Mozart-16
Sound Card
User's Manual

- D25041111 -

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❖ Introduction

The Mozart-16 sound card is a 16-bit stereo sound card that supports Sound Blaster Pro™ and Microsoft Windows™ Sound System standards. The Mozart-16 coordinates all the interfaces on the card to provide CD-ROM control, audio card function and PC system support.

The Mozart-16 allows you to run Sound Blaster Pro compatible games and applications, and the rapidly growing Microsoft Windows business applications that are compatible to Microsoft Windows Sound System.

The CD-ROM interface on the Mozart-16 sound card supports three of the most popular CD-ROM drives in the market: Sony, Mitsumi and Panasonic.

Features and Specifications

Sound Standards Supported

- Adlib
- Sound Blaster and Sound Blaster Pro
- Microsoft Windows Sound System
- Windows 3.1
- Meets and exceeds Multimedia PC Level 2 Specifications

Wave Audio

- Maximum recording and playback sampling rate of up to 48Khz stereo
- 16-bit digital-to-analog and 16-bit analog-to-digital converter
- 16-bit and 8-bit digitizing in stereo and mono mode

FM Music Synthesizer

- Yamaha OPL3 FM technology music chip using 4 operators
- 16-bit digital-to-analog converter
- Supports two modes:
  1) Two-operator mode with 11 voices full stereo (6 melodies and 5 percussions)
  2) Four-operator mode with 20 voices full stereo (15 melodies and 5 percussions)

Digital/Analog Mixer

- Stereo analog mixing from CD-audio, line-in, FM music and digitized voice
- Stereo digital mixing from microphone, line-in, CD-audio and line-out
- Master volume control
- PC Sound Mix
- Balance

Power Requirements

- STD PC Voltages at +5V, +12V
- Current Draw at 1.2A @ +5V, 2A @ +12V

I/O Address

- 220, 240 (Sound Blaster)
- 320-340, (CD-ROM)
- 530, F40 (Windows)
- 388 (AdLib)

Interrupt

- 5, 7 (Sound Blaster)
- 7, 10, 11 (Windows Sound System)

Built-in Stereo Power Amplifier

- 4-watt per channel stereo power amplifier at 4 or 8 ohm

MIDI Interface/Joystick Port

- Built-in integrated MIDI UART interface with 64-byte FIFO
- IBM PC Joystick/Gameport

CD-ROM Interface

- CD-ROM interface for:
  SONY CDU31A and CDU33A
  Mitsumi LU005/FX001
  Panasonic 562B/563
- CD Audio Connectors

Audio Devices Interfaces

- Speaker out
- Line out
- Line in
- Microphone in

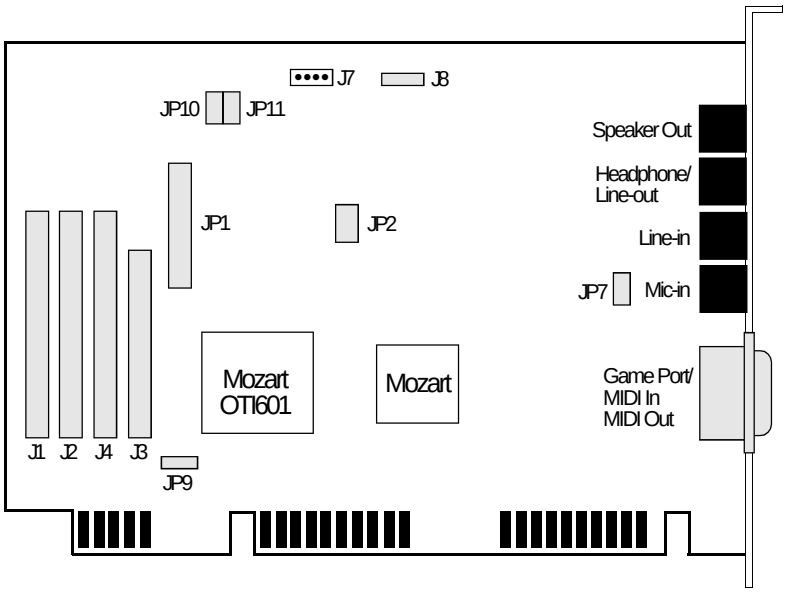
Package Checklist

The Mozart-16 package contains the following items:

- The Mozart-16 sound card
- The Mozart-16 user's manual
- Three device driver diskettes
- One CD audio cable
- One speaker cable

If any of these items is missing or damaged, please contact your dealer or sales representative for assistance.

❖ Hardware Installation



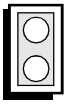
The Mozart-16 Sound Card

Connectors

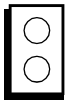
J1: Panasonic CD-ROM Connector
J2: IDE CD-ROM Connector
J3: Sony CD-ROM Connector
J4: Mitsumi CD-ROM Connector
J7: Mitsumi CD Audio-in Connector
J8: PC Buzzer Connector
JP1 and JP2: OPL4 Daughter Card Connectors

Jumper Settings

Jumper JP7
Microphone Select

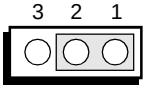


On: Electret Condenser Microphone (Default)

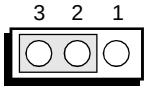


Off: Dynamic MIcrophone

Jumper JP9
CD-ROM Select

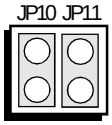


1-2 On: Other CD-ROMs (Default)

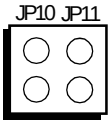


2-3 On: Mitsumi CD-ROM

Jumpers JP10 and JP11
OPL3/OPL4 Daughter Card Select



On: OPL3 Installed (Default)



Off: OPL4 Installed

Connecting Audio Devices to Audio Jacks

The Mozart-16 sound card is equipped with the following input and output connections.

Speaker out

This connector provides 2 channel stereo at a 4 or 6 watts-per-channel output level for a 4 ohm or 8 ohm external speaker system. No powered amplifiers are required for 4 ohm or 8 ohm speakers.

Caution:

- *Do not plug or unplug the speaker out connections while playing.*
- *Do not play at excessive levels.*
- *Do not plug mono plugs into the speaker output, otherwise it may damage the amplifier.*

Headphone/Line out

Headphones should not be plugged into the speaker output, otherwise damage to the headphone or excessive sound pressure level may result. Use 32 ohm, 32mW stereo headphones. This can be connected to the Line-in connector of any external amplifier, CD-player, Hi-Fi set, etc.

Note:

Connecting the headphone will result in the disconnection of the speaker output. Externally and internally powered speaker outputs will be muted when headphones are connected.

Line-in

This can be connected to the Line-out connector of any Hi-Fi set, radio set, CD-player, synthesizer, walkman, etc.

Mic in
Connect the microphone to the Microphone-in connector of the sound card.

Game Port/MIDI
The Game/MIDI port is a 15-pin female connector located just below the Microphone-in connector. This port can be connected to any IBM PC compatible with 15-pin D-sub connector.

Disable the game port if you already have a game port or game card installed in your system. This port can be disabled during software installation.

You need a MIDI adapter to connect a MIDI instrument to the Mozart-16 sound card. The MIDI adapter can be purchased at your local computer store and is connected to the Game/MIDI port.

Connecting a CD-ROM Drive to Mozart-16

1. Switch off your computer's power.

2. Install the CD-ROM drive into your system. Refer to your drive's manual for its installation procedures.

3. Connect the interface cable that comes with your CD-ROM drive to the appropriate interface connector on the Mozart-16 sound card.

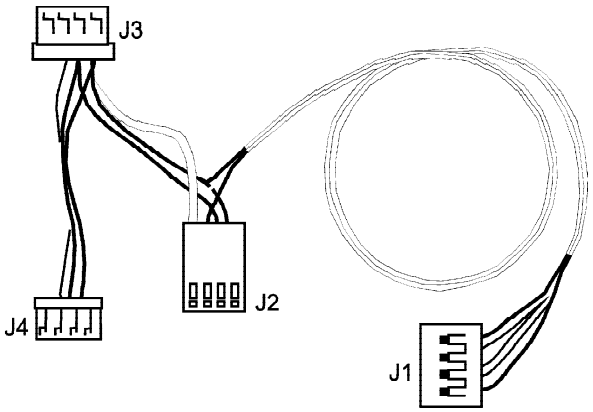
   The Mozart-16 sound card is equipped with four CD-ROM interface connectors: Mitsumi, Sony, Panasonic and ATAPI/IDE CD-ROM drive. The Mitsumi CD-ROM drive interface (J4) is a 40-pin connector supporting Mitsumi LU005S and Mitsumi FX001.

The Sony CD-ROM drive interface (J3) is a 34-pin connector supporting SONY CDU31A and CDU33A. The Panasonic CD-ROM drive interface (J1) is a 40-pin connector supporting models 562B and 563. The IDE CD-ROM drive interface (J2) supports all ATAPI/IDE standard CD-ROM drive.

Caution:
Pin 1 of each interface connectors is oriented differently. Locate pin 1 prior to installing the cable.

4. Connect the power cable to your CD-ROM drive.

5. The Mozart-16 package includes an audio cable as shown below.



Connect J1 of the audio cable to the Mitsumi Audio-in connector (J7) on the Mozart-16 sound card. The other end of the audio cable has three connectors: J2, J3 and J4. Connect this according to the type of CD-ROM installed in your system.

If you are using a Sony CD-ROM (CDU-31 or CDU-33), connect J2 of the audio cable to the Sony CD-ROM's audio-out connector located at the rear of the drive. Leave J3 and J4 unconnected.

If you are using a Mitsumi CD-ROM (LU-005S or FX-001), connect J3 of the audio cable to the Mitsumi CD-ROM's audio-out connector located at the rear of the drive. Leave J2 and J4 unconnected.

If you are using a Panasonic CD-ROM, connect J4 of the audio cable to the Panasonic CD-ROM's audio-out connector located at the rear of the drive. Leave J2 and J3 unconnected.

The default setting of the Mozart-16's CD-ROM interface is:

CD-ROM type: None
I/O port address: 340H

❖ Software Installation

The Mozart-16 sound card includes three program diskettes. These are the Mozart Installation Diskette, Mozart Recording Session for Windows and Mozart Sound Impression for Windows.

Mozart Sound System Installation

The Mozart Installation Diskette contains the INSTALL.EXE file. This program will copy files and make necessary changes in your CONFIG.SYS and AUTOEXEC.BAT files. The CONFIG.SYS and AUTOEXEC.BAT files are modified to properly initialize the Mozart-16 sound card when the system is booted.

INSTALL.EXE will also install the necessary Windows drivers and modify the SYSTEM.INI file. SYSTEM.INI is modified to set up Windows for Mozart-16 sound card.

To install:

1. Insert the Mozart Installation Diskette into floppy drive A or B. At the DOS prompt, type:

   A:\INSTALL

2. Follow the instructions on the screen to complete the installation.

CD-ROM Driver Installation

Refer to your CD-ROM manual on installing its driver.

Sound Impression Installation

1. Select the Run option under the File menu of the Program Manager.

2. Insert the Mozart Sound Impression for Windows diskette into floppy drive A or B. At the DOS prompt, type:

   A:\SETUP

3. Follow the instructions on the screen to complete the installation.

Recording Session for Windows Installation

Installing from DOS

1. Insert the Mozart Recording Session for Windows diskette into floppy drive A or B. At the DOS prompt, type:

   A:\INSTALL

2. Follow the instructions on the screen to complete the installation.

Installing from Windows

1. Select the Run option under the File menu of the Program Manager.

2. Insert the Mozart Recording Session for Windows diskette into floppy drive A or B. At the DOS prompt, type:

   A:\INSTALL

3. Follow the instructions on the screen to complete the installation.

Midisoft Overview

Recording Session is a powerful sequencer offering standard MIDI sequencing features, as well as an editable musical notation display.

The program contains three windows, or views that you use to record, play, and edit your musical compositions.

Score View

This window displays your music in standard musical notation. As you record, notes will appear onscreen. When you play back the song, you can see the notes highlighted as they are sounding. You can also add, delete and edit notes and phrases from this window.

Mixer View

This window is where you record, play, name and adjust tracks. You have real-time control of the playback characteristics of each track, so you can experiment before making permanent changes.

This window also contains the transport buttons similar to an audio tape deck, as well as a tempo slider, a Master Volume control, and a song location display (Counter).

MIDI List View

This window displays your music as MIDI events. If you are more comfortable with a traditional MIDI sequencer, this affords you the flexibility of minute adjustments to the shape of each note. In addition, you can enter and edit MIDI messages such as Program Change, Aftertouch, Pitch Bend and others.

MIDI Setup

Before jumping into Recording Session, you need to make sure that your MIDI interface is set up and installed correctly.

MIDI interface

Interface type

Recording Session works with any interface supported by Windows 3.1/Multimedia Windows. You need to set up the interface with the proper driver in the Windows Control Panel before it will work with Recording Session.

Interrupts

You need to determine something called an interrupt request level (IRQ) for the interface card. The IBM and compatible computers use interrupts to signal the CPU (central processing unit, or brain) of your computer that a specific part of the system (the MIDI interface in this case) needs attention. Many items in a PC use interrupts

hard and floppy disk drives, modems, serial ports, scanners, mice and other pointing devices, network adapters, etc.

You must have your interface's IRQ set to a unique number, or there will be conflicts. If you do have a conflict, your MIDI interface will probably not work, or work intermittently.

Some hints on interrupts:

- Do not use IRQ 4 if you have an active serial port.
- Do not use IRQ 3 (and 4) if you have two serial ports.
- Do not use IRQ 7 if you use a print spooler. Otherwise, this is usually a good choice for an available interrupt.
- If you have a mouse, it is probably set to IRQ 2 or IRQ 3.
- You normally set the IRQ level with switches or jumpers on the interface board. Refer to the manufacturer's documentation

Port address

Some MIDI interfaces allow you to change their port, or I/O address. On occasion, another peripheral card, such as a scanner or SCSI card, may be set to use the same port address. In this case, you will have to change the interface or the other peripheral to use a different port address.

Installing the MIDI Driver

If you are using Recording Session for the first time, you need to specify the MIDI driver you would like to use. You have three choices: Multimedia Drivers, Midisoft Drivers, and No Drivers.

The Multimedia Drivers option uses generic drivers written to work with any MIDI program that supports Windows 3.1/Multimedia Windows. You must have MIDI properly set up in the Windows Control Panel. (e.g. you should select General MIDI). Use this option if you need to use the Windows MIDI Mapper.

The Midisoft Drivers option uses a driver created specifically for Recording Session. If you use this, you need to disable any standard MIDI driver settings in the Windows Control Panel.

The No Drivers option allows you to use the program for display and editing, but not playback. This is useful if you have not yet purchased a MIDI interface. Recording Session should now run, if you have set up your interface correctly.

A MIDI System

To form a complete MIDI system, you need a MIDI input device (such as a keyboard) and a MIDI output device (such as a synthesizer module).

For many years, the word “synthesizer” was connected with the word “keyboard” in many people’s minds. Today, synthesizers are recognized to be simply tone-generating devices which can be controlled by a keyboard, as well as drum pads, motion sensors, breath

controllers, computer signals, etc. The synthesizer cannot distinguish between any of these — it's all MIDI.

Although many synthesizers (especially older models) have keyboards attached, there is a growing trend toward separate components, as guitarists, drummers, wind players, etc. becoming interested in MIDI. We will assume for the sake of illustration that you have a separate keyboard controller and synthesizer module, even if they are housed in the same case.

The keyboard is the MIDI input device in this case (substitute guitar controller/drum pads/pitch-to-MIDI converter etc. if you have those instead). Connect a MIDI cable from the MIDI OUT jack of the keyboard to the MIDI IN jack of your MIDI interface. If you do nothing else, this now enables you to record music, although you won't be able to play it back.

The synth module is the MIDI output device in this case. Connect another MIDI cable from the MIDI OUT jack of the interface to the MIDI IN jack of the synth module. You now have a complete system, an input device (the keyboard) to enter music into Recording Session, and an output device (the synth module) on which to play back the finished product.

A relatively new type of synthesizer is one contained on a sound card that installs inside a computer. These have the advantage of being compact and economical. Many of these cards are available with drivers for Windows 3.1/Multimedia Windows.

Local Control On/Off, MIDI Thru, and MIDI Feedback

Local Control On/Off

When you are using a synthesizer which includes an integral keyboard, you must use a feature called Local Control On. This means there is an internal connection between the keyboard and the synthesizer. If there is no connection, you would not hear anything when you pressed a key.

MIDI Thru

A MIDI Thru connector copies any data at the MIDI IN back out. Many MIDI software packages provide this same feature, usually called MIDI Thru.

A problem arises when you use a keyboard synthesizer with Local Control On and a sequencer with MIDI Thru On. The keyboard sends MIDI messages to both the synthesizer and the sequencer simultaneously. The sequencer passes the MIDI messages through and back to the synthesizer with a slight delay. The result is a doubling of notes, which is not often useful musically. To avoid this problem, always use Local Control On (on your synthesizer) or MIDI Thru (on the sequencer) but never use both of them together!

MIDI Feedback

A related problem is that many types of MIDI equipment (not only synthesizers) have an internal MIDI Thru capability. This can be useful in certain situations, but when hooked into a sequencer that also provides MIDI Thru, you end up with a classic feedback loop. MIDI output goes to an input, through to an output, back into an input, and around the chain, where it starts all over again. You will either hear garbled or stuck notes, or everything will lock up and refuse to play.

Again, the solution is never use MIDI Thru on both the MIDI equipment and the sequencer simultaneously. Recording Session allows you to switch the MIDI Thru feature on or off in the Options menu.

Appendix A: Utilities

DOS Utilities

The Mozart-16 sound card provides features for volume control. These features run automatically during boot-up since they were installed as part of the installation program.

Controlling the Master Volume

The MZTVOL.SYS file is the master volume control program. To release the program from memory, type:

<CTRL><ALT> R

To control the volume, type:

<CTRL><ALT> U	to increase the volume.
<CTRL><ALT> D	to decrease the volume.
<CTRL><ALT> M	to mute the sound.

Controlling the Mixer Panel

The MZTPANEL.EXE file is the mixer panel program. To release the program from memory, type:

C:\MOZART\MZTPANEL /R

To control the mixer panel, type:

C:\MOZART\MZTPANEL.EXE

To display the mixer panel, type:

<CTRL><ALT> P

To control the volume on both speakers:
- Use the up/down arrow keys to control the volume
- Use the left/right arrows to move from one sound column to another.

To control the volume of the left speaker:
- Press the left <SHIFT> key
- Use the up/down arrow keys to adjust the volume.

To control the volume of the right speaker:
- Press the right <SHIFT> key
- Use the up/down arrow keys to adjust the volume.

When finished:
- Press <ESC> to quit.

Caution:
Do not use this program under Windows or DOS programs that use the graphics mode instead of the text mode display.

Mozart Diagnostic Test

MZTTEST.EXE is a DOS based MOZART diagnostic program that test the FM synth, wave and line-in data paths. The test can be run individually or as a group in single pass or continuous mode. The Mozart-16's configuration is displayed on the right side of the screen.

Note:
MZTTEST.EXE sets its own volume levels and is not controlled by the Mozart panel.

Windows Utilities

Controlling the Volume on the Mixer Panel

Under Windows, go to the MOZART Sound System window and click the Mozart Mixer icon.

Click on the double control menu box and select the expanded panel or shrinked panel display. The expanded panel shows all the sound volume control displays (master, wave, synth, and line). The shrinked panel displays the master volume control only. (The master volume control is the combination of the wave, synth and line-in sounds).

Use your mouse to control the volume and mixing.

To synchronize the left and right speakers, click the "Sync" button. "X" will appear in the box. To alternate the left and right speakers, click the box again and "X" will disappear.

Switching Modes Under DOS

To switch from Sound Blaster to Windows Sound System mode or vice versa, use the following syntax:

MZTMODE SB|WSS [/530|/F40]

SB	Sound Blaster Mode
WSS	Windows Sound System Mode
/530	I/O address 530 (WSS only)
/F40	I/O address F40 (WSS only)

For Sound Blaster Mode, type:

C:\MOZART\MZTMODE SB

If only SB is specified, the I/O address, interrupt vector and DMA channel that are used will be based on the current defaults in the MZTINIT.SYS command line in the CONFIG.SYS file.

For Windows Sound System, type:

C:\MOZART\MZTMODE WSS [I/O address]

If an I/O address for MZTMODE WSS is not specified, the I/O address will default to 530.

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