, not last.

### Problems when Using Two Sound Cards

---

Having another sound card in your system in addition to the SPEA MEDIA XTC card will greatly increase the chances of having system conflicts. We highly recommend that any other sound devices and their associated Windows drivers be removed before installing the SPEA MEDIA XTC card.

### Configuration Problems

---

Adding new hardware and software to your computer requires ensuring that there are no conflicts with your existing system. If you have difficulty with the installation procedure or are unable to make the card work, a conflict may be present. There are three major configuration settings to consider: I/O Port Address, Interrupt Request lines (IRQ), and Direct Memory Access channels (DMA).

To resolve such conflicts, it is very important to know the settings of other cards (it is best to remove other sound cards) and peripherals currently in your system, including the mouse, fax-modem, video accelerators, etc.

One quick way to check for conflicts is to check the configuration of all components in your PC with the ICU Utility.

Boards without Plug & Play functionality have to be enrolled with the ICU Utility via the corresponding CGF files or manually. Only then can the ICU Utility distribute free addresses for the Plug & Play boards like e.g. the SPEA MEDIA XTC.

## Audio Problems

---

If you are satisfied that the SPEA MEDIA XTC hardware and software are properly installed with no conflicts, but you hear no sound at all, the problem may be with your audio connections. Here are some suggestions:

- Try playing both a .WAV file and a .MID file to ascertain that there is no sound at all coming from the speakers. If you hear one and not the other, the problem is internal and has nothing to do with your audio system.
- Be sure that your stereo system is properly set up. Try connecting a sound source other than SPEA MEDIA XTC, such as an audio CD player, and establishing whether or not you can hear it.
- Be sure that the sound card is properly connected to the monitoring system (a 1/8" mini-phone cable should be running from the SPEA MEDIA XTC Out connector to a line input on the monitoring system). To eliminate the possibility of a bad cable, try plugging a pair of high-impedance headphones (such as most Walkman-type phones) to the SPEA MEDIA XTC Out jack and see if you hear any sound.

### Problems Internal to the SPEA MEDIA XTC

---

If you suspect that the problem is internal, the computer or the card may have become 'confused', which is generally simple to remedy.

- Run the SSInit program to reinitialize the board.
- Open the mixer in SSInit or Audiostation and move the faders to make sure that the mixer values aren't set to zero.
- Initialize the card without changing any settings. To do this, run SSINIT with a specific mode argument (i.e., SSINIT GM, SSINIT MT32, or SSINIT FM). Entering SSINIT with no specific mode argument will take you into the configuration screens discussed in *Part 3* in this manual.
- In general, it is good practice to reset the computer (power off-on or 'warm' reboot by pressing CTRL+ALT+DEL) after changing port, DMA, or IRQ settings.

## Problems with Games

---

- Make sure that the SPEA MEDIA XTC is in the proper operating mode. One way to be sure is to follow the guidelines for choosing the proper mode in *Part 4* of this manual, section *Using SPEA MEDIA XTC with Games*.
- If the game's Install or Setup program doesn't give you a particular sound option that you know the game supports, (e.g., the game's box and manual specify MT-32, but the game's Install or Setup doesn't support it), try rerunning the game's Install or Setup program after first initializing the sound card to the particular mode. Some 'smart' install programs try to auto-detect your sound card, and if the SPEA MEDIA XTC is set to the wrong mode, the Install program may not recognize it.
- If you select a game mode and the game's Install program says something like 'Sound card not found, proceed anyway?', choose 'yes'. In some cases, you can still install the program and it will work fine. The problem lies in the way some install programs check for the presence of sound cards.
- If you are having difficulty with the playback of Sound Blaster digital audio emulation, there could be an IRQ conflict with your selection for SB IRQ/Wave IRQ in SSInit. One possible cause is that IRQ 7, which is used automatically by many games for digital audio, is being used by your LPT1 port. Try setting your SB IRQ/Wave IRQ in SSInit to 5 (Remember not to set the SB IRQ/ Wave IRQ to the same value as your IRQ under Base Values).
- It is a good practice to initialize SPEA MEDIA XTC before playing each game (See *Part 4*).
- If you are having a problem with your external game/joystick controller, make sure that the SPEA MEDIA XTC joystick is disabled. This should solve the problem. Do this in the SSInit Hardware Settings screen.
- In order to use two joysticks, you will need to use a Sound Blaster compatible Y-connector, or use an industry-standard MIDI Joystick kit. This will make allowances for the proper direct connections for dual joysticks.

## Problems under Windows

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- If you are able to run Windows, but the SPEA MEDIA XTC software applications don't work, it is likely that your Windows device drivers are not functioning properly. This is the first place where you should look for problems. It is also the first thing you should look at when running the sound card under Windows for the first time. See *Part 3*, section *Configuring SPEA MEDIA XTC Under Windows* for information on configuring and troubleshooting the Windows device drivers using the Driver Setup screen.
- If digital audio playback is consistently repeating, then your Primary Wave Interrupt assignment is probably incorrect. Go to the Driver Setup screen and look at the Status Line.
- If digital audio playback is intermittently bad then you probably have a DMA conflict in your machine. Go to the Driver Setup screen and try a different DMA channel.

Next, you must edit the SYSTEM.INI file in the Windows directory to find and remove any virtual device drivers that are in conflict with your SPEA MEDIA XTC device drivers. To do this, locate the section of the file under the [386Enh] header. Look for 'device=\*.386' entries, where \* is the device driver name, and remove any entries that correspond to other sound cards' virtual MIDI or DMA device drivers.

Examples of such entries would be:

device=vmqxd.386 (Music Quest virtual MPU-401 [MIDI] device driver)

device=vsbd.386 (Sound Blaster virtual DMA device driver)

Be careful not to remove the following:

device=\*vdmad (Microsoft virtual DMA driver)

device=vtdapi.386 (Microsoft virtual timer driver)

device=vvdmad.386 (SPEA MEDIA XTC virtual DMA driver)

- Use the SPEA MEDIA XTC UNINSTALL Utility to remove the SPEA MEDIA XTC components from your system. Then reinstall the SPEA MEDIA XTC software. See '*Uninstalling the SPEA MEDIA XTC Software*' in the Addendum of the SPEA MEDIA XTC manual
- If all else fails, try restoring your original SYSTEM.INI file (backed up as SYSTEM.SND), then reinstalling the SPEA MEDIA XTC Software.

## Problems with MIDI under Windows

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If you are able to play and record .WAV files with no problem, but are experiencing difficulty getting the synthesizer or MIDI functions to work, try the following.

- Check the MIDI Mapper and make sure that MIDI data is being directed where you want it to go (remember that the SPEA MEDIA XTC MIDI Out device will bypass the SPEA MEDIA XTC synthesizer and will instead drive only the external MIDI port). If the MIDI Mapper icon does not appear in the Control Panel, it means that your MIDI drivers are not properly installed. In this case, open the Drivers applet (in the Windows Control Panel) and install the MIDI Mapper driver.
- If you are trying to use MIDI Out to drive an external MIDI device, be sure:
  - a) that the channels are properly assigned in the MIDI Mapper;
  - b) that a genuine MIDI cable (not just any cable with 5-pin DIN connectors) is connecting the SPEA MEDIA XTC MIDI Out to the external device's MIDI In; and
  - c) that the channel, mode, and sound of the external device are properly set up.
- Take note that the 'In' and 'Out' labeling on the MIDI adapters refers to MIDI 'In' and 'Out' on your sound card and not the external device. Therefore, the cable labeled 'In' should go to the MIDI connector labeled 'Out' on your external synthesizer, and the cable labeled 'Out' should go to the connector labeled 'In' on your external synthesizer.
- Confirm that you are using the proper adapter for the Joystick/MIDI port.
- If you are playing MIDI data into the SPEA MEDIA XTC but you aren't hearing anything, it is likely that the software you are using needs to be set to echo the information back out to a sound device. You can accomplish this by turning on a feature in the Windows application called **MIDI Thru** or **MIDI Merge**. This function will take any incoming MIDI data and echo it back out to the MIDI Mapper. In this instance, make sure your MIDI Mapper setup is sending MIDI data to the device which you are trying to hear.

# Appendix C

## Technical Specifications

### On-board Processor

8 MHz Motorola 68EC000

### Synthesizer

Architecture: Digital Wavetable Synthesis

Voices: Up to 32

Polyphony: Up to 32 notes

Sample Memory: 1 Mbyte of ROM, 4 MB compressed sound

D/A Converter: 16-bit Linear Serial

Playback Sample Rate: 31.250 kHz

Level and Panning Controls: Separate

12-bit L&R controls for each voice

Filters: Separate Configurable 4-Pole Digital

Filter for each voice

Envelopes: Hardware Envelopes for Ampli-tude and Filters

### Mic/Line Input

Connector 3.5 mm (1/8") mini phone jack

Tip = signal

Sleeve = Ground

Nominal Input Level: 100 mV r.m.s. (70 mV p-p) in Mic mode, 1 V r.m.s. (700 mV p-p) in Line mode

Nominal Input Impedence: 100 kOhms

### CD/Aux Input

Connector: 3.5 mm (1/8") mini phone jack

Tip = L channel

Ring = R channel

Sleeve = Ground

Max Input Level: 1 V r.m.s. (2.8 V p-p)

Nominal Input Impedence: 22 kOhms

### TV Tuner Input

Connector: Pin header

Max Input Level: 1 V r.m.s. (2.8 V p-p)

Nominal Input Impedence: 22 kOhms

### Modem Input

Connector: Pin header

Max Input Level: 1 V r.m.s. (2.8 V p-p)

Nominal Input Impedence: 22 kOhms

### Audio Output

Connector: 3.5 mm (1/8") mini phone jack

Tip = L channel

Ring = R channel

Sleeve = Ground

Max Output Level into a Line Input: 2 V r.m.s. (5.6 V p-p)

Max Output Level into Headphones: 100mW into Hi-Z headphones (Walkman Style)

### PCM Playback Section

Devices: One Wave output (playback) devices and one Wave input (record) device.

Capability: Simultaneous playback of single mono or streams while recording a single mono or stereo stream.

D/A Converter: 16-bit Linear Serial Sigma-Delta Converter

Max Playback Sample Rate: 48.0 kHz

Level and Panning Controls: Separate

12-bit L&R controls for each voice

Formats: 8-bit unsigned linear, 8-bit u-law and a-law, 16-bit signed linear. All formats Mono or Interleaved Stereo.

### Digital Recording Section

A/D Converter: 16-Bit Linear Serial Sigma-Delta Converter

Available Sampling Rates: 5.5125, 6.615, 8.0, 9.6, 11.025, 16.0, 18.9, 22.05, 27.42857, 32.0, 33.075, 37.8, 44.1, and 48.0 kHz

Source Selection: Any external source, microphone, CD, Synthesizer, TV Tuner, Modem or wave

Level Control: Individual

Level Control Range: 0 to -38 dB on all other record sources

Formats: 8-bit unsigned linear, 8-bit u-law and a-law, 16-bit signed linear. All formats Mono or Interleaved Stereo.

### Audio Mixing

Input Sources: Synthesizer Output, PCM Output, CD/Aux Input, Mic/Line Input, TV Tuner, Modem  
Level Control: 12-bit for Synthesizer and PCM, 5-bit for all others  
Level Control Range: 0 to -62 dB for all  
Frequency Response: 20-20,000 Hz  $\pm$  1 dB  
Distortion: <0.5%  
Signal/Noise Ratio: >80 dB

### Host Interface

Configuration: 68B50 Communications Interface, MPU-401 MIDI Interface. Emulation of MPU-401 or 68B50 UART-based MIDI Interface  
Number of Ports: 4  
Base Port Address: 330-33F, 350-35F (Plug & Play)  
Interrupt Usage: 2/9, 5, 7, 10; up to two possible, software selectable  
DMA Usage: 0, 1, 3, 5, 6; up to five possible, Plug & Play  
Number of MIDI Ports: 1 In, 1 Out/Thru (using Optional Expander Cable)  
Software Features: MIDI Split, Merge, and Time Stamp  
MIDI Clock: 12-bit, 1 MHz Counter with Synchronized Tempo Updates  
Joystick Interface: Standard PC-Compatible Joystick Port  
Max Number of Joysticks: 2 (2 Axis, 2 Buttons) or 1 (4 Axis, 4 Buttons)

### MIDI/Joystick Connector

- |    |                                  |
|----|----------------------------------|
| 1  | +5V                              |
| 2  | Joystick A button 1 +            |
| 3  | Joystick A X-coordinate          |
| 4  | GND (Joystick A buttons 1 & 2 -) |
| 5  | GND (Joystick B buttons 1 & 2 -) |
| 6  | Joystick A Y-coordinate          |
| 7  | Joystick A button 2 +            |
| 8  | +5V                              |
| 9  | +5V                              |
| 10 | Joystick B button 1 +            |
| 11 | Joystick B X-coordinate          |
| 12 | MIDI Out                         |
| 13 | Joystick B Y-coordinate          |
| 14 | Joystick B button 2 +            |
| 15 | MIDI In                          |

## Appendix D

# MIDISOFT Recording Session Plus

MIDISOFT's Program Recording Session Plus is a powerful sequencer offering Standard MIDI sequencing features, as well as an editable musical notation display.

When you have successfully installed the software, you will find detailed online help information about notation, MIDI and General MIDI as well as about the Program Recording Session Plus itself so that you will find it very easy to use the Program.

### How to install the Software:

1. Insert the MIDISOFT Installation disk in the corresponding disk drive.
2. Start Windows (if not already done)
3. Start the Installation from the Program Manager with the following call:

```
'File' 'Run'  
A:\SETUP.EXE
```

4. Follow the instructions on the screen.

The program will be installed onto your hard disk.

After you have successfully installed the software you will find the program group 'Recording Session Plus' with the program and the online help as mentioned above.



## Appendix E

### Glossary

change numbers and types of instrument sounds. See also **MIDI**.

**ASCII:** American Standards Committee on Information Interchange. A standard used by PC-compatible computers to represent numbers and characters in binary form.

**AUTOEXEC.BAT:** A batch file that directs the activities performed by the computer during system startup, including a good deal of setup and configuration.

**BIOS:** Stands for Basic Input-Output System. Code in your computer's ROM (Read Only Memory) that provides the power-on, self test and other operating functions.

**Booting/Booting Up:** Starting the computer. There are two types. Warm Booting is accomplished by simultaneously pressing the CTRL/ALT/DEL keys (or by pressing your computer's RESET button) and can occur only when the computer is running. A cold boot requires activation of the ON/OFF switch.

**CONFIG.SYS:** An ASCII file that is created to provide the computer with special information about applications and hardware.

**DMA:** Direct Memory Access. A facility that allows a peripheral to access system memory without having to involve the CPU.

**Driver:** A small program that performs as the software interface between a peripheral (i.e., video and sound card, printer, keyboard, etc.) and the host (main) computer. Drivers are often loaded as specified by CONFIG.SYS when the system is booted up.

**Expansion Card:** An internal peripheral, added to expand a computer's capability. The SPEA MEDIA XTC is an expansion card.

**Expansion Slot:** The physical space and accompanying connectors within the computer where expansion cards are installed.

**FM Synthesis:** A method of synthesizing sound, popularized by Yamaha and used by most early sound cards, that is based on Frequency Modulation.

**General MIDI:** An extension to the MIDI specification that defines a minimum set of standards for a class of instrument known as a 'General MIDI Instrument'. These standards include correlation between MIDI program

**I/O Port:** Input/Output port. Computers typically use a memory address to communicate with a peripheral via an I/O port. Knowing and accessing the specific address and port for a given peripheral is usually the job of the driver. See also **Driver**.

**.INI File:** An ASCII text file that specifies default values and configuration variables for a program. An .INI file is read and used when the program is booted.

**Interrupt Request (IRQ):** Signal used by a device, such as a mouse, to inform the computer that it is in need of attention.

**Jumper:** A small plastic plug that fits over a pair of pins. When the cap or plug straddles two pins, it makes an electrical connection. The computer makes decisions based on whether the connection is made or not. A group of jumper pins is called a **jumper block**.

**.MID file:** The Windows format for Standard MIDI Files. See also **Standard MIDI File**.

**MIDI:** A specification, consisting of both hardware and software components, that allows a wide variety of music synthesizers, audio equipment, and other entertainment-related devices to communicate with each other.

**MPU-401:** A popular PC MIDI interface protocol developed by Roland Corp.

**MT-32:** A popular sound module manufactured by Roland Corp whose sound set became somewhat of a standard in sound cards. The MT-32 was a primary catalyst for the adoption of General MIDI.

**Multimedia:** The integration of numerous audio and visual media, such as graphics, animations, sound recordings, MIDI data, etc., in the pre-sentation of a work.

**OPL-2/OPL-3:** Two generations of FM synthesis chips produced by Yamaha and made popular in early sound cards.

**Peripheral Equipment:** Auxiliary equipment connected to a computer (e.g., sound card, monitor, printer, keyboard, etc.). A peripheral may reside inside or outside the computer.

**RAM:** Random Access Memory; memory that can be read from and written to. In common usage, RAM refers to the internal, volatile memory used by the computer to hold programs and data while it is working with them. Information stored in RAM is lost if power is removed

**ROM:** Read Only Memory; memory space in your computer for storing permanent operating instructions. Information stored in ROM is retained even if power is removed

**.SND files:** A DOS file format for storing digital audio recordings.

**Sound Blaster:** A popular early sound card. Many games assume the presence of a Sound Blaster. The SPEA MEDIA XTC is fully Sound Blaster compatible.

**Standard MIDI File:** An addition to MIDI specification that defines a standard file format for MIDI sequences.

**SYSTEM.INI:** A configuration file executed when Windows is booted. It is used primarily to load device drivers into memory.

**Terminate and Stay Resident (TSR):** Programs that remain in memory after being run in order to make it easy to reactivate them. TSRs may use substantial memory and cause conflicts with other programs.

**.WAV files:** The standard Windows file format for digital audio recordings.

**Wavetable Synthesis:** A type of synthesis based on playing back short samples of actual instruments. Since it uses recordings of actual instruments, wavetable synthesis sounds more realistic than FM.

**WIN.INI:** A file specifying how Windows should be configured when it is booted.