



CBX-D3/D5

**Steinberg**

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# Introduction

Welcome to the Cubase Audio XT CBX on-line supplement!

Please use one of the methods described below to quickly find the desired information:

- **Use the Table of Contents provided by the Adobe Acrobat Reader program.**
- **Use the Adobe Acrobat Reader Search function.**
- **Click on a cross-reference (green text) to jump to the respective topic.**

It is of course possible to print out this document or parts of it.

Additional Information on how to use the Adobe Acrobat Reader program can be found in its on-line Help.

## What this document contains

This supplement to the Audio Recording book describes the differences between audio recording in Cubase (or Cubase Score) and in Cubase Audio XT with a Yamaha CBX D3/D5.

Below, the CBX-D5 and CBX-D3 are commonly referred to as “the CBX”. If nothing else is specifically stated, the text below applies to both machines.

If you find any discrepancies between the main Audio Recording book and this document, it is this document you should rely on, since using Cubase Audio XT with the CBX is slightly different from other versions.

### CBX Support

- Yamaha allows you to use two CBXs on the same SCSI bus, even sharing the same hard disk (if it is fast enough). This means you can connect two CBXs to one computer and get an eight channel system.
- Cubase Audio lets you decide in software exactly how to configure the audio ins and outs on the CBX, and supports the stereo recording and Standby Recording features of the CBX.
- The CBX-D5's effects (DSP) capabilities are fully supported. There's automation of all mixpoints, including the digital equalisation, via Cubase's Mixer windows. The Effect unit can be set up using a dialog called “Digital Effects...” found on the Audio menu and described later in this supplement.

# Requirements

The following equipment is needed, in addition to what is needed for MIDI recording:

- **One or two Yamaha CBX-D3/D5s.**

- **A “SCSI Host Adapter” for your computer.**

This card, which adds a SCSI interface to your computer, must be “ASPI compatible”. ASPI is a standard for SCSI on PC computers, established by Adaptec. While other manufacturers make ASPI compatible SCSI cards, staying with an original Adaptec card minimizes the risk for incompatibility problems.

- 
- If you use Windows 95, see the “Read Me” files included for more information about SCSI.
- 

- **One ore more SCSI hard disks for the audio files.**

In the Yamaha documentation that comes with the CBX you will find information on recommended drives and a checklist for purchasing hard disks.

- **It is also strongly recommended that you have two MIDI interfaces, or an interface with two MIDI Inputs.**

Two-way communication between the computer and the CBX improves the timing of the recordings, see [page 11](#) for connection details.

# Installation

To install Cubase Audio XT and the Yamaha CBX D3/D5, proceed as follows:

## Preparations

First go through the following steps in the getting Started book:

- **Windows 95**
- **Getting the Computer ready**
- **About Printers**
- **Installing the Copy Protection key**
- **Installing the MIDI Interface/synthesizer driver**
- **Connecting the MIDI Equipment**

## SCSI Host Adapter

- 
- The description below is only true for Windows 3.1 or 3.11. Windows 95 users, please read the “Read Me” files included with the program.
- 
- **Install the SCSI Host Adapter as described in the documentation that came with it. Please note the following points:**
  - Make sure the base address and IRQ settings for the card do not conflict with any other cards in your computer. For example, some Adaptec cards have a default Base Address of “330” which is the same as the default address for a regular MPU-compatible MIDI card. In this case, one of the cards *must* be moved to another base address.
  - You must install a driver for the card. You have two options:
    - ASPI for DOS (“the “ASPIxDOS driver” where X is a version number), which is the DOS version of the ASPI Manager software.
    - ASPI for Windows which is the Windows 3.1/3.11 version of the driver.With some cards, either or both of these drivers are included, with some they have to be purchased separately. With Adaptec cards, it is often part of a package called “EZ-SCSI”.
  - With the software comes diagnostic tools for checking that the ASPI manager is installed properly and that all SCSI devices are found, during startup. Please use these tools. This will make it much easier to troubleshoot any SCSI problems you might have at an initial stage.

## Disabling “Disconnect”

If your PC SCSI card has a “Disconnect” feature, it must *not* be enabled. If it is, the computer might lock up when it and the CBX try to access the SCSI hard disk at the same time. Exactly how to turn this option off should be described in the documentation that came with the card. It is most likely either a setting in the card’s BIOS setup, or a switch in the command line for the card, in your CONFIG.SYS file.



## Hard Disks

- 1. With power turned off on all units, connect the hard disk to the SCSI host adapter, as recommended by the disk manufacturer and in the host adapter documentation.**

Pay special attention to any notes about *SCSI IDs* and *termination*.

- 2. Turn on the hard disk, and then the computer.**
- 3. Use the software included with the SCSI host adapter to install and partition the drive, as described in the documentation that came with the host adapter.**

- 
- The hard disk used with the CBX must be formatted in DOS (FAT 16) format! Do not create partitions larger than 2 GigaByte.
- 

- 4. Reboot the computer.**

The drive should now appear under DOS and under Windows (for example in the File Manager). If your internal drive for example was the “C:” drive, the SCSI hard disk will now be the “D:” drive.

# Installing the CBX

For installation of the CBX we refer to the very comprehensive installation instructions in the manual that comes with the CBX (although they don't specifically relate to PC computers).

## SCSI Communication

Observe the following points when making the SCSI connections and settings:

- It is very important that you have your SCSI connections and terminations done correctly.
- If you have two CBXs, install the second one on the SCSI chain, just as with the first. Only use SCSI termination on the last unit in the chain!
- You must assign unique SCSI device IDs to all units on the SCSI chain.
- If you have two CBXs, you need to differentiate between them in Cubase Audio. Therefore, the CBX with the highest SCSI ID will be assigned the number "1" in Cubase Audio, the other will be assigned the number "2". You will use this number in the Hardware Setup dialog, and in the Standby Record dialog, to assign settings and recording to one or the other unit.

## Verifying SCSI Communication with the CBX

The SCSI software you installed is able to list all recognised SCSI devices in your system. Please check the instructions that came with the SCSI host adapter card, if in doubt.

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- You must make absolutely sure that all your CBXs and all your hard disks appear in the list of recognised SCSI devices, when you boot up the computer.
- 

If any device does *not* appear, please check the following points:

- **Did you set up termination properly?**
- **Are all devices set to unique SCSI IDs?**
- **If you disconnect the CBX, does the SCSI hard drive(s) get recognised? If the answer is yes, check the cables to the CBX and the termination. The CBX uses the faster SCSI-2 protocol which requires special cables.**

## CBX MIDI Connections

### 1. **Connect a MIDI Out on the computer to MIDI In on the CBX.**

The CBX *can* share MIDI connectors with other MIDI equipment, but if you have the ability to reserve a specific MIDI port for the CBX, we recommend you to do so. However, if you plan to use the “Sync Master:Cubase” function in Cubase Audio (See [page 70](#)), you *must* reserve a MIDI Out port for the CBX.

2. If you have two CBXs, connect the MIDI Thru on the first unit to MIDI In on the second.
3. **We also recommend you to connect the MIDI Out on the CBX to a MIDI In on the computer since this will improve the timing of your recordings significantly!**

This more or less requires that you have one multi-port MIDI interface or two single-port ones, since you also want to connect your MIDI keyboard and possibly MIDI sync sources to the computer. Also note some of the synchronizing options require MIDI Input from the CBX.

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- It is not possible to use a MIDI merger for this purpose!
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## Audio Connections

For all references to audio connections, we refer to the CBX documentation. Only observe the following point:

- With the CBX-D5, you can record analog or digital signals. Which input source to use is decided in the Hardware Setup dialog, as described on [page 77](#).

## Installing Cubase Audio XT

1. **Go back to the Getting Started book and perform the first seven steps in the section “Installing the software” on page 25.**

If you later need to switch to another hardware system, see [page 16](#).

2. **Continue from step 8 on page 26 in the Getting Started book.**

## Making MIDI Settings

Again, please return to the Getting Started book’s Installation chapter and perform the following steps:

- **Start Cubase!**
- **Checking MIDI Interface Installation**
- **Saving the Settings**

## Making Audio Settings

In Cubase, select “Hardware Setup from the Audio menu and set the dialog as follows (not all options are available for the CBX-D3):

---

Setting:	Description:
MIDI Output	Here, select the MIDI Output to which you have connected your CBX(s).
Sync Mode	The basic setting here is Free Run, the more advanced options are described on <a href="#">page 70</a> .
Record Frequency	See later in this text.
Record Time	Here you set the maximum length recording you plan to perform, in minutes. The CBX can not make longer individual recordings than set here.
CBX-D3/D5 Unit	If you have only one CBX, leave this as is. If you have two, use this to set which of the units the following settings should apply to.
MIDI Input	Here, select the MIDI Input to which you have connected the selected CBX.
Input Source	Here you select if this recording should be done via the analog or digital inputs.

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<b>Setting:</b>	<b>Description:</b>
Word Clock Master	When you record analog signals, set this to Internal. When you record digital signals, set this to one of the last three options, depending on the input used. For more info, see the CBX manual and <a href="#">page 77</a> .
Playback Frequency	If Word Clock master is set to Internal, you can change this value. Set it to the basic sampling frequency you plan to use in your Song, normally 44.1 or 48 kHz.
Channel Status Freq.	For all normal applications, set this to the same as the Playback Frequency.
Channel Status Bit 0	This only applies if you are playing back digitally. Set this to Consumer if use the CD/DAT interface and Professional if you use the AES/EBU interface.

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## Where do I Go Next?

Now, please proceed to the Audio Recording book included in this package. For differences between Cubase (Score) and Cubase Audio XT, see the following text.

# Switching to another Audio Hardware System

If you later want to run Cubase Audio XT with some other audio hardware than the one specified at installation, there are two ways:

## By reinstalling

This is the safest and simplest way. Simply reinstall the program, and specify the same destination directory. For files you might have changed, like the def.all startup Song, you will be asked if you want to keep the version already installed or install a new one.

## By changing the cubaseda.ini

This is the more advanced option.

- 
- If you don't feel confident about changing the "cubaseda.ini" file, please use the reinstall method described above.
- 

In your Cubase Audio XT directory you will find a folder called "audio". Inside this is *one folder for each* of the audio hardware systems that Cubase Audio XT supports. Inside each of these folders is a file called "adevice.dll". Which audio hardware the program uses depends on which of these "adevice.dll" files that is loaded on startup.



The instruction on which file to load is found in the “cubaseda.ini” file. If you change this, Cubase Audio XT will use another system.

Proceed as follows:

- 1. Make sure Cubase Audio XT is not running.**
- 2. Open a text editor, for example Notepad.**
- 3. Locate and open the file “cubaseda.ini”, located in your Cubase Audio XT folder.**
- 4. Locate the PREFS section.**
- 5. Change the path on the “AudioDevice=” line so that it points to the directory corresponding to the audio hardware you now want to use.**
- 6. Save the file.**
- 7. Launch Cubase Audio XT.**

Providing the path is typed in correctly, the other hardware will now be used.

# Recording and Playback

## About Inputs vs Channels

The CBX is a two input, four output recording device. It has four audio Channels, that is, it can play back four discrete mono audio files at the same time.

Please take some time to come to grips with the difference between Audio Inputs, Audio Channels and Audio Outputs.

### The Analog vs Digital ins and outs

The Input Channels on the CBX are labelled 1 and 2. If you use the digital inputs, Input 1 refers to the Left channel and Input 2 refers to the Right channel.

By the same token there are four output channels labelled 1 to 4. On the two AES/EBU digital outs on the CBX-D5, 1 & 3 are Left channels and 2 & 4 are Right channels.

### Inputs and Channels

The fact that there are two Audio Inputs means you can record on one or two channels at a time (per CBX). Recordings made on channel 1 and 3 always use Input 1/Left and recordings made on channel 2 and 4 always use Input 2/Right (more details follows below).

## Channels and Outputs

On the CBX-D3, there's a direct relation between Audio Channels and Outputs. Channel 1 always appears on Output 1, Channel 2 is always on Output 2 and so on.

On the CBX-D5, on the other hand, the Audio Channels can be routed to the Outputs in any way. Audio Channel 4 might appear on Output 1 *and* 2, for example. This routing is done in Cubase's Mixer window.

## Single Track Recording Assignments

### With one CBX-D3

- To record on Channel 1 or 2, connect to the corresponding input and set the Track's Chn value to the same number (1 or 2).
- To use Channel 3 or 4, set up for recording on channel 1 or 2, as described above; record, and then set the Track to *play back* on the desired channel (3 or 4).

### With a second CBX-D3

- If you have a second CBX-D3, Input "1/Left" on this unit records on Cubase channel 5, and Input "2/Right" records on Cubase Channel 6. In addition, channel 7 and 8 are available for playback.

## With one CBX-D5

To record on channel:	Connect to input:	And set the Track to Chn:
1	1/Left	1
2	2/Right	2
3	1/Left	3
4	2/Right	4

## With a second CBX-D5

To record on channel:	Connect to input:	And set the Track to Chn:
1 on the second CBX	1/Left on the second CBX	5
2 on the second CBX	2/Right on the second CBX	6
3 on the second CBX	1/Left on the second CBX	7
4 on the second CBX	2/Right on the second CBX	8

## Recording Length

Each recording you make can only be as long as you have specified with the Record Time setting in the Hardware setup dialog.

- **Raising the Record Time value will allow you to make longer continuous recordings.**
- **Lowering the Record Time will make the CBX prepare recording files faster. This means shorter waiting times when preparing to record.**
- **If you set the Record Time to a higher value than you have space left on your hard disk recording is automatically deactivated when the disk is filled up.**

## Specifying a recording file

Record file names and locations can be specified in two places:

- In the Inspector, by clicking the “Filename” button.
- At the top of the Monitor window, by clicking the “Filename” button that corresponds to the channel you plan to record on.

A file set up for recording as displayed in the Inspector and in the Monitor



Either way, a standard file dialog appears, where you can specify a name and location for the file.

- 
- Cubase will inform you if you try to select a disk that can not be used for audio recording (for example your internal IDE disk) Please remember that recording can only be performed on a SCSI disk connected to the CBX's SCSI interface.
-

# Monitoring

The CBX provides monitoring, that is it allows you to control how the audio passes through the unit when recording. This for example allows you to listen to the input signal when preparing for, and actually performing a recording.

If you connect a source and *activate* monitoring for that channel, the *input signal* for that channel is routed directly to the mix. When you *deactivate* monitoring you will instead hear what is *already recorded* on the Track.

Monitoring can be controlled in one of two ways, and you select which by activating/deactivating “Tape Monitor Mode” on the Audio menu:

## **Tape Monitor Mode activated (Automatic monitoring):**

- When a Monitor button in the Inspector or Monitor window is “pressed”, monitoring is activated when Cubase is stopped and when you are recording.
- When you hit Play, monitoring is automatically *deactivated*.

## **Tape Monitor Mode deactivated (Manual monitoring):**

In this mode, monitoring is controlled by the Monitor buttons in the Inspector and Monitor window. Whenever one of these buttons are activated, monitoring is active for that channel, regardless if Cubase is playing, recording or in stop mode.

- 
- Don't forget to deactivate Monitoring before playing back a recording!
-

## Recording Levels

For all references to recording level adjustments, see your CBX manual. However, please note that when monitoring is activated, the signal passes through the A/D and D/A converters on the CBX, which means you can listen to the output of the unit to check for any degradation in signal quality due to improper levels.

## Stereo Recording

The CBX is essentially a mono system, that is each channel can only play back a mono recording. A stereo recording therefore occupies two channels. To record in stereo, proceed as follows:

### Setting up the CBX-D3

The CBX-D3 can only record stereo on channel 1 and 2, therefore proceed as follows:

- 1. Connect the stereo source to both inputs.**
- 2. Select a Track and set it to channel 1.**



**3. Make sure Channel 1 and 2 are not “occupied” (already used) at the position in the Song where you plan to record.**

This is because stereo recording always uses channel 1 and 2, see below. If the channel is accidentally occupied by another recording, that recording will be cut off when the stereo recording starts.

**4. Switch the Channel Mode setting in the Inspector to Stereo.**

**Setting up the CBX-D5**

**1. Connect the stereo source to both inputs.**

**2. Select a Track and set it as follows:**

---

<b>Chn setting:</b>	<b>Channels used for recording:</b>
1	1 and 2
2	2 and 3
3	3 and 4
4	Not allowed!

---

**3. Make sure the two channels are not “occupied” (already used) at the position in the Song where you plan to record.**

If either channel is accidentally occupied by another recording, that recording will be cut off when the stereo recording starts.

**4. Switch the Channel Mode setting in the Inspector to Stereo.**

**Performing the Recording**

**1. Set up a file for recording.**

**2. Activate recording as usual.**

The signal is recorded into one stereo file.

**Editing Stereo recordings**

Since stereo recordings are made into one file that plays back on two channels, they appear as one event with two audio curves in it, in the Audio editor. The two channels share one volume curve.

- This event occupies two channels - the one it resides on and the next!



A stereo recording, residing on lane 1, but actually occupying channels 1 *and* 2.

Apart from this fact, editing stereo recordings is nothing different from editing mono recordings.

## Stereo recordings and channel assignments

- You can move a stereo event to channel 1, 2 or 3.
  - You can *not* play back stereo events on channel 4.
  - You can simultaneously play back one stereo recording on channel 1 and 2 and another on channel 3 and 4.
- 
- Do not overlap stereo and mono events since it will lead to suddenly muted events during playback. There are no restrictions in Cubase preventing you from creating such a situation, so you should take special care if you use both mono and stereo events in the same Song.
-

## Multi Track recording

Multi Track recording can be performed as described in the Audio Recording book.

- Multi Track recording with one unit allows you to record two mono recordings at the same time, and also to record MIDI and audio simultaneously.
- Multi recording with two units allows you to record two stereo files at the same time, together with MIDI, if desired.

The following rules apply:

### Mono

- With one CBX you can record make two mono recordings at a time. With two CBXs you can record on four tracks simultaneously.
- You must set each Track you want to record onto a different channel number and you must also activate recording in the “R” column for each of the Tracks.
- With the CBX-D3, channel routing is as follows:

To record on channel:	Connect to input:	And set the Track to Chn:
1 on the first unit	1/Left on the first unit	1
2 on the first unit	2/Right on the first unit	2
1 on the second unit	1/Left on the second unit	5
2 on the second unit	2/Right on the second unit	6

- With the CBX-D5 channel routing as follows:

<b>The signal connected to:</b>	<b>Will be recorded on:</b>	<b>On the CBX channel:</b>
1/Left on the first unit	the Track with the lowest channel number	set for the Track (1-4)
2/Right on the first unit	the Track with the next higher channel number	set for the Track (1-4)
1/Left on the second unit	the Track with the next higher channel number	set for the Track (5-8)
2/Right on the second unit	the Track with the highest channel number	set for the Track (5-8)

## **Stereo**

- Each device performs one stereo recording as described on [page 24](#).
- You must set each Track you want to record onto a different channel number and you must also activate recording in the “R” column for each of the Tracks.
- On the CBX-D5, the first device can record on channel 1, 2 or 3, and the second on channel 5, 6 or 7.
- On the CBX-D3, the first device must record on channel 1 and the second on channel 5.
- Each recording will occupy two channels (as with any stereo recording).

In either case (mono or stereo), monitoring and actually recording is done as with single Track recording.

## Punch In and Out

With the CBX you can chose between manual or automatic punch in.

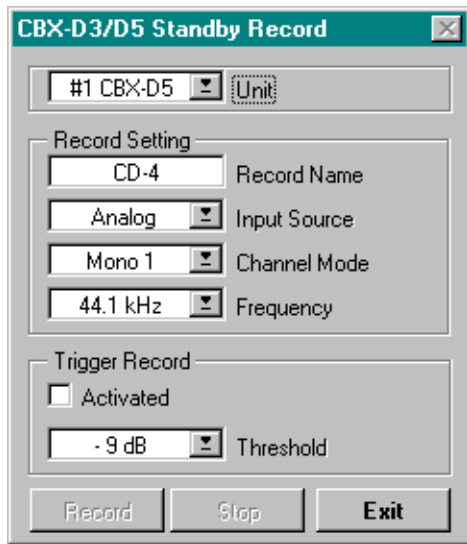
- **Automatic punch in is described in the Audio Recording book.**
- **Manual punch in is just as with MIDI Tracks, you simply activate/deactivate recording on the fly, as needed.**

You can only punch in and out once, during one “play pass”. You must then stop and re-activate play before you can punch in again, without stopping in between.

## Avoid many continuous Short Segments!

The CBX has a limitation with playing many segments within a very short period of time. For example, if you have ten segments on a track, all within one second you will most likely run into playback problems. Please try to avoid this.

## StandBy Recording



This dialog box, which is opened from the Audio menu, is used to record audio without having play activated in Cubase. It can for example be used to transfer audio from CD and DAT, for use in Cubase.



## Setting Up

1. **First, decide which CBX you want to use for recording, if you have two. This is done using the top field in the dialog.**
2. **The next step is to select a file to record to. This is done by clicking on the “Record Name” field and using the file dialog, just as in the Monitor window (see [page 22](#)).**
3. **Select an Input Source, a Channel Mode and a Recording Frequency. The first and last of these parameters are the same as in the Hardware Setup dialog (see [page 77](#)). The Channel Mode pop-up, however, is unique to this dialog box. The options are:**
  - Mono 1: Recording a mono file from Audio Input 1 (left channel).
  - Mono 2: Recording a mono file from Audio Input 2 (right channel).
  - Stereo: A stereo file will be recorded from both inputs (=channels).
4. **When everything is set up, recording is activated using the Record button, and terminated using the Stop button.**
5. **If you wish you can use a feature called Threshold recording, by activating (ticking) this function and setting a threshold using the pop-up.**

When this function is used, you still activate recording by clicking the Record button, but recording won't actually commence until an input signal exceeds the threshold level (please refer to the input meters on the CBX front panel). This eliminates any “dead air” at the beginning of the audio file.

6. When recording is done, an image file is created as after all audio recording and the file will appear in the Pool together with a full length segment. From there you can for example drag it into the Audio editor or the Arrangement.

# Pool

## Sample Rate

For each segment in the pool you have a Sample Rate (SRate) value. With the CBX, this value can be changed, which allows you to transpose the sample (as when using varispeed on a tape recorder). The CBX can handle playback of any combination of sample rates. You might for example play back one segment with one sample rate and another with another sample rate, even if they are segments from the same file!

## Importing Audio files

The CBX version of Cubase Audio XT can import files in AIFF and Wave (WAV) format. This is done with a menu item on the File menu in the Pool, called “Import Audio File”. To decide which type of files to display and import (AIFF or Wave) use the pop-up in the lower part of the dialog box.

- AIFF files must be 16 bits. They can be in mono or stereo and all sample rates are supported.
- Wave Files can be 8 or 16 bits. They can be in mono or stereo. The sample rate must be 11025, 22050 or 44100Hz.

## **About Wave File Conversion**

When you import Wave files, they are first converted to AIFF format, and it is actually this AIFF file which is added to the Pool.

The original file is not deleted. Therefore you must make sure you have at least as much free disk space as the original file occupies. In some cases even more space is needed.

# Audio Editor

The only difference between the Audio Editor when using Cubase Audio XT with the CBX, compared to using Cubase/Cubase Score with audio cards, is the stereo handling which is described on [page 24](#).

# Mixing and using Effects

## About Volume in the signal chain

There are three volume “mixpoints” for the signals in the CBX.

- *Each segment* has its own volume curve which you draw in, in the Audio Editor. This is what we call the Dynamic Events.
- You can use the Cubase Mixer to dynamically control the volume of each *audio channel* (on the CBX-D5, the mixer can also be used for controlling panning and effects as described later).
- The Monitor window in Cubase Audio also has playback volume controls for each channel that essentially double up for the Mixer volume.

If you compare the audio flow through Cubase Audio to that of a regular mixer you will find that the Dynamic Event Volume is just like the channel volume, it is individual for each input (if you look upon the events as inputs to the mixer).

The Mixer and Monitor volumes on the other hand are more like the bus or group volumes, that is, all events assigned to a certain audio channel (the equivalent of a group) are affected equally by these volume changes.

## **The Event Volume**

How to draw in or change the volume curve for a segment is described in the Audio Editor chapter in the Audio Recording book. Event volume is effective during regular playback, but not when monitoring using the Speaker button or the Magnifying glass tool.

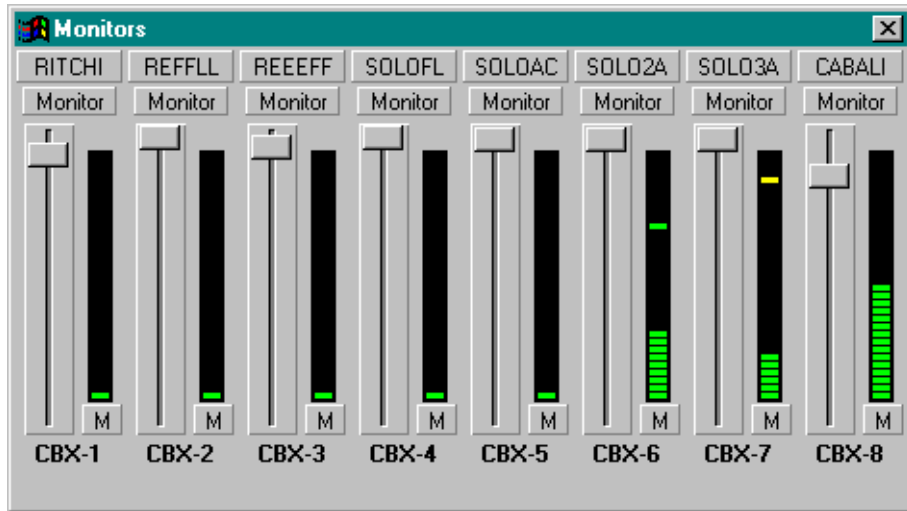
## **The Mixer Volume**

- On the CBX-D3, the Mixer Map is used to control volume for each channel/output.
- On the CBX-D5, the Mixer Map is used to control volume, audio routing, panning, EQ and effects.

This is described in detail later.

## The Monitor Window

The Volume controls in the Monitor window can *not* be automated. They are mainly there for setting basic playback levels during the recording process.



The meter bargraphs are derived from the waveform images and do not have the precision of high-end mixing console meters. Furthermore, if no waveforms are used in the Arrange window, the meters are not available at all.

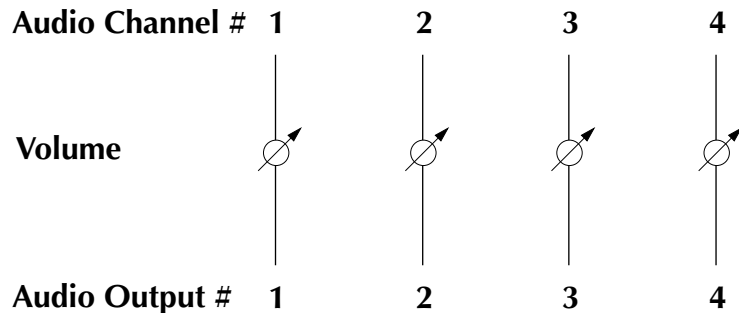


# Signal Routing

## CBX-D3

The signal flow in the CBX-D3 is simple. Each channel is simply routed to the corresponding Output, via a volume control.

These volume controls can be accessed from Cubase's mixer map.



## Channel Routing on the CBX-D5

All of the “components” described below can be controlled from Cubase's mixer map.

- The CBX-D5 has a built-in four channel mixer with two stereo busses.
- One of the stereo busses (titled 1/2) is always sent to Output 1 and 2. The other (titled 3/4) is sent to Output 3 and 4.

- Each channel can be assigned to one or both of the stereo busses.
- Each channel has a pan pot. This combined with bus assignments allows you to use the four outputs as two complete stereo pairs or as four totally separate mono channels.

**Audio Channel # 1 2 etc.**

**Volume**

**Equalizer**

**Pan**

**1/2 On/Off**

**3/4 On/Off**

**Bus 1/2**

**Bus 3/4**

**Bus  
Volume**

**Bus  
Balance**

**Out 1**

**Out 2**

**Out 3**

**Out 4**

— Mono signals

— Stereo signals

CBX-D5 signal flow diagram.

## **Effect routing on the CBX-D5**

- The CBX-D5 also has two (mono) effect sends per channel, which are routed into the effect processor built into the CBX-D5.
- Just as with the Channels, each effect return can be assigned to either stereo bus, or both. The effect returns can also be balanced between left and right, again just as the channel signals.

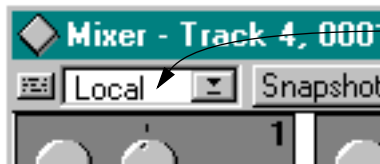
Detailed descriptions of each control in the CBX-D5's mixer follows later in this text.

## **Using the Mixer**

With Cubase for the Yamaha CBX comes a number of Mixer Maps that can be used separately or together. Below follows the basic steps and after that are the different maps and their controls explained.

- 1. Open the “Setup Mixer Maps” dialog (on the Options menu).**
- 2. Click the Load button.**
- 3. Locate the directory “mixermap/yamaha/cbx” in your Cubase Audio directory and open it.**
- 4. If you have a CBX-D3, open the file D3\_VOL4.MIX. If you have a CBX-D5, open the file BASIC1\_4.MIX.**

5. Close the “Setup Mixer Maps” dialog.
6. Create a Mixer Track.
7. Pull down the Output menu on the Mixer Track, and select the Mixemap you just loaded.
8. Create a Part on the Track.
9. Double click on this Part to open the Mixer window.
10. Make sure the Mixer is in Local mode to begin with so that you don’t accidentally record anything while acquainting yourself with the Mixer.



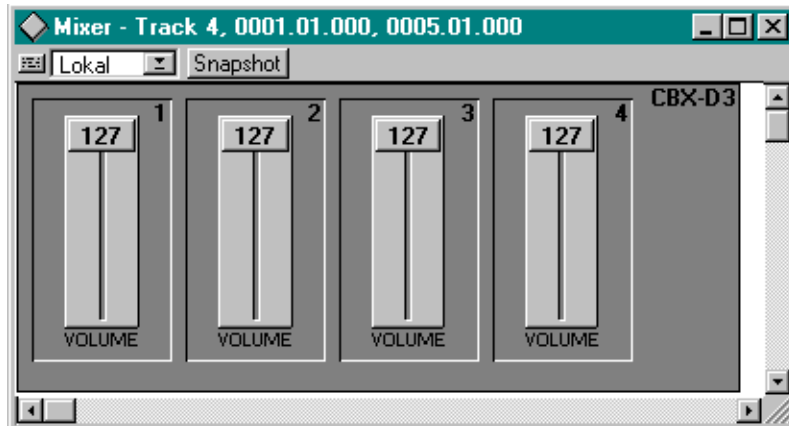
The Local mode setting

11. Play back the music and play around with the controls. They are all described in detail below.

Mix Automation is achieved using Write mode and/or Snapshots, as described in the Mixer chapter in the main manual.

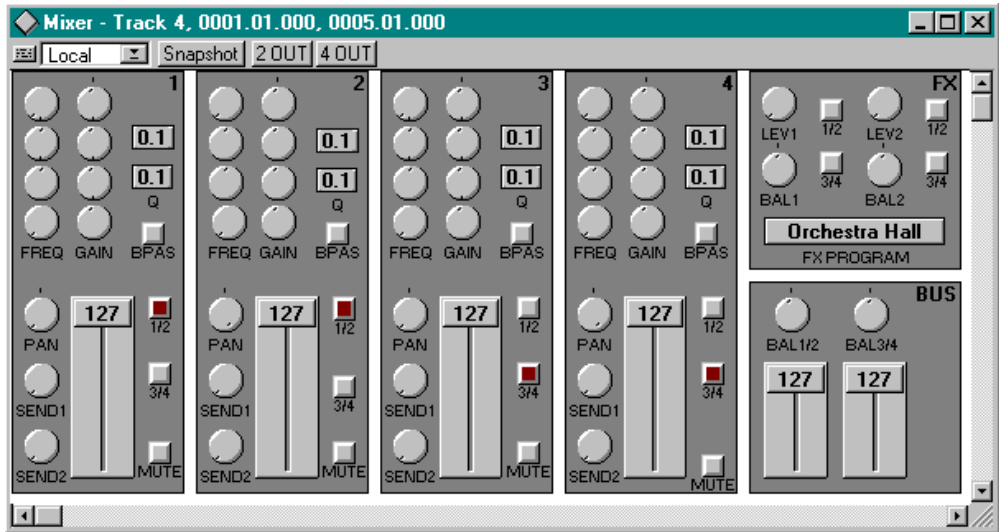
# The CBX-D3 Mixer map

This mixer only contains four controls, one volume for each channel.



The CBX-D3 mixer map.

# The Main CBX-D5 Mixer Map (basic1-4.mix)



This Mixer consists of four channel sections, one master section and one effect return section.

- The four Channel sections are for controlling the four audio Channels (not the Outputs) in the CBX-D5.
- The Bus section is for controlling the output of the Mixer to the Audio Outputs of the CBX-D5.
- The FX section is for controlling the output (Returns) from the built in digital effect unit in the CBX-D5.

# The Channel Controls



## Volume

The fader is of course for controlling the output volume of the Channel, to the Bus(es) it is connected to (see below).

## Panning

This pans the channel between the left/right input of the Bus(es) the channel is connected to.

A typical situation would be when you use two channels to play back a stereo recording. Then you would set the pan controls of the two channels full left and full right, respectively.

### **Bus 1/2 and 3/4 On/Off**

These two switches can be used to connect the Channel to one or both of the two stereo busses, 1/2 and 3/4.

- If you activate 1/2, the channel will play back via Audio Output 1 and 2.
- If you activate 3/4 it will be played back via Audio Output 3 and 4.
- You can then use the Pan Control to set the balance between 1/2 and 3/4 respectively.

### **Mute**

This silences all output from the audio channel to both Buses and to the Effects (see below).



## Send 1 & 2

These two “pots” are used to control the amount of effect send from each audio channel. The higher you set this, the more signal will be sent from this particular audio channel to the digital effects.

The reason there are two effect sends is that the effect unit can in some configurations operate as two separate effects. See [page 62](#) in this chapter.

Both effect sends are “post-fader”, which means that the amount of effect send also depends on the Volume fader. For example, if the Volume fader is all the way down, no signal is sent to the effect unit at all, regardless of the Send 1 & 2 settings.

## Eq Freq, Gain and Q

There are four EQs. All have Gain (amount) and Frequency settings and the two middle ones also have a Q (bandwidth) setting.

- The Top filter is a High Shelving EQ.
- The second and third filters are identical parametric ones.
- The fourth filter is a Low Shelving one.

The Frequency of all filters sweeps through the entire 18Hz to 18kHz range (15kHz when you have used the 32kHz recording frequency). However, you will probably use the top filter in the upper frequency ranges, the one below it in the upper mid frequency ranges, etc.

All filters have a gain of  $\pm 15\text{dB}$ . The higher the Q value the more narrow the frequency band that the filter operates in.

- 
- Please note that heavy EQing increases the gain of the output from the Channel. This might lead to audible artifacts due to overload. If this problem occurs, reduce the Volume for that Channel until the sound is clean again.
- 

## **Eq Bypass**

This switch lets you “disconnect” the filter completely from an audio channel.

## Effect Returns



This section allows you to control the return signals from the built in digital effect unit.

### Level 1

This is used to control the return volume. If the effect unit is configured for dual effect (see [page 62](#) in this chapter) this will only control the output of effect 1.

### Balance 1

This controls the balance between the left and right channel of the return signals. As with Level 1 above, if the effect unit is in dual mode, this will only control effect 1.

## **Bus On/Off for Effect 1**

These two switches can be used to connect the output of the effect unit to one or both of the two stereo busses, 1/2 and 3/4.

- If you activate 1/2, the effects will play back via Audio Output 1 and 2.
  - If you activate 3/4 it will be played back via Audio Output 3 and 4.
- You can then use the Balance control to set the balance between 1/2 and 3/4 respectively.

Here's a tip: If you activate the return of the effect in this section of the Mixer, but turn off the Bus output in the channel section of the mixer, the bus will only play back the “wet” effect signal. This can be very effective for special effects like Pitch Shifting, Ring Modulation etc, where you might not want to hear the dry signal from the channel at all.

## **Level 2, Balance 2 and Bus On/Off for Effect Return 2**

This is just as the same controls for Effect return 1, but only have any relevance when the effect unit is in dual mode and operates as two separate effects. When it does, these controls affect the output of Effect 2.

## Fx Program

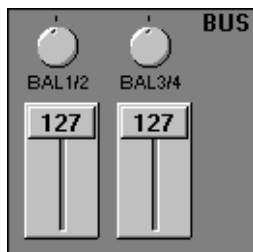
This object contains a list of effect programs. The first ten options are the Presets that you have made up in the Digital Effect dialog (see [page 62](#)), and after these come all the different effect algorithms, with their default settings.

This means that by selecting from the Presets, you can recall any effect algorithm, *together with your own settings*.

The other options give you one of the effect algorithms *with the default settings*, which be might be just fine in some cases. This also provides a quick way of stepping through the different algorithms in the effect processor from inside the Mixer window.

The CBX-D5 takes some time to switch from one preset (algorithm) to another, and produces no output during this period. Therefore, it will probably be most effective to put in automated effect selections during silent passages.

## Bus



This is the main output of the Mixer.

### Volume Faders

These are the main volume controls for the signal from the Buses, to the audio outputs.

### Balance Controls

These control the Balance between the left and right channel on the two buses, respectively.

# The other CBX-D5 Mixer Maps

With Cubase come six Mixer maps, located in the “mixermaps/yamaha/cbx” directory in your Cubase Audio directory.

- BASIC1-4.MIX. This is the basic four channel mixer described above.
- NUMEQ1-4.MIX is the same as above but with some EQ controls as scrollable value fields. This allows you to see exactly which frequencies the EQs operate at.
- BASIC5-8.MIX and NUMEQ5-8.MIX are two mixers for those who have two CBX-D5s, but not enough space on the screen to mix all eight channels at the same time. You may very well load these into one Mixermap “slot” each so that you can switch quickly between them.
- 8TRK\_VOL.MIX and 8TRK\_EQ.MIX are two eight channel mixer for those with two CBX-D5s. The first contains volume and panning and other basic controls, and the other contains EQ control only. As above, you may load these into one Mixermap “slot” each.

# More about Mixer Objects

## Customizing the Mixer Maps

- 
- The above is additional information for advanced users only. You do not need to read and understand the following to use Cubase Audio with the CBX to its full extent.
- 

You can modify the Mixer Maps provided with the program.

The most obvious thing to do would be to assign External Controllers, in order to use MIDI hardware such as a fader panel to physically control the objects in real time during a mix.

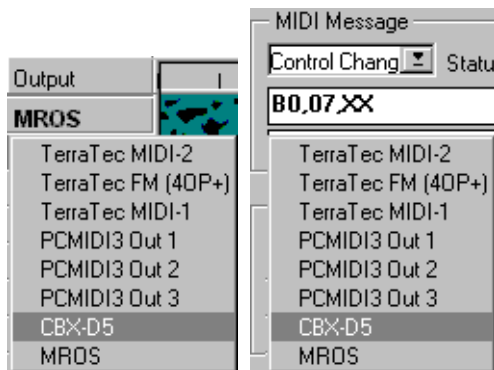
But there are other things you might want to do, too. You might for example change the graphic layout, rename objects or change the Min and Max values to restrict a value range. You might even create your own Mixer Objects to control the CBX. If you load one of the Mixer Maps supplied with the program and double click on an object you will see precisely how it is built up. You can then create an identical object in your own custom Mixer Maps.



## Additional MIDI Control

Those of you that belong to the adventurous type can create their own Mixer objects or record MIDI data directly into Parts to control the CBX.

There is a special “virtual” MIDI port for the CBX, which you will find in the MIDI Output list. All data that you want to send to your CBX(s) must be sent via this MIDI Output.



There's a special Output item called CBX-D3/D5. As you can see above, it appears both in the Track list and in the Mixer Object dialog.

The MIDI Channels work like this: If you have one CBX, there is a one-to-one correspondence between Audio Channels and MIDI Channels. If you have two CBXs, the second one will receive on MIDI Channel 5 to 8.

However, the Effect Return Controls and the Fx Program Change controls on the CBX-D5 are exceptions. For the first CBX-D5 these are sent on MIDI Channel 1. For the second, they are sent on MIDI Channel 5.

Below follows tables of which MIDI Controllers are used.

- 
- Please note that only one control (Channel Volume) is available for the CBX-D3.
-

## Channel Controls

---

Ctrl#	Function
7	Channel Volume. This is the only control available for the CBX-D3.
8	Send 1 Level
9	Send 2 Level
10	Pan
11	Out 1 Volume (Bus has to be turned on)
12	Out 2 Volume (Bus has to be turned on)
13	Out 3 Volume (Bus has to be turned on)
14	Out 4 Volume (Bus has to be turned on)
:	
16	EQ 1 - Type
17	EQ 1 - Frequency
18	EQ 1 - Gain
19	EQ 1 - Q
20	EQ 2 - Type
21	EQ 2 - Frequency
22	EQ 2 - Gain

---

---

<b>Ctrl#</b>	<b>Function</b>
--------------	-----------------

23	EQ 2 - Q
----	----------

24	EQ 3 - Type
----	-------------

25	EQ 3 - Frequency
----	------------------

26	EQ 3 - Gain
----	-------------

27	EQ 3 - Q
----	----------

28	EQ 4 - Type
----	-------------

29	EQ 4 - Frequency
----	------------------

30	EQ 4 - Gain
----	-------------

31	EQ 4 - Q
----	----------

:

66	EQ Bypass
----	-----------

67	Mute
----	------

68	Bus 1/2 Select
----	----------------

69	Bus 3/4 Select
----	----------------

---

## **Bus Controls**

---

<b>Ctrl#</b>	<b>Function</b>
70	Bus 1/2 Level
71	Bus 3/4 Level
72	Bus 1/2 Balance
73	Bus 3/4 Balance

---

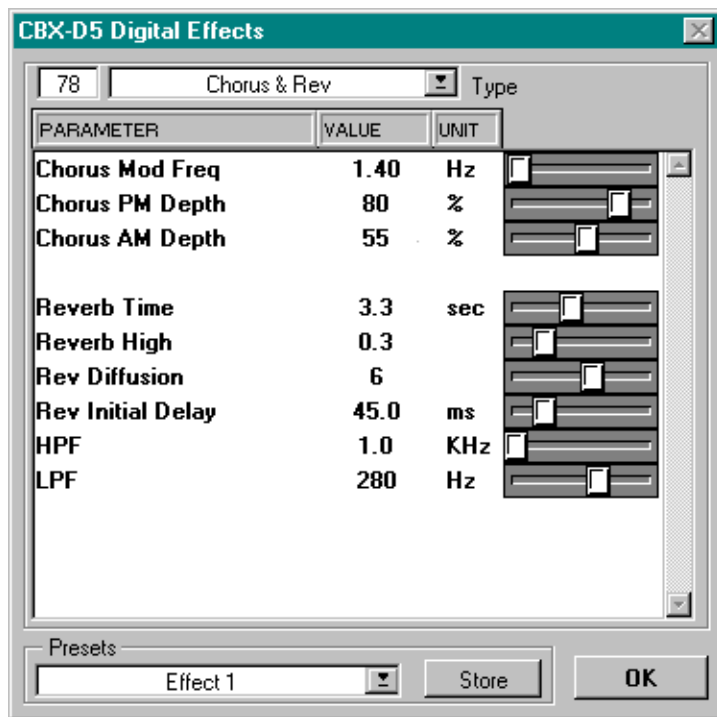
## **Effect Return Controls**

---

<b>Ctrl#</b>	<b>Function</b>
80	Ret. 1 Level
81	Ret. 1 Balance Level
82	Ret. 2 Level
83	Ret. 2 Balance Level
84	Ret. 1 Bus 1/2 Sel.
85	Ret. 1 Bus 3/4 Sel.
86	Ret. 2 Bus 1/2 Sel.
87	Ret. 2 Bus 3/4 Sel.

---

## The Digital Effects Dialog (CBX-D5 only)



This dialog, reached from the Audio menu is used to make all settings for the effect processor built into the CBX-D5.

## Making Settings

1. Use the Type pop-up and number field to select an algorithm.
2. Make settings using the faders in the central part of the window.
3. Store the settings as a Preset (see [page 66](#)).

## Signal Path

- The Effect unit receives its input via the sends in the Mixer and delivers its output to the Fx Returns in the Mixer.
- The Input to the effect unit is mono, that is, it doesn't matter to the effects how the signals is panned in the stereo field.
- The Output from the effects is always in stereo, even when you use dual effects (see below).

The exact parameters for each effect are described in the CBX-D5 manual.

# Type

The CBX-D5 has a large set of effect types (sometimes called algorithms). These break down into three types: Single, Cascade and Dual.

## Single

The Effect Types in the range 1 to 48 (identified by a single name), each occupy the entire processing power of the CBX-D5's effect processor. When you select a Single Type effect, only Send 1 and Effect Return 1 is active.

## Cascade

Type 49 to 70 consist of two effects in series. The signal coming in from the Send 1s in the mixer are sent to Effect 1 and then to Effect 2. You can tell how the signal is routed by looking at the name of the type. Type 55, for example is called "Distortion → Rev". This means that the signals first passes through a distortion type effect, and from there into a reverb.

The amount of the two effects is set using Lev 1 in the Fx Return section of the Mixer.



## Dual

Effect Type 71 to 82 are dual effects. In this mode the two effects can be addressed totally separately via effect Send 1 and Send 2. Let's take Type 73 as an example. With this type, channels where you use Send 1 to feed the effects will be coloured by a delay, and channels where you use Send 2 will be sent through a reverb. You can of course add both delay and reverb to a channel if you wish.

Dual effects allow you to use the CBX-D5 as two totally separate stereo units, mix-wise. Simply send one or more channels to Bus 1/2, and use Send 1 to add effect to these channels. Make sure Effect 1 only returns to Bus 1/2. Route other channels to Bus 3/4, use Send 2 to add effects to them and have the return signal from effect 2 arrive at bus 3/4.

## Parameter, Value and Units

When you have selected an Effect Type, you can use the faders to the right in the window to set the Parameters of the effects. The Value column shows you the current settings, and the Unit column tells you what unit the number represents: seconds, dB or whatever.

If there are more settings than fit in the window at one time, use the scroll bar at the right side of the window.

## Creating Presets

When you have made up a number of settings, you can use the Preset section of the dialog to store them permanently.

- 1. Set up the parameters as you wish.**
- 2. Hold down [Alt] and select a memory location from the ten, on the Presets menu.**
- 3. Click on the Store button.**
- 4. To name/rename a Preset, double click on its current name on the pop-up field and type in a new one. Press [Return].**

Presets are saved with your Song and in Setup files.

# Recalling Presets

## **From the dialog**

When you wish to use a Preset, simply select it from the menu.

## **From the Mixer**

In the Mixer, there is an FX Program object which you can use to select between effect Presets.

Selecting Presets can be part of your automated mix. But as you might have noted by now, when you select a new effect Type, the CBX-D5's effect processor mutes its output for a short while. Therefore, selecting Presets is probably best done during silent passages.

# Synchronization

Synchronizing digital audio material with the “real world” raises many issues which are not immediately apparent when using MIDI-only systems. This is a big subject, and we will only be able to touch upon it here. The Yamaha CBX manual does a good job of explaining how to set up different systems where the digital audio is synchronized. Please refer to this for further information.

## Synching Cubase vs Synching the CBX

When you lock Cubase to time code, for example coming from an audio or video tape recorder, it will replace its internal “absolute time” clock with an external one – the time code. If the time code is slow, fast, or fluctuates in speed, this will affect Cubase’s playback speed likewise – it should, that’s the whole purpose of synchronization!

There are a number of situations where you will encounter time code that varies slightly in speed: when moving a project from one tape recorder to another, when using a tape for long periods of times so that it stretches and wears out, when stripping tapes with different time code generators, etc.

In a system where Cubase only handles MIDI, these differences will be too small to be noticed. However, as soon as you bring digital audio into the picture, things get more complicated.

When Cubase asks the Yamaha CBX to play back an audio file it will only specify which file to start and *when*. Once the audio is playing, it is not being clocked by Cubase, but by the CBX itself. This means that if Cubase's playback speed varies (because it is synced to time code), or is not the same as when you recorded the audio file, MIDI and audio will drift out of sync.

Let's take an example of a situation where the SMPTE time code is running 0.001% fast when you play back a sound file, compared to when you recorded it. When set against a perfectly stable sound file, we find that this tiny error grows, within 16 bars, to become an audibly disturbing 27 tick positioning error (at 120 BPM). By 64 bars into the song we have a 100 tick error.

So, are there any solutions to this problem? Fortunately – yes!

## The Sync Mode options

As stated above, the problem is to get Cubase and the CBX to continuously agree on how fast “time flies”, so that they both adjust their playback speed accordingly.

The CBX has a few special options for this, which are accessed from the Hardware Setup dialog. The options are found on a pop-up called “Sync Mode”.

### Freerun

If you have no problems with drift between audio and MIDI, choose this option.

Freerun means *no* synchronization between Cubase and the CBX, as described above.

### Cubase

If you need sync between the CBX and Cubase, and Cubase is synced to tape, select this option.

When “Cubase” is selected as a sync master, a dedicated timing clock is sent via MIDI *from* Cubase *to the* CBX, which it synchronizes its playback frequency to. This means that if Cubase’s *time base speed* (not the tempo!) varies, due to fluctuations in the speed of time code coming in to Cubase, the CBX will adjust its playback frequency accordingly.

- 
- This function is only active during playback. The CBX always *records* in “Free-run” mode (see above). This means you should not varispeed your tape recorder when recording into the CBX.
- 

Please note that when the CBX changes its playback frequency in this manner, the pitch will also change. This means that if you varispeed a tape recorder that you use as a time code master, so that the material on tape changes in speed and pitch, the CBX output will change in the same way.

There are two important things to note about using the “Cubase” option.

- It takes some time for the CBX to accommodate to a pitch change, approximately three seconds, so any larger changes in playback speed will take a while to get noticed.
- When this function is used, the CBX(s) must be the only device(s) connected to this MIDI Output on the computer. Please try to set up your MIDI system so that one MIDI Out is used for the CBX(s) only.

## **D3#1 and D3#2/D5#1 and D5#2**

When you want to use one of your CBXs as a sync master for your entire studio, select this option.

- 1. If you have two CBXs you have to select which one to use as the master by selecting it from the Sync Mode pop-up.**
  - 2. Use the MIDI Input pop-up to set which MIDI In this CBX is connected to.**
- 
- Make sure you have the pop-up just above this set correctly so that the setting is applied to the correct CBX, if you have two.
- 

Now, Cubase's time base is locked to that of the CBX. If you now for example use Cubase to output MIDI Time Code, this time code will be locked to the timing of the CBX. Using this MIDI Time Code and the Word Clock output from the CBX to synchronize all your audio equipment ensures complete synchronization between all units.



## Resolving digital audio via Word Clock

The CBX can receive and send *Word Clock*, via its Word Clock In and Out or as part of the Digital Audio on the AES/EBU and CD/DAT connectors.

When you wish to clock the CBX externally, you use the Word Clock Master pop-up in the Hardware Setup dialog.

External Word clock will only synchronize the CBX's *output stage*. A varying word clock will *not* make the CBX varispeed its audio playback.

# File Handling

## Maintaining the hard drive

The Yamaha CBX documentation lists the requirements put on the hard disk in terms of speed and interleave.

We recommend that you keep your Windows and program files on one disk (for example an internal IDE drive) and reserve the SCSI disk for audio and song files.

When you use Purge Segments in the Pool, it will be evident which files are no longer used in a Song (the files not used will have no Segments at all). This gives you a way of finding out which files can be deleted. But please remember that an audio file can be used in more than one song.

Deleting files can be done from the Pool.

- 
- It is necessary every now and then to *defragment* the disk that holds your audio files.
-

## File Compatibility

All Cubase specific files (Song files, Arrangement files, Pools etc) are compatible between different versions of Cubase, even on different platforms (see Appendix 1 to the main Cubase manual). There are a few things to note specific to audio, though.

- The CBX uses AIFF files where other version of Cubase (Audio) uses Wave files. You might need to convert the files before playing them back on some other audio hardware.
- Normally, Cubase is not responsible for the actual clocking of the digital audio. Therefore, playback speed of audio might differ slightly between systems, which might make the audio in a Song created on another system drift noticeably out of sync. Please observe the precautions you must take for proper synchronization, as described above.

# Menu and Dialog Reference

## Tape Monitor mode

This allows you to switch between automatic (Tape Monitor mode activated) or manual (Tape Monitor mode deactivated) monitoring:

### **Tape Monitor Mode Activated**

- If the Monitor button is activated for a channel, monitoring is *on* in stop mode and during recording.
- Monitoring is automatically *deactivated* during playback.

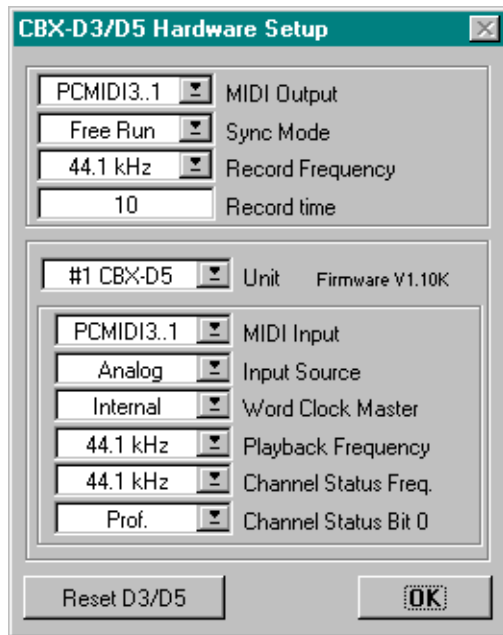
### **Tape Monitor Mode deactivated**

Monitoring is manually controlled by the Monitor buttons in the Inspector and in the Monitor window. Whenever one of these buttons are activated, monitoring is activated for that channel, regardless if Cubase is playing, recording or in stop mode. See [page 23](#) for more information.

## Standby Record

This dialog is used to record audio without having play activated in Cubase. See [page 32](#).

## Hardware Setup dialog



The Hardware Setup dialog is reached from the Audio menu. It is used for basic settings for the CBX as follows. Some of these settings you will have done already at installation.

## **MIDI Output**

This is the MIDI Output you have your CBX(s) connected to. If you have two units, connect the MIDI Out of the computer to the MIDI In of the first unit, then connect the MIDI Thru of that CBX to the MIDI In of the next.

## **Sync Mode**

This option is described under the heading Synchronization, earlier in this chapter.

## **Record Frequency**

This is the “sampling frequency” the CBX will use for recording.

If you are using the analog ins and plan to mix your project via the analog outputs, it does not matter much if you select 44.1 or 48 kHz. 32 kHz however, gives a noticeable loss in high frequency response.

- If you use the analog inputs but will be mastering digitally, you should select the same sampling frequency as your master recorder uses.
- If you use the digital inputs, you should select the same frequency as your input source uses and set Word Clock Master to the input you use, for best possible audio quality (see “Synchronization”, on [page 68](#)).
- You can change this setting in the middle of a song. You might for example switch from a digital input source with a 44.1 kHz frequency (a CD player) to one with a 48 kHz frequency (a DAT recorder).

## **Record Time**

This item allows you to specify how much disk space should be set aside for each new recording on a Track. You will not be able to make longer continuous recordings on a Track than specified here. On the other hand, setting this to a lower number will reduce the time it takes for the computer to prepare the files before each recording pass.

- 
- If you have two CBXs, all settings above will be common to both of them.
- 

## **CBX-D3/CBX-D5 Units**

If you have two units, the CBX setting is used to switch between them, so that you can make the settings in the lower half of the dialog box individually for each of them.

## **MIDI Input**

This is the MIDI Input you have your CBX connected to.

## **Input Source**

This is used to decide which Input on the back of the CBX should be used for recording. The options are described in detail in the manual that came with your CBX.

## Word Clock Master

This is used to select a clock for resolving the digital audio playback in the CBX. The options are:

---

Internal	This will make the audio playback sync to the CBX's built in clock.
External	This will make the audio resolve to a word clock signal coming in via the WORD CLK IN input on the back of the CBX.
Digital Inputs	The last three options will make the audio playback resolve to the clock inherent in a digital audio signal fed into one of the digital audio inputs.

---

A thorough discussion on using Word Clock is found in the CBX manual and under the Synchronization heading, on [page 68](#).

## Playback Frequency

If Word Clock Master is set to Internal, this menu can be used to select a playback “sampling frequency” for the CBX.

- If you are mastering via the analog outputs, this setting should match as many of your recordings in the Song as possible.
- If you are mastering via digital outputs, this setting should match the recording frequency of your mastering machine.



## **Channel Status Frequency**

This allows you to set a flag in the digital audio data coming out via the digital outs, telling the intended playback frequency. For all normal applications, this should be set to the same value as the Playback Frequency.

## **Channel Status Bit 0**

This setting allows you to make the digital output contain a “professional status flag” or a “consumer status flag”. Generally, this should be set to Consumer when using the CD/DAT interface and to Professional when using the AES/EBU interface. An incorrect setting might make the receiving device for example “refuse” to go into record mode.