

EGO-SYS

# WaMi Box

**DSP BASED 20 BIT 4 CH INTEGRATED  
PCMCIA DIGITAL AUDIO SYSTEM  
16 CH. HARDWARE INTERNAL MIXER & FX  
64 VOICE SAMPLER/SYNTHESIZER**

*Owner's Manual*

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- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

If necessary, consult an experienced radio/television technician for additional suggestions. The following booklet prepared by the FCC may also be helpful: "How to Identify and Resolve Radio-TV Interference Problems". The booklet is available from the U.S. Government Printing Office, Washington DC, 20402 Stock No. 004-000-00345-4.

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## YOUR EGO-SYSTEMS DEALER

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For 24-hour technical support, contact EGO-SYSems:

Home Page: [www.egosys.net](http://www.egosys.net)  
E-mail: [webmaster@egosys.net](mailto:webmaster@egosys.net)  
Tel: +82 2 780-4451~3  
Fax: +82 2 780-4454

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## Introduction

Congratulations and thank you for choosing WaMi Box!

The WaMi Box is a professional integrated Audio/MIDI interface for notebook PC equipped with PCMCIA expansion slot. Its features meet professional sound recording/sampling and musical application requirements, bringing sound studio possibilities to your notebook PC.

Imagine yourself recording/sequencing or editing your work while you are on the road! With a notebook computer and the WaMi Box, you've got all the things you need to do your job.

This small box provides 2 In/4 Out analog audio I/O ports with RCA type connector, S/PDIF Coaxial/Optical digital I/O ports are also supported. MIDI input and output ports are provided and for the private working moment, headphone output (1/4") is employed. MIC input also very useful for the instant MIC input situation.

These various I/O options are only the beginning of WaMi Box's features. Built-in DSP chip enables hardware-based effects for the all available output and input channels. Sound fonts can be loaded to the internal RAM (up to 16MB), and the WaMi Box can be used as a sound module without any external sound module attached to the MIDI Out port. If you use ED!SON, the font editor, you can create your own set of sound fonts and utilize for your next song.

We are now presenting brand new driver for WaMi Box, which provides more stable MME, DirectSound drivers and ASIO driver. Set Manager, sound font loader utility, and ED!SON the sound font editor/compiler are newly added utilities and they will boost the power of WaMi Box.

Expand your space for creativity with WaMi Box. You don't have to stay in your room for recording/sequencing your work. WaMi Box will provide the most flexible way to catch the moment you haven't been able to imagine so far. Control room is on your lap and the rest of the world is your studio!

## Features

### **2 Input/4 Output analog I/O**

20-bit digital audio on your notebook is now a reality. RCA type I/O ports will provide exceptional audio quality. 4 Outputs (2 stereo channels) can be assigned for either separate channels output or same channel output for various working situation.

### **S/PDIF Coaxial, Optical digital I/O**

From/ to the digital I/O equipped stereo master decks, such as CD player/recorder, DAT or MD, WaMi Box provides digital I/O ports in Coaxial type(RCA connector) and Optical type(TOSLINK).

### **DSP Effects Processor**

WaMi Box contains 17 reverb/chorus programs and a 2/4-band stereo graphic equalizer. These effects can be applied on Wave table, DSP waves, or Line inputs.

### **Wave Table Synthesis**

4 MB RAM for GS Wave Table will make your MIDI sequences sound realistic. The WaMi Box is compatible with Downloadable Sound (DLS) standard, allowing sound banks from different vendors to be downloaded.

### **Professional Sampler/Synthesizer**

16 MB of on-board DRAM enables you to upload and make WaMi Box used as a sound module. Also you can download and edit large sample-size instruments with ED!SON, the sound font editor. WaMi Box is a professional sampler /synthesizer.

### **Direct Sound Ready**

WaMi Box supports Microsoft Direct Sound, which allows hardware mixing of multiple waves (up to 32 waves) and provides on-board memory buffer to support static wave buffer.

### **Digital Signal Converter**

When you connect any digital input source to WaMi Box, you immediately get the converted signal in all outputs. For example, if you connect a signal from your CD player to the COAXIAL S/PDIF input on the WaMi Box, you will have OPTICAL S/PDIF output of the same signal, as well as the analog signal on the LINE OUT 1 and 2.

### **Sample Rate Converter**

WaMi Box's A-D converter works only in 44.1 kHz sampling rate. However, it can accept 48 kHz sampling rate from all digital input ports and automatically converts it into 44.1 kHz sampling rate. For example, if you connect a digitally audio recorded in 48 kHz sampling rate into the COAXIAL S/PDIF input, WaMi Box will output 44.1 kHz converted signal at all output ports.

### **Sampling with WaMi Box**

With the provided sampling utility-ED!SON, you can use WaMi Box as a sampler and sample playback device with 64 voices and up to 16 MB of RAM. This program lets you edit or create your own sound with various controls like Envelope Generator, Filters, Low-Frequency Oscillator etc...

### **Using WaMi Box as a MIDI Sound Module**

WaMi Box can be used as if it's a MIDI sound module. Just connect a MIDI cable to its MIDI IN jack. With MIDI sound font editor, you can create and store sounds fonts of your own and upload the sound set using Set Manager to use.

## Wami Box Package Contents

Your WaMi Box package should contain the following:

1. WaMi Box external unit (1)
2. PCMCIA card (1)
3. PCMCIA card cable (2)
4. CD-ROM containing drivers and software (1)

*PCMCIA Card Caution* : WaMi Box package includes 2 PCMCIA card cable with different length. We recommend you to handle the PCMCIA card and cable very carefully. Especially, connector part of PCMCIA card and cable can be loosen or broken easily and these condition leads connection failure between computer and WaMi Box.

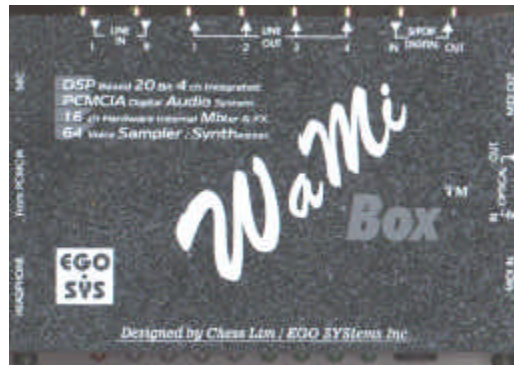
*Please read through this manual in its entirety before using WaMi Box.* You may already be family with many of the concepts and instructions, but despite its small appearance WaMi Box is a complex and delicate instrument. Treat it with care and you will enjoy its features for many years.



## WaMi Box I/O Interface and LED Indicators

WaMi Box contains many I/O ports for use in variety of applications. While most of them may be familiar and self explanatory, you may want to read through this section just as a precaution.

### I/O Interface



#### **LINE IN**

Line level (-10dBV) inputs from analog audio devices, such as CD players or mixers.

#### **LINE OUT (1~4)**

Line level -10dBV outputs from WaMi Box.

#### **S/PDIF DIGITAL IN/OUT**

Coaxial (RCA type) S/PDIF digital input and output. Output carries WaMi Box Mixer's Master Output signal. S/PDIF coaxial(RCA type) input signal source can be selected by pressing the INPUT SELECTOR on the WaMi Box's front panel until COAXIAL is selected. When selected, the coaxial S/PDIF input source is routed to the INPUT channel on WaMi Box Mixer.

#### **OPTICAL IN/OUT**

Optical S/PDIF input and output. Output carries WaMi Box Mixer's Master Output signal. S/PDIF optical input signal source can be selected by pressing the INPUT SELECTOR on WaMi Box's front panel until OPTICAL is selected. When selected, the optical S/PDIF input source is routed to the INPUT channel on WaMi Box Mixer.

### **MIDI IN/OUT**

MIDI input and output to connect to external MIDI equipped controllers (keyboards), and sound modules.

### **HEADPHONE**

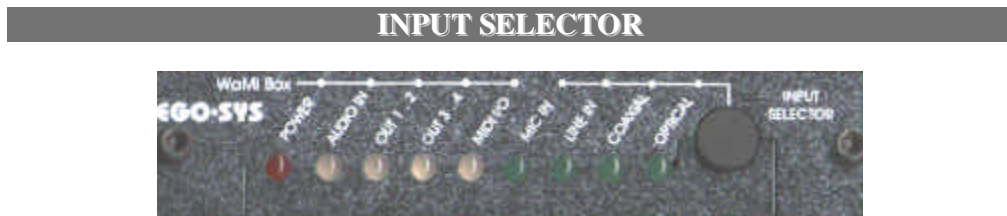
1/4" TRS jack for headphone monitoring of WaMi Box. Only the outputs 1 and 2 (master outputs from WaMi Mixer) are monitored.

### **FROM PCMCIA**

Connect the provided cable from PCMCIA card to WaMi Box.

### **MIC**

Microphone input to WaMi Box. Microphone signal can be selected by pressing the INPUT SELECTOR on the WaMi Box's front panel until MIC IN is selected. When it is selected, microphone signal is routed to the INPUT channel on WaMi Box Mixer.



Press the Input Selector repeatedly to cycle through different input source (MIC IN, LINE IN, COAXIAL, OPTICAL) to route to WaMi Box Mixer.

### **MIC IN**

Microphone connected to MIC IN jack is selected and routed to WaMi Box Mixer's Input Module.

### **LINE IN**

Input source connected to LINE IN (RCA type) is selected and routed to WaMi Box Mixer's Input Module.

### **COAXIAL**

Coaxial (RCA type) S/PDIF input source is selected and routed to WaMi Box Mixer's Input Module.

### **OPTICAL**

Optical S/PDIF input source is selected and routed to WaMi Box Mixer's Input Module.

## **LED Indicators**

Audio channel LED colors change according to their level. Light Green indicates low level and Red indicates peak level.

### **POWER**

Indicates that power is being supplied through PCMCIA card. When your notebook is turned off (or in a sleep/hibernation mode), it will disconnect power supply to WaMi Box.

### **AUDIO IN**

Indicates signal present at MIC, coaxial LINE IN, coaxial or optical S/PDIF IN.

### **OUT 1, 2 / 3, 4**

Indicates signal present at LINE OUT 1-2 and/or 3-4. Normal output level is indicated by green light and if the signal level is over the limit light turns to in red.

### **INPUT SOURCE**

Indicates which input source is selected routing to input channels of WaMi Box.

### **MIDI I/O**

Indicates MIDI activity (both input and output).

## Installation

### System Requirements

- Notebook PC with Pentium II 233 or above processor
- Windows 95/98 (Windows 98SE strongly recommended)
- CD-ROM
- 20 MB free disk space for installation

### Windows 95/98 Hardware Driver Installation

1. Turn your PC' s power off.
2. Plug in WaMi Box PCMCIA Card into an unused PC card slot
3. Turn the notebook power on. On Windows 95/98 start-up, it will find new hardware “EGOSYS-PCMCIA Multimedia Device”.
4. When Windows 95/98 asks for the drivers to install, select “*Driver from disk provided by hardware manufacturer*”.
5. Insert the WaMi Box CD-ROM and select [*CDROM drive:Driver\Win 95-98 Driver\Wamibox.inf*]
6. Follow Windows 95/98 installation procedure to install.

### Windows 95/98 Hardware Configuration

1. From [*Start / Settings / Control Panel /System /Device Manager / Sound, Video & Ggame Controllers*], check that your card is correctly installed. It should appear as [EGOSYS WaMi Box].
2. To define WaMi Box Wave Table as a default MIDI Device: From [*Start / Settings / Control Panel / Multimedia / MIDI*], select [WaMi Box MIDI Play] as playback device.
3. To define WaMi Box Wave as a default Wave Device: From [*Start / Settings / Control Panel / Multimedia / Wave*], select [WaMi Box Synth #1] as a playback device and [WaMi Box Synth Record] as a recording device.

## PCMCIA Card - Hot Plug Feature

For most notebook computers, WaMi Box PCMCIA card can be inserted or removed while the notebook is powered up and running. However, the following **CAUTIONS** apply:

1. Close all applications that uses audio and MIDI devices before removing WaMi Box PCMCIA card.
2. When you insert WaMi Box PCMCIA card, there may be some time delay because firmware and soundbanks have to be downloaded into the PCMCIA card.
3. Follow your notebook computer's guidelines on handling PCMCIA card as a general precaution.

## Installation Troubleshooting

1. From [*Start / Settings / Control Panel / System / Device Manager / Sound, Video & Game Controllers*], check that WaMi Box is correctly installed and shown.
2. If the device icon/name is overlaid with a yellow circle, it means that the device installation has failed. Installation failures can come from:
  - a. Problem with previous installations
  - b. Hardware failure.
  - c. Resource allocation conflicts
3. Problem with previous installations:
  - a. Uninstall WaMi Rack following the uninstall procedure described below.
  - b. Reboot the PC
  - c. Re-install the hardware and drivers.
4. Resource allocation conflicts:

Use Windows 95/98 Conflict Resolution Tool to solve the problem.

If problem persists, contact your nearest WaMi Box dealer or us (EGOSYS) directly.

## Windows 95/98 WaMi Box Application Installation

After your WaMi Box and the driver have been installed properly, you can install and use the WaMi Box Mixer, FX Panel, Virt.Channel, Set Manager and ED!SON provided in the CD-ROM.

1. To install the WaMi Box Applications : From [Start / Run], browse into [CD-ROM:\Applications\WaMi Box.exe]. You may also double-click the [WaMi Box.exe] icon directly from the CD-ROM.
2. Follow the installation procedures to install WaMi Box applications.
3. After the installation is completed, a folder named *WamiBox* will appear on your START menu PROGRAM directory, containing the applications *Control Panel, Audio In Panel, FX Panel, Virtual channels, Set Manager and Ed!son*. To call up an application to use, select desired application name when you see them in the START>Program directory.

## Windows 95/98 Software Uninstallation

To uninstall the WaMi Box Mixer and Font Utility software:

1. From [*Start / Settings / Control Panel / Add/Remove Programs*], select [*WaMiBox Uninstall*].
2. Follow the Uninstall procedures.
3. Turn the notebook PC power OFF.

To completely remove all WaMi Box Drivers, Mixer, and Font Utility:

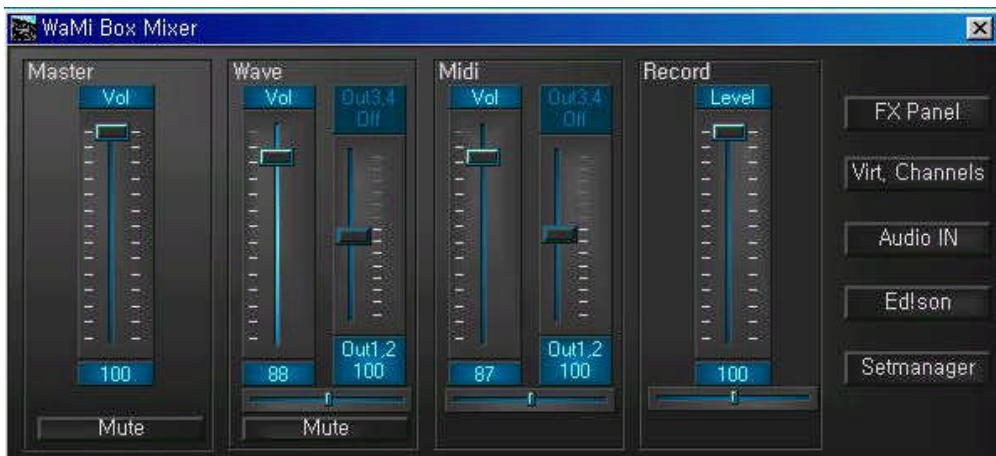
1. From [*Start/Settings/ControlPanel/Add/RemovePrograms*], select [*WaMiBox Uninstall*].
2. Follow the Uninstall procedures.
3. Follow your notebook PC s procedures on removing PCMCIA card, and remove it from the card slot.
4. Turn the notebook PC power OFF and reboot your notebook.

## WaMi Box Mixer

The control panel is the central control unit of the WAMI BOX. It contains firstly the analog mixer which mixes the various audio signals, and feeds them either to the output or the synthesizer for further processing. Switching of the various signal paths also takes place here: the signals are switched as required for the many varied tasks of the WAMI BOX. When the WAMI BOX is started for the first time, the mixer is in a games-compatible mode. In this mode the card is fully compatible with Soundblaster, Soundblaster Pro and Windows Sound System. Using this setting, DOS games can be played with GM/GS sounds or older FM sounds with effects, four-channel playback and V space.

The card can also be fully reconfigured, however, for example to make hard disk recordings of the best possible quality with digital inputs and outputs.

In addition, the control panel switches one of the two MIDI interfaces to the game/MIDI port if the MIDI jacks on the front panel are not to be used for some reason. Normally, however, MIDI routing should be set to OFF as the MIDI ports cannot be used by the front and back panels simultaneously.



### 1. Master level fader

It controls overall (Wave, Midi and Record) level of the WaMi Box. Even if you adjust level for each part, you can decrease overall level by lower down this fader. When you press „MUTE“ button under the fader, whole audio path will be muted and you won't get any sound from WaMi Box.

### 2. Wave level fader

Wave level fader controls audio output level. You can pan the sound on the right or left using panning fader right under the fader, below the panning fader, you can find the MUTE button which you can mute audio channel output. Beside the Wave level fader you will see the slider marked with output 1,2 and 3,4. This slider controls and place 1,2 & 3,4 outputs as you want. If you go to FX Panel, you will see 2 channels mode or 4 channels mode. This slider is enabled to use when you choose 4 channels mode and let you control to route outputs where you want to assign between output 1,2 and output 3,4.

### **3. Midi level fader**

Controls output level of MIDI channels. Like Wave level fader, you can pan the signal or assign output channels between output 1,2 and output 3,4.

### **4. Record level fader**

You can adjust input level for recording with this fader.

### **5. FX Panel**

This button calls up the FX panel, which allows you to set reverb, echo, chorus, equalizer and V space.

### **6. Virt. channels**

This switch calls up an additional window in which are located as many volume, effect, pitch and panorama sliders as you selected wave playback drivers. With these sliders you can mix and control the different wave channels that are used by various programs.

### **7. Audio In**

Pressing this button will call up Audio In window, which you can set input level and effect return value for input signal like Echo, Reverb and Chorus.

### **8. Ed!son**

When you press this button, Ed!son – sample editor, window will be appeared.

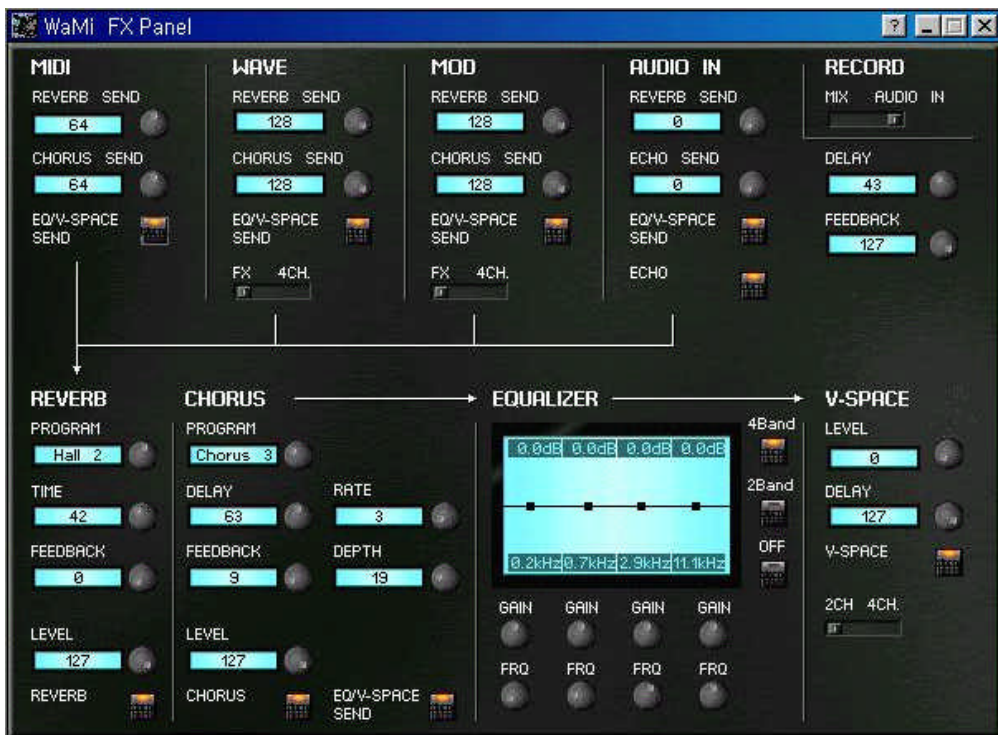
### **9. Setmanager**

This button will call up font loader applet, Setmanager.



## The FX panel

The FX panel controls the effects and effect paths of the WAMI BOX. You can use it to control and route the reverb, chorus, equalizer and V space effects. This window will be appeared when you click FX Panel button in the basic Mixer window.



### 1. MIDI

You can adjust SEND level of MIDI channels from here. Especially the MIDI channels doesn't have RETURN level control, so the send level you set here directly affects amount of processed output signal.

#### \* Equalizer/V space send

Using this switch, you can decide whether this signal is routed via the sum equalizer and the V space 3D algorithm.

### 2. WAVE

Controls SEND level of Wave channels to REVERB and CHORUS effects. As you can see the arrows under it signal routes to Reverb and/or Chorus effect. Using level knob, you can set desired amount of SEND level. You can also switch channel mode with the switch located on the bottom of the section between FX(2 channel mode and 4channel mode).

### **3. MOD**

This section is not supported currently.

### **4. AUDIO IN**

Controls SEND level for audio input.

### **5. REVERB**

You can select reverb type and adjust its value using appropriate knobs. You can turn on or off with the button described as “Reverb”.

### **6. CHORUS**

You can select chorus type and adjust its value using appropriate knobs. You can turn on or off with the button described as “Chorus”.

### **7. EQUALIZER**

In this display, you can see the curve which produces the equalizer settings. With the 4 channel equalizer you have the option to touch the curve at four points with one click of the mouse, and to change it (at two points only in the case of the 2 channel equalizer, of course - base and treble control). You are shown the values for the increase or decrease, and the filter cut-off frequencies, at the top and bottom of the display.

### **8. V-SPACE**

You can set virtual 3D space effect value.

## The Virtual Channels

You can open Virt. Channel window by clicking Virt.Channel button from the basic Mixer window. Select desired channel number from virtual channel selecting window which coloured in sky-blue, and adjust the levels.



### 1. Volume

Adjust the audio channel volume of matched virtual channel that selected at the box above the sliders.

### 2. SYN/VOL

Adjust the MIDI channels volume of matched virtual channel that selected at the box above the sliders.

### 3. REVERB

This slider is using for adjusting reverb return value of audio(wave) channels.

### 4. CHORUS

You can adjust chorus return value of audio(Wave) channels with this slider.

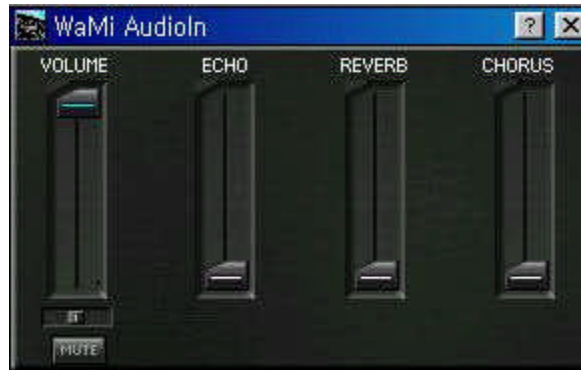
### 5. Pitch

As you can imagine, you can pitch up/down of wave channel with this slider. If you want to pitch up, slide it to the right direction, or you need to slide to the left to lower down the pitch.

\* By clicking "Reset" button once, all the sliders will return to default value.

## The Audio IN

Clicking “Audio In“ button on the Mixer window calls up following window that is used for input level adjusting and effect return value such as Echo, Reverb and Chorus.



### 1. VOLUME

Controls input level of the incoming signal through the input port of WaMi Box.

### 2. ECHO

You can set proper echo return value for incoming signal.

### 3. REVERB

Adjust reverb return value for incoming signal.

### 4. CHORUS

Set chorus value for incoming signal.

## Ed!son

Pressing Ed!son button on the WaMi Box control panel calls up Ed!son window, the sample editor. With this application, you can edit a wave file (or individual instrument file) by your own taste and compile or save for your next usage. We include separate manual for Ed!son, please refer it.

## Setmanager

You can use WaMi Box as a sound module by uploading soundfont set with Setmanager.

Setmanager consists with several sections. You can check the card information at the top of the window. Also usage of built in RAM status is showed.

Current MIDI Soundsets are indicated and you can MUTE or SOLO desired soundest.



### 1. Free RAM

The size of RAM built in WaMi Box is indicated here. You can load as much soundfont set as this size indicates 0kB. This size is determined by subtracting RAM usage from total RAM size (16MB) you can see on the right side of the window.

### 2. Current MIDI Soundsets

This section indicates soundest that currently used or loaded on the built in RAM. Multiple soundsets can be loaded.

### 3. MUTE/SOLO button

Selected Soundset is high lighted in blue. These buttons are used for muting or soloing selected Soundset.

### 4. Priority

When more than one sound set is loaded, only one set of sound can be played. For this purpose, Priority should be set. Select desired soundset and change its

Priority number by clicking blue button by the number. The Soundset with higher priority number will be played while there are more than one set of soundset is loaded.

### **5. Load**

Select desired sound set number in the “Current MIDI soundsets” window and click Load button, now you can select and load a soundset at your choice. As mentioned earlier, you can load as many soundsets until 16MB of built in RAM runs out.

### **6. Delete**

Choose a soundset to unload and click the button, then selected soundset will be deleted from the Current MIDI soundsets window.

## The signal paths of the WAMI BOX

In order to cater for the many options of the Audio System WAMI BOX whilst maintaining compatibility with DOS games, a number of large-scale integrated circuits have been used in the sound card; these perform their own special tasks according to the signal path. Because of this, the signal paths are switched according to the task. This may appear somewhat complicated at first glance, but we have made the use of the many different functions of the WAMI BOX as simple as possible for you through pre-defined settings of the control panel.

## The signal paths in the synthesizer

The synthesizer component of the WAMI BOX has several virtual devices. These are: 3 sound-producing (in the broadest sense) devices (MIDI synthesizer, wave playback and signal input), 5 effect devices (reverb, chorus, echo, equalizer and V space) and a wave record. These 8 devices are for the most part software algorithms which are implemented in the synthesizers operating system. Each of these algorithms uses a more or less large number of processor units (slots, see also hardware manual). By switching off some devices (in general, effect devices), the number of units available for other devices can be increased. The sound-producing devices only use processor units if they are active and allocate the slots variably among themselves. The corresponding number of slots is requested according to the number of channels and voices in use. The wave devices have a higher priority than the MIDI device. If needed, voices are therefore borrowed in the first instance from the MIDI device.

The different sound sources can be routed in various ways to the effects and outputs.

## WaMi Box Applications

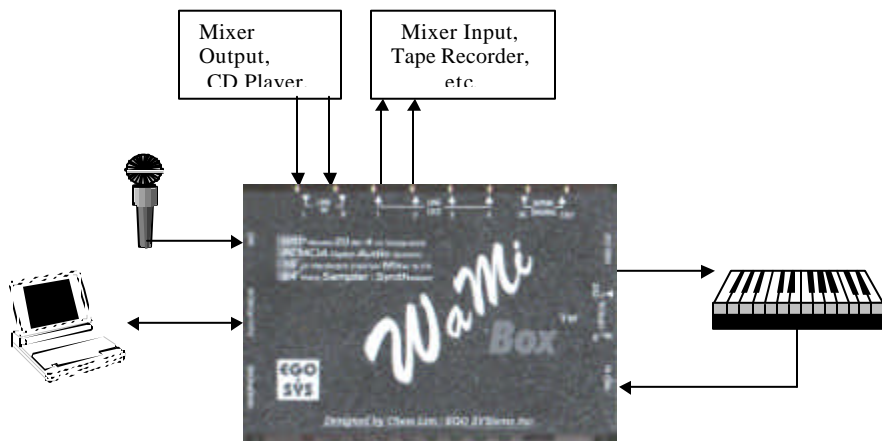
With its many features, WaMi Box has many applications in audio and music production. While you may find the set up that best suits your needs, the basic system set up provided below can serve as a guideline.

### Basic Set Up

In this set up, WaMi Box is used as a stand alone demo production workstation. If you are on the road or need to create a demo quickly, all you need to do is plug in the keyboard controller and/or a microphone. If you need to work on or edit an existing MIDI file, you just connect the WaMi Box and nothing else. For the most basic needs, WaMi Box serves following functions:

1. Record analog musical instruments and/or voice on to a digital audio recording and/or MIDI sequencing software, such as Cakewalk or Cubase Audio.
2. Serve as a MIDI sound module
3. Mixdown digital or analog program on to a 2 track stereo recorder.

### Basic Connections



Basic WaMi Box Mixer in Normal DSP Mode



Select the FX button on the basic Mixer window. In this mode, you will have reverb and chorus effects send on all sources, as well as the program graphic equalizer.

### **TO RECORD AND PLAYBACK MIDI**

1. Open your MIDI sequencing software.
2. Open WaMiBox Mixer by clicking once on its icon in the Windows Status Bar.
3. Select a track to record MIDI in your MIDI sequencing software.
4. Select input source on your MIDI sequencing software as MIDI (as opposed to wave or audio).
5. Select *WaMi Box MIDI Play* as your MIDI output and select a MIDI channel.
  - If you want to use external MIDI sound module connected to WaMiBox, select *WaMi Box MIDI-1* as your MIDI output.
6. Select a MIDI instrument (sound font) of your choice using Set Manager.
7. On WaMiBox Mixer, make sure that the MIDI channel fader is up. MIDI channel is located just to the left of Wave module. This fader controls the output volume of MIDI sound fonts in WaMi Box.
8. To apply reverb and/or chorus to WaMiBox sound font, click on the *FX Panel* button on the Mixer window and adjust the send value of Reverb/Chorus knob in MIDI section
9. To apply pan-pot to WaMiBox sound font, click on the *PAN* slider under the level fader and drag it to the left or right.
  - Since WaMiBox sound fonts are all in stereo, it's best to leave the pan-pot in the center position unless you need to change the stereo image of all MIDI sounds in WaMiBox.
10. Follow your MIDI software's instructions on recording and playback

WaMiBox MIDI sounds are sent to all outputs (analog and digital), as well as the headphone. Using the Output Select slider, you can also assign desired output port for MIDI signal.

### **TO RECORD AUDIO**

1. Open your digital audio recording software/sequencer.
2. Open WaMi Box Mixer by clicking once on its icon in the Windows Status Bar.

3. Click the *INPUT SELECTOR* on WaMi Box front panel repeatedly to select the input source (coaxial, optical, line in or microphone).
4. The input source selection you make is routed to INPUT channel on the WaMi Mixer.
5. In your audio recording software, select a track and designate the input source *WaMi Box Synth Record*. Depending on the software you use.

#### **TO PLAYBACK AUDIO**

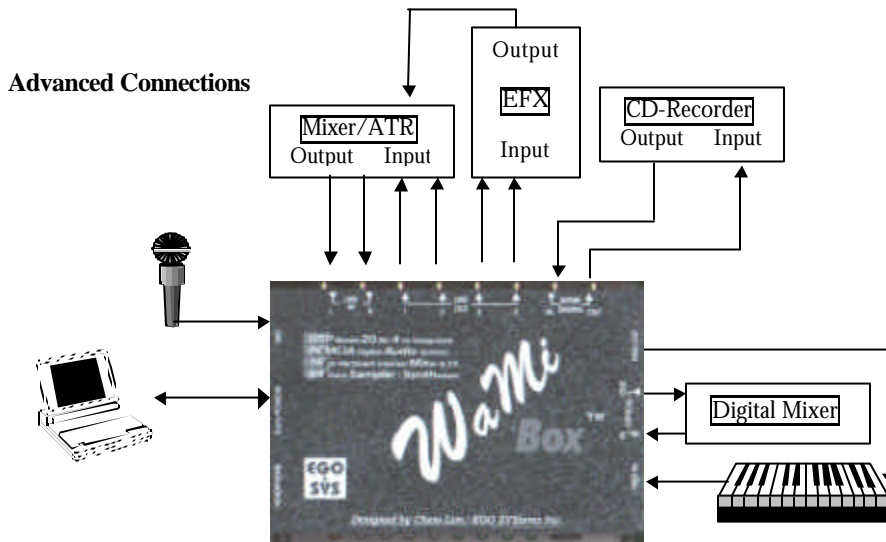
1. Open your digital audio recording software/sequencer.
2. Open WaMi Box Mixer by clicking once on its icon in the Windows Status Bar.
3. In your audio recording software, select the output port among *WaMi Box Synth Play#1 to whatever number of virtual output channel* corresponds to the *WAVE* channel on WaMiBox Mixer.
4. To apply reverb and/or chorus to the sound, click on the FX Panel and adjust the send level in Wave section. Then open Virt. Channel window and adjust *REVERB* or *CHORUS* return slider until desired effect is achieved.
5. To apply pan-pot to the sound, click on the *PAN* slider under *WAVE* level fader and drag it to the left or right.
  - Since most audio recording software has volume controls, you can leave the WaMiBox Mixer fader to its highest position.

### **Advanced Set Up**

In this set up, WaMiBox functions as the centerpiece of your digital audio and MIDI workstation. The basic procedures for handling MIDI and digital audio is same as in the Basic Set Up. However, in a more complicated set up, you may want to connect:

1. Coaxial S/PDIF output from a CD player to SPDIF input of WaMi Box, and S/PDIF output from WaMi Box to S/PDIF input of CD recorder or DAT.
2. Optical S/PDIF output from a digital mixer to optical S/PDIF input of WaMi Box

- Line Out 3 and 4 to outboard signal processor/effect box (Line Out 3 and 4 serves as effects/aux sends). You can also use Line out 3 and 4 as additional bus to multitrack tape recorder.



### WaMi Box Mixer in 4 CH Mode

The difference between 4 CH Mode and the FX Mode is that in 4 CH Mode, Wave channels' Reverb and Chorus effect sends are disabled. Instead, Outputs 3 and 4 are available on all Wave input channels. The Outputs 3 and 4 can function in 2 ways:

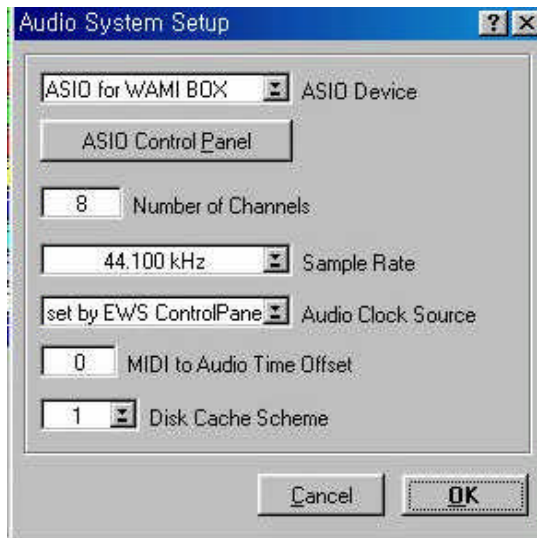
- As an auxiliary send to route effect send signals from Wave Modules to the outboard signal processing equipment, such as more elaborate digital effects system. To do so, make the connections as shown above. (*In this case you can simply connect the output returns of the effects processor to the LINE IN of WaMi Box and control its level with the INPUT Module fader.*) You can still use reverb and chorus on the MIDI module.
- As an additional output bus to route Wave sounds to multitrack recorder. In this case, WaMiBox Mixer functions as a 4-bus recording console.

## Setting for Applications

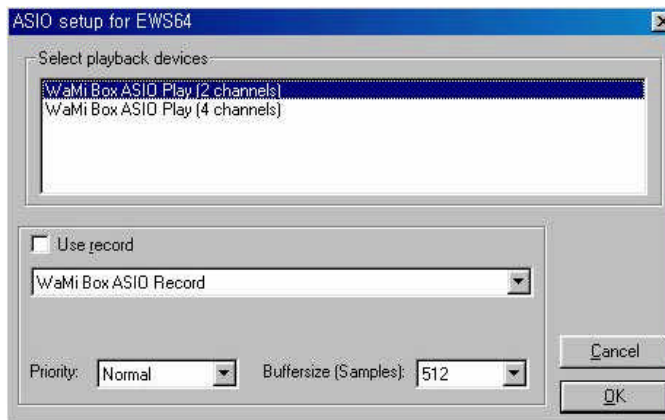
WaMi Box supports various drivers so it can be work with several applications. Here we will show you few of sample setting.

### 1. CUBASIS (ASIO 2.0 driver)

Cubasis is a hard-disk recording/sequencing software. It is a smaller version of CUBASE, but they are very similar in setup. It supports ASIO 2.0 driver for faster digital audio data processing.



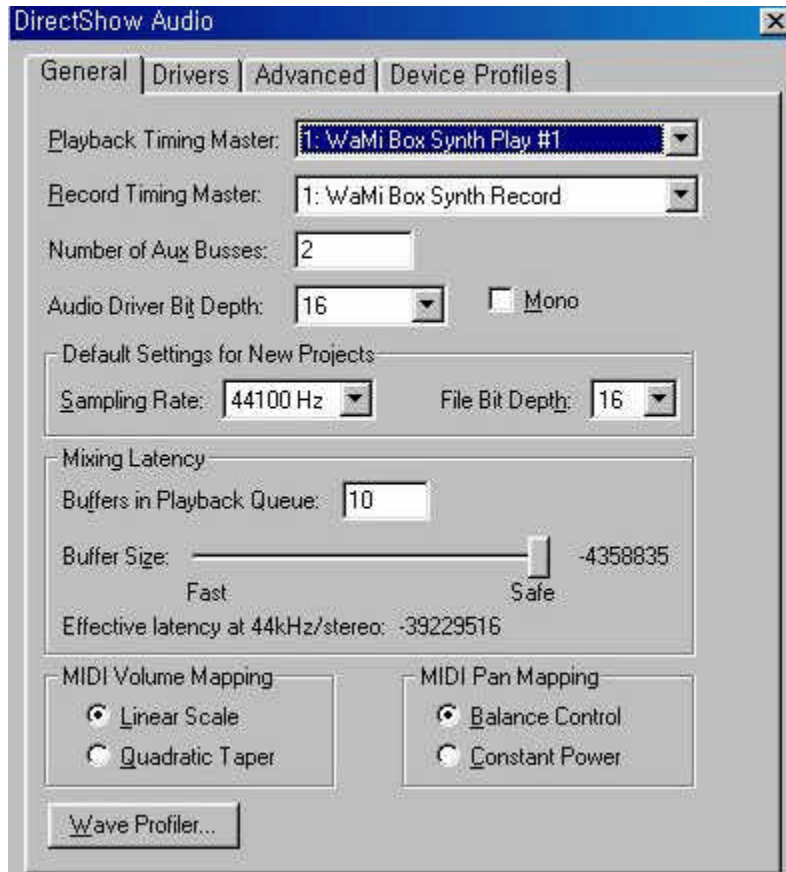
When you open the application for the first time after successfully installed both hardware and software of WaMi Box, you should set audio driver part as you can see above. Go to Audio>System then you will see the setup window as above. Select “ASIO for WAMI BOX” for ASIO Device.



If you click “ASIO Control Panel” button right under the ASIO driver selection window, ASIO setup window will appear as above. You can select either 2ch Mode or 4ch Mode here and for the recording you should check “Use record”. Also you can adjust Buffer size in this window.

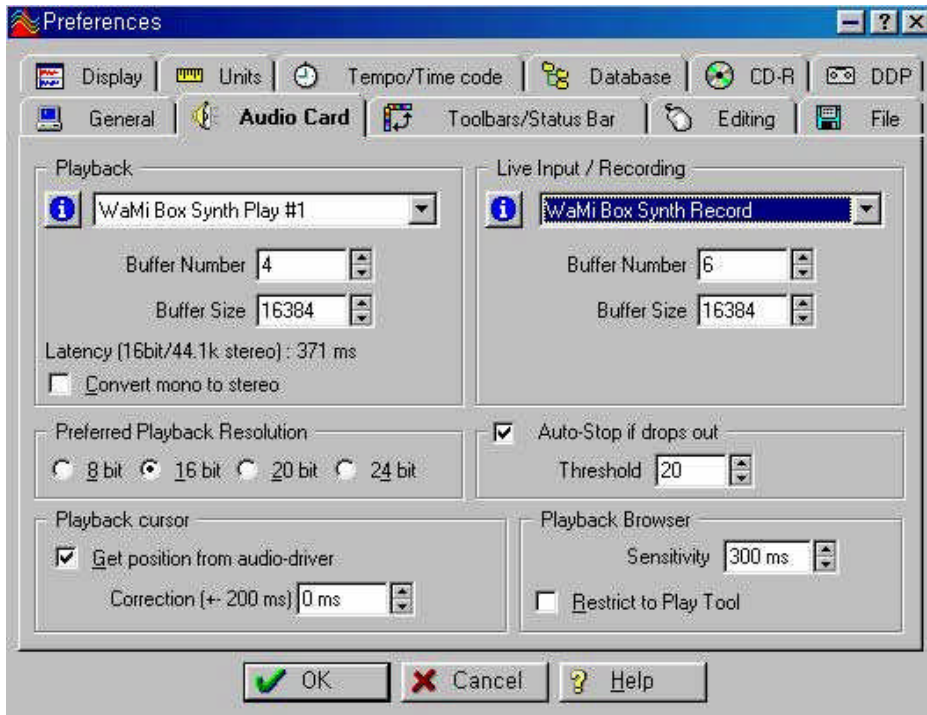
## 2. Cakewalk

Cakewalk is one of popular hard-disk recording/sequencing software.

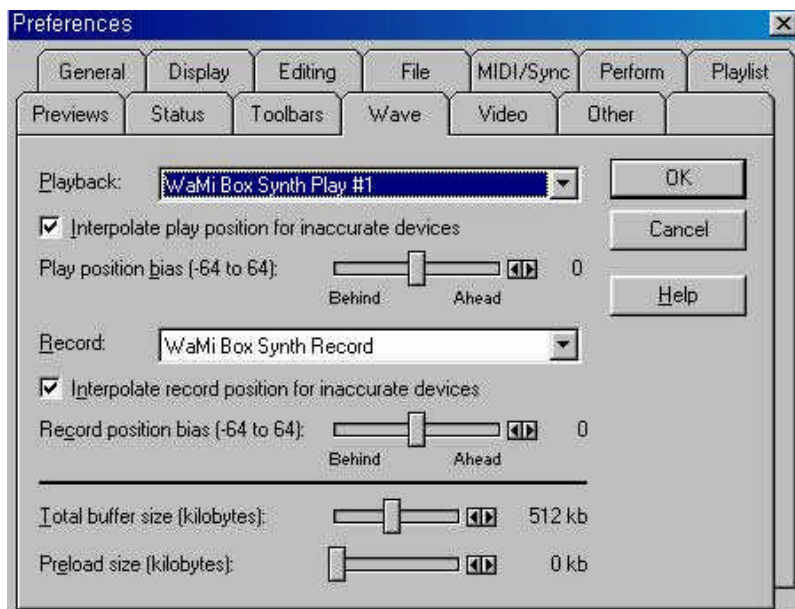


Go to Option>Audio menu and you will find setup window as above. You need to set the Playback Timing Master and Record Timing Master as WaMi Box. Also it is highly recommended to run “Wave Profiler” for automatic buffer size setting.

### 3. Wave Lab



### 4. Soundforge



## Other Applications for WaMi Box

### **WaMiBox as a Digital Signal Converter**

When you connect any digital input source to WaMiBox, you immediately get the converted signal in all outputs. For example, if you connect a signal from your CD player to the COAXIAL S/PDIF input on the WaMiBox, you will have OPTICAL S/PDIF output of the same signal, as well as the analog signal on the LINE OUT 1 and 2.

### **WaMiBox as a Sample Rate Converter**

WaMiBox's A-D converter works only in 44.1 kHz sampling rate. However, it can accept 48 kHz sampling rate from all digital input ports and automatically converts it into 44.1 kHz sampling rate. For example, if you connect a digitally audio recorded in 48 kHz sampling rate into the COAXIAL S/PDIF input, WaMiBox will output 44.1 kHz converted signal at all output ports.

### **Sampling with WaMiBox**

If you have a software sampler, you can use WaMiBox as a sampler and sample playback device with 64 voices and up to 16 MB of RAM. If you are not familiar with software sampler, you may want to try demo/shareware software sampler included in the WaMiBox CD-ROM.

### **Using WaMiBox as a MIDI Sound Module**

WaMiBox can be used as if it's a MIDI sound module. Just connect a MIDI cable to its MIDI IN jack. With MIDI sound font editor, you can create and store sounds fonts of your own.

## MIDI Implementation

### Wami Box Specific MIDI Messages

Various features of the WaMi Box can be also controlled by NRPN MIDI messages as follows :

NRPN# High/Low	Description	Power-up Default
3700H	Equalizer Low band (bass) 0=-12dB, 40H=0dB, 7FH=+12dB	60H (+6dB)
3701H	Equalizer Med Low band 0=-12dB, 40H=0dB, 7FH=+12dB	40H (0dB)
3702H	Equalizer Med High band 0=-12dB, 40H=0dB, 7FH=+12dB	40H (0dB)
3703H	Equalizer High band (treble) 0=-12dB, 40H=0dB, 7FH=+12dB	60H (+6dB)
3708H	Equalizer Low cutoff freq 0=0Hz, 7FH=4.7 kHz	0CH
3709H	Equalizer Med Low cutoff freq 0=0Hz, 7FH=4.2 kHz	1BH
370AH	Equalizer Med High cutoff freq 0=0Hz, 7FH=4.2 kHz	72H
370BH	Equalizer High cutoff freq 0=0Hz, 7FH=18.75 kHz	40H
3720H	Spatializer effect volume 0= no effect, 7FH= maximum effect	00H
3724H	Mike1/AUXL volume 0 to 7FH	40H
3725H	Mike2/AUXR volume 0 to 7FH	40H
3726H	Mike 1/AUXL pan 0=hard left, 40H=center, 7FH=hard right	00H (left)
3727H	Mike 2/AUXR pan 0=hard left, 40H=center, 7FH=hard right	7FH (right)
372CH	Spatializer effect delay 0 to 7FH	2
372DH	Spatializer effect input 0=mono input (left+right), 7FH=stereo input (left-right)	0
372EH	Spatializer effect output mode 0=2 speaker mode, 7FH=4 speaker mode	0
3751H	Rom + 32Kx16 sram test nprn data must be 23h to start test	



## Detailed MIDI Implementation

MIDI MESSAGE	HEX CODE	DESCRIPTION	COMPATIBILITY
NOTE ON	9nH kk vv	Midi channel n(0-15) note ON #kk(1-127), velocity vv(1-127). vv=0 means NOTE OFF	MIDI
NOTE OFF	8nH kk vv	Midi channel n(0-15) note OFF #kk(1-127), vv is don't care.	MIDI
PITCH BEND	EnH bl bh	Pitch bend as specified by bhbl (14 bits) Maximum swing is +/- 1 tone (power-up). Can be changed using pitch bend sensitivity. Center position is 00H 40H.	GM
PROGRAM CHANGE	CnH pp	Program (patch) change. Specific action on channel 10(n=9): select drumset. Refer to sounds / drumset list. Drumsets can be assigned to other channels (see SYSEX MIDI channel to part assign and part to rhythm allocation)	GM/GS
CHANNEL AFTERTOUCH	DnH vv vv	pressure value. Effect set using Sys. Ex. 40H 2nH 20H-26H	MIDI
MIDI RESET	FFH	Reset to power-up condition CTRL 00 BnH 00H cc Bank select : Refer to sounds list. No action on drumset. cc=64 reserved for Wami Box sound editor	GS/EGOSYS
CTRL 01	BnH 01H cc	Modulation wheel. Rate and maximum depth can be set using SYSEX	MIDI
CTRL 05	BnH 05H cc	Portamento time.	MIDI
CTRL 06	BnH 06H cc	Data entry : provides data to RPN and NRPN	MIDI
CTRL 07	BnH 07H cc	Volume (default=100)	MIDI
CTRL 10	BnH 0AH cc	Pan (default=64 center)	MIDI
CTRL 11	BnH 0BH cc	Expression (default=127)	MIDI/GM
CTRL 64	BnH 40H cc	Sustain (damper) pedal	MIDI
CTRL 65	BnH 41H cc	Portamento ON/OFF	MIDI
CTRL 66	BnH 42H cc	Sostenuto pedal	MIDI
CTRL 67	BnH 43H cc	Soft pedal	MIDI
CTRL 80	BnH 50H vv	Reverb program vv=00H to 07H (default 04H) 00H : Room1    01H : Room2 02H : Room3    03H : Hall1 04H : Hall2    05H : Plate 06H : Delay    07H : Pan delay	EGOSYS
CTRL 81	BnH 51H vv	Chorus program vv=00H to 07H (default 02H) 00H : Chorus1    01H : Chorus2 02H : Chorus3    03H : Chorus4 04H : Feedback    05H : Flanger 06H : Short delay    07H : FB delay	EGOSYS
CTRL 91	BnH 5BH vv	Reverb send level vv=00H to 7FH	GS
CTRL 93	BnH 5DH vv	Chorus send level vv=00H to 7FH	GS
CTRL 120	BnH 78H 00H	All sound off (abrupt stop of sound on channel n)	MIDI
CTRL 121	BnH 79H 00H	Reset all controllers	MIDI
CTRL 123	BnH 7BH 00H	All notes off	MIDI
CTRL 126	BnH 7EH 00H	Mono on	MIDI
CTRL 127	BnH 7FH 00H	Poly on (default power-up)	MIDI
CTRL CC1	BnH ccH vvH	Assignable Controller 1. cc=Controller number (0-5Fh), vv=Control value (0-7Fh). Control number (ccH) can be set on CC1 CONTROLLER NUMBER (Sys. Ex. 40 1x 1F). The resulting effect is determined by CC1 controller function (Sys.Ex. 40 2x 40-4A)	GS
CTRL CC2	BnH ccH vvH	Assignable Controller 2. cc=Controller number (00h-5Fh), vv=control value (0-7Fh). Control number can be set on CC2 CONTROLLER NUMBER (Sys.Ex. 40 1x 20). The resulting effect is determined by CC2 controller function (Sys.Ex.40 2x 50-5A).	
RPN 0000H	BnH 65H 00H 64H 00H 06H vv	Pitch bend sensitivity in semitones (default=2)	MIDI/GM
RPN 0001H	BnH 65H 00H 64H 01H 06H vv	Fine tuning in cents (vv=00 -100, vv=40H 0, vv=7FH +100)	MIDI
RPN 0002H	BnH 65H 00H 64H 02H 06H vv	Coarse tuning in half -tones (vv=00 -64, vv=40H 0, vv=7FH +64)	MIDI
NRPN 0108H	BnH 63H 01H 62H08H 06H vv	Vibrate rate modify (vv=40H -> no modif)	GS
NRPN 0109H	BnH 63H 01H 62H 09H 06H vv	Vibrate depth modify (vv=40H -> no modif)	GS
NRPN 010AH	BnH 63H 01H 62H 0AH 06H vv	Vibrate delay modify (vv=40H -> no modif)	GS
NRPN 0120H	BnH 63H 01H 62H 20H 06H vv	TVF cutoff freq modify(vv=40H -> no modif)	GS
NRPN 0121H	BnH 63H 01H 62H 21H 06H vv	TVF resonance modify (vv=40H -> no modif)	GS
NRPN 0163H	BnH 63H 01H 62H 63H 06H vv	Env. attack time modify(vv=40H ->no modif)	GS
NRPN 0164H	BnH 63H 01H 62H 64H 06H vv	Env. decay time modify(vv=40H -> no modif)	GS
NRPN 0166H	BnH 63H 01H 62H 66H 06H vv	Env. release time modify(vv=40H ->no modif)	GS
NRPN 18rrH	BnH 63H 18H 62H rr 06H vv	Pitch coarse of drum instr. note rr in semitones (vv=40H ->no modif)	GS

NRRP 1ArrH	BnH 63H 1AH 62H rr 06H vv	Level of drum instrument note rr (vv=00 to 7FH)	GS
NRRP 1CrrH	BnH 63H 1CH 62H rr 06H vv	Pan of drum instrument note rr (40H = middle)	GS
NRRP 1DrrH	BnH 63H 1DH 62H rr 06H vv	Reverb send level of drum instrument note rr (vv=00 to 7FH)	GS
NRRP 1ErrH	BnH 63H 1EH 62H rr 06H vv	Chorus send level of drum instrument note rr (vv=00 to 7FH)	GS
NRRP 37xxH	BnH 63H 37H 62H xx 06H vv	Special WaMi Box features controls (see above)	EGOSYS
Sysex	F0H 7EH 7FH 09H 01H F7H	General MIDI reset	GM
Sysex	F0H 7FH 7FH 04H 01H 00H 11 F7H	Master volume (11=0 to 127, default 127)	GM
SYSEX	F0H 41H 00H 42H 12H 40H 00H 00H dd dd dd dd xx F7H	Master tune (default dd= 00H 04H 00H 00H) -100.0 to +100.0 cents. Nibblitized data should be used (always four bytes). For example, to tune to +100.0 cents, sent data should be 00H 07H 0EH 08H	GS
SYSEX	F0H 41H 00H 42H 12H 40H 00H 04H vv xx F7H	Master volume (default vv=7FH)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 00H 05H vv xx F7H	Master key -shift (default vv=40H, no transpose)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 00H 06H vv xx F7H	Master pan (default vv=40H, center)	
SYSEX	F0H 41H 00H 42H 12H 40H 00H 7FH 00H xx F7H	GS reset	GS
SYSEX	F0H 41H 00H 42H 12H 40H 01H 30H vv xx F7H	Reverb type (vv=0 to 7), default = 04H 00H : Room1    01H : Room2 02H : Room3    03H : Hall1 04H : Hall2    05H : Plate 06H : Delay    07H : Pan delay	GS
SYSEX	F0H 41H 00H 42H 12H 40H 01H 31H vv xx F7H	Reverb character, default 04H	GS
SYSEX	F0H 41H 00H 42H 12H 40H 01H 33H vv xx F7H	Reverb master level, default = 64	GS
SYSEX	F0H 41H 00H 42H 12H 40H 01H 34H vv xx F7H	Reverb time	GS
SYSEX	F0H 41H 00H 42H 12H 40H 01H 35H vv xx F7H	Reverb delay feedback. Only if reverb number=6 or 7 (delays)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 01H 38H vv xx F7H	Chorus type (vv=0 to 7), default = 02H 00H : Chorus1    01H : Chorus2 02H : Chorus3    03H : Chorus4 04H : Feedback    05H : Flanger 06H : Short delay    07H : FB delay	GS
SYSEX	F0H 41H 00H 42H 12H 40H 01H 3AH vv xx F7H	Chorus master level, default = 64	GS
SYSEX	F0H 41H 00H 42H 12H 40H 01H 3BH vv xx F7H	Chorus feedback	GS
SYSEX	F0H 41H 00H 42H 12H 40H 01H 3CH vv xx F7H	Chorus delay	GS
SYSEX	F0H 41H 00H 42H 12H 40H 01H 3DH vv xx F7H	Chorus rate	GS
SYSEX	F0H 41H 00H 42H 12H 40H 01H 3EH vv xx F7H	Chorus depth	GS
SYSEX	F0H 41H 00H 42H 12H 40H 1pH 02H nn xx F7H	MIDI channel to part assign, p is part (0 to 15), nn is MIDI channel (0 to 15, 16=OFF). This SYSEX allows to assign several parts to a single MIDI channel or to mute a part. Default assignment : <u>part</u> <u>MIDI channel</u> 0 9        (DRUMS) 1-9        0-8 10-15    10-15	GS
SYSEX	F0H 41H 00H 42H 12H 40H 1pH 15H vv xx F7H	Part to rhythm allocation, p is part (0 to 15), vv is 00 (sound part) or 01 (rhythm part). This SYSEX allows a part to play sound or drumset. There is no limitation of the number of parts playing drumset. Default assignment: part 0 plays drums (default MIDI channel 9) all other parts play sound.	GS
SYSEX	F0H 41H 00H 42H 12H 40H 1nH 40H v1 v2 ... v12 xx F7H	Scale tuning, n is MIDI channel (0 to 15), v1 to v12 are 12 semi-tones tuning values (C, C#, D, ... A#, B), in the range - 64 (00H) 0 (40H) +63(7FH) cents. This SYSEX allows non chromatic tuning of the musical scale on a given MIDI channel. Default v1, v2, ... ,v12 = 40H, 40H,...,40H (chromatic tuning). Scale tuning has no effect if the part is assigned to a rhythm channel or if the sound played is not of chromatic type.	GS
SYSEX	F0H 41H 00H 42H 12H 40H 1nH 1AH vv xx F7H	Velocity slope from 00H to 7FH (default = 40H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 1nH 1BH vv xx F7H	Velocity offset from 00H to 7FH (default = 40H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 1nH 1FH vv xx F7H	CC1 Controller number (00-5FH) (default = 10H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 1nH	CC2 Controller number (00-5FH) (default = 11H)	GS

	20H vv xx F7H		
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 00H vv xx F7H	Mod pitch control (-24,+24 semitone) (default = 40H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 01H vv xx F7H	Mod tvf cutoff control (default = 40H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 02H vv xx F7H	Mod Amplitude control (-100%+100%) (default=40H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 03H vv xx F7H	Mod lfo1 rate control (default = 40H). n is don' t care. Rate is common on all channels	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 04H vv xx F7H	Mod lfo1 pitch depth (0-600 cents) (default=0AH)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 05H vv xx F7H	Mod lfo1 tvf depth (default = 0H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 06H vv xx F7H	Mod lfo1 tva depth (0-100%) (default = 0H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 10H vv xx F7H	Bend pitch control (-24,+24 semitone) (default = 42H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 11H vv xx F7H	Bend tvf cutoff control (default = 40H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 12H vv xx F7H	Bend Amplitude control (-100%+100%) (default=40H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 14H vv xx F7H	Bend lfo1 pitch depth (0-600 cents) (default=0AH)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 15H vv xx F7H	Bend lfo1 tvf depth (default = 0H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 16H vv xx F7H	Bend lfo1 tva depth (0-100%) (default = 0H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 20H vv xx F7H	CAF pitch control (-24,+24 semitone) (default = 40H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 21H vv xx F7H	CAF tvf cutoff control (default = 40H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 22H vv xx F7H	CAF Amplitude control (-100%+100%) (default=40H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 24H vv xx F7H	CAF lfo1 pitch depth (0-600 cents) (default=0AH)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 25H vv xx F7H	CAF lfo1 tvf depth (default = 0H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 26H vv xx F7H	CAF lfo1 tva depth (0-100%) (default = 0H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 40H vv xx F7H	CC1 pitch control (-24,+24 semitone) (default = 40H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 41H vv xx F7H	CC1 tvf cutoff control (default = 40H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 42H vv xx F7H	CC1 Amplitude control (-100%+100%) (default=40H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 44H vv xx F7H	CC1 lfo1 pitch depth (0-600 cents) (default=0AH)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 45H vv xx F7H	CC1 lfo1 tvf depth (default = 0H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 46H vv xx F7H	CC1 lfo1 tva depth (0-100%) (default = 0H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 50H vv xx F7H	CC2 pitch control (-24,+24 semitone) (default = 40H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 51H vv xx F7H	CC2 tvf cutoff control (default = 40H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 52H vv xx F7H	CC2 Amplitude control (-100%+100%) (default=40H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 54H vv xx F7H	CC2 lfo1 pitch depth (0-600 cents) (default=0AH)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 55H vv xx F7H	CC2 lfo1 tvf depth (default = 0H)	GS
SYSEX	F0H 41H 00H 42H 12H 40H 2nH 56H vv xx F7H	CC2 lfo1 tva depth (0-100%) (default = 0H)	GS

Notes :

NRPN sending method : CTRL#99=high byte, CTRL#98=low byte, CTRL#6=vv

Example : NRPN 0108H = 40H -> CTRL#99=1, CTRL#98=8, CTRL#6=64

x or xx means don' t care.