YAMAHA

TONE GENERATOR

CBX-T3

Owner's Manual

SPECIAL MESSAGE SECTION

This product utilizes or an external power supply (adapter). DO NOT connect this product to any power supply or adapter other than one described in the manual, on the name plate, or specifically recommended by Yamaha.

WARNING: Do not place this product in a where anyone could walk on, trip over, or roll anything over power or connecting cords of any kind. The use of an extension cord is not recommended! If you must use an extension cord, the minimum wire size for a 25' cord (or 1 cm) is 18 AWG. NOTE: The smaller the AWG number, the larger the current handling capacity. For longer extension cords, consult a local electrician.

This product should be used only with the components supplied MMM a cart, rack, or stand that is recommended by Yamaha. If a cart, etc., is used, please observe all safety markings and instructions that accompany the accessory product.

ECIFICATIONS SUBJECT TO CHANGE: The information contained in this manual is believed to be correct at the time of printing. However Yamaha reserves the right to change or modify any of the specifications without notice or obligation to update existing units.

Do not attempt to service this product beyond that described in the user-maintenance instructions. All other servicing should be referred to qualified service personnel.

This product, either alone or in combination with an amplifier and headphones or speaker/s, may be capable of producing sound levels that could cause permanent hearing loss. DO NOT operate for long periods of time at a high volume level or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should consult an audiologist. IMPORTANT: The louder the sound, the shorter the time period before damage occurs.

Some Yamaha products may have benches and/or accessory mounting fixtures that are either supplied with the product or as optional accessories. Some of these items are designed to be dealer assembled or installed. Please make sure that benches are able and any optional fixtures (where applicable) are well MM BEFORE using. Benches supplied by Yamaha are designed for MMM only. No other uses are recommended.

NOTICE: Service charges incurred due to lack of knowledge relating to how a function or effect works (when the unit is operating as designed) are not covered by the manufacturer's warranty, and are therefore the owners responsibility. Please study this manual carefully and consult your dealer before requesting service.

ENVIRONMENTAL ISSUES: Yamaha strives to produce products that are both user safe and environmentally friendly. We sincerely believe that our products and the production methods used to produce them, meet these goals, In keeping with both the letter and the spirit of the law, we want you to be aware of the following:

Battery Notice: This product MAY contain a small non-rechargeable battery which (if applicable) is soldered in place. The average life span of this type of battery is approximately five years. When replacement becomes necessary, contact a qualified service representative to perform the replacement.

This product may also use "household" type batteries. some of these may be rechargeable, Make sure that the battery being charged is a rechargeable type and that the charger is intended for the battery being charged.

When installing batteries, do not mix old batteries with new, or with batteries of a different type. Batteries MUST be installed correctly. Mismatches or incorrect installation may result in overheating and battery case rupture.

Warning: Do not attempt to disassemble, or incinerate any battery. Keep all batteries away from children.Dispose of used batteries promptly and as regulated by the laws in your area. Note: Check with any retailer of household type batteries in your area for battery disposal information.

Disposal Notice: Should this product become damaged beyond repair, or for some reason its useful life is considered to be at an end, please breve all local, state, and federal regulations that relate to the disposal of products that contain lead, batteries, plastics, etc. If your dealer is unable to assist you, please contact Yamaha directly.

NAME PLATE LOCATION: The graphic below indicates the location of the name plate for this model. The model number, serial number, power requirements, etc., are located on this plate. You should record the model number, serial number, and the date of purchase in the spaces provided below and retain this manual as a permanent record of your purchase.

serial number

model number
power requirements
etc.
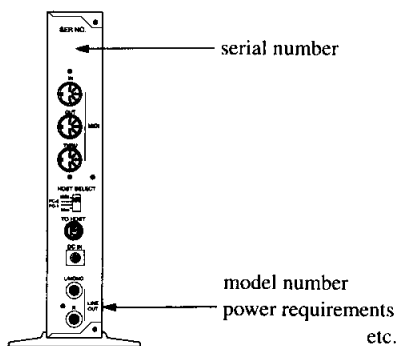
Model _____

Serial No. _____

Purchase Data _____

PLEASE KEEP THIS MANUAL

Table of Contents

Preface

Congratulations!

Thank you for purchasing Yamaha's CBX-T3 tone generator.

The CBX-T3 tone generator has integrated, high quality voices created with Yamaha's original AWM technology. The CBX-T3 can be used as a tone generator with a computer, or as an extension for a synthesizer, Clavinova, or Disk Orchestra system.

To obtain maximum performance and enjoyment from your new CBX-T3, read this Owner's Manual carefully, and afterwards store it in a safe place for future reference.

How to use this manual

This manual is divided into four parts and provides all the information you need to begin using your Yamaha CBX-T3 tone generator. Part 1, "Introduction", explains how the CBX-T3 works (how sound is generated).

The remaining parts explain how to set up, use, and care for your Yamaha CBX-T3 tone generator. Parts 1 through 3 will familiarize you with how the CBX-T3 works, after which you should only need to refer to the Reference section from time to time for details on functions you don't use very often or have never used before.

Part I   **Introduction:** This part describes how the CBX-T3 operates. Read this part before setting up your system.

Part II   **Setting Up:** Information on setting up your CBX-T3 and how to connect it to other devices.

Part III   **Using the CBX-T3:** Contains all the information you need to operate your CBX-T3.

Part IV   **Reference:** This part provides specific and more detailed information regarding the use of your CBX-T3. Use this part as you would a dictionary or encyclopedia: turn to it when you need specific information.

There is also a glossary and an index at the back of the manual. Use these together with the table of contents to find information quickly.

Introduction

We recommend that you read through this part, before installing and using your CBX-T3, in order to become familiar with its capabilities.

The CBX-T3

Your CBX-T3 is a state of the art, digital AWM (Advanced Wave Memory) tone generator that contains 192 instrument voices and 10 different Drum and Percussion sets. The CBX-T3 is extremely versatile: it can be added easily to almost any music system.

To play the CBX-T3 sound module, MIDI data must be input from one of the following: a MIDI keyboard, a MIDI sequencer, a MIDI data recorder, a computer, or a Yamaha Disk Orchestra system. Data can be input using the CBX-T3's MIDI ports. The CBX-T3 can also be directly connected to a computer through the TO HOST port by using RS-232C or RS-422 connectors. In addition, you may use headphones or standard phone plugs to receive and listen to sound data generated by your system.

CBX-T3 Sound

All sounds in the CBX-T3 are produced using AWM technology. AWM (Advanced Wave Memory) is a Yamaha technique for digitally recording waveform data of original sounds, resulting in a very accurate recorded sound. Sound samples are stored as elements in the CBX-T3's internal ROM (Read Only Memory).

Voices

The CBX-T3 uses the elements stored in its ROM to form voices.
The 192 basic instrument voices include: piano, electronic piano,
guitar, bass, strings, brass, synthesizer sounds, various ethnic
instruments, and effect sounds. These voices are arranged into
three different voice banks: General MIDI, Disk Orchestra, and
C/M. The CBX-T3 is Multi-Timbral, meaning it can produce up
to 16 different voices simultaneously. The CBX-T3 is also 28-note
polyphonic, meaning it can play up to 28 elements simultaneously.
The 28 notes used are automatically and dynamically allocated
among the CBX-T3's 16 parts. (Basically, a part is a MIDI chan-
nel.) Thus, one CBX-T3 unit can easily simulate a large band or
orchestra.

Drum and Percussion sets

The CBX-T3 can generate a wide variety of drum and percussion
voices. These drum and percussion voices are all assigned to Part
10 and are divided into 10 style specific Drum and Percussion sets.
Part 10 is dedicated to play the Drum and Percussion sets only.
Part 10 cannot be set to a different type of voice, but it can be set
to any one of these Drum and Percussion sets: Standard, Room,
Power, Electronic, Analog, Brush, Orchestra, Clavinova, RX, and
C/M.

Effects

The CBX-T3 contains a DSP (Digital Signal Processor) which is
used to generate 8 exciting digital effects: 6 reverb variations: Hall
x 2, Room x 2, and Plate x 2, plus two delay variations: Stereo
delay and Delay reverb. These digital effects, used correctly, pro-
duce sounds that are bright and rich.

MIDI channels

MIDI uses MIDI channels to allow communication between indi-
vidual devices in a MIDI system. The CBX-T3 is equipped with
16 MIDI channels, and each channel has its own channel monitor
LED on the front panel of the CBX-T3. An LED lights when its
corresponding channel is being played, enabling you to check the
input signal.

Parts

Voices are assigned to one of the 16 Parts. Each of the MIDI channels can be used as an independent Part; therefore you have access to up to 16 individually controlled instruments. Each Part receives controlling data, sent from a MIDI master keyboard or computer sequencer, on a different MIDI channel, but any number of Parts can be set to receive data from the same MIDI channel. The volume, pan position, attack rate, release rate, and the reverb depth can be adjusted separately for each part. Dimensional instrument organization, or the layering of several sounds, is also possible.

Dynamic voice allocation

The CBX-T3 uses a DVA — Dynamic Voice Allocation — system to automatically assign notes and MIDI channels. This means that up to 28 notes are available to you at any time, no matter which MIDI channel you use. When you use more than 28 notes, the notes will be truncated, depending on which Part they are played by—the highest Parts number being truncated first. Part 10, Drum and Percussion sets, always has priority over the other Parts. So if you are playing music with more than 28 notes, make sure that the more important melody lines are assigned to the Parts with a higher priority, i.e. those Parts with the lowest Part number.

Audio input

The CBX-T3 has an audio input port for receiving audio signals from various audio equipment. This data can then be mixed with the CBX-T3's performance. You can also use the CBX-T3's INPUT control to adjust the volume of the input source.

Computer interface

The CBX-T3 has an integrated computer interface. A computer interface translates the digital instrument's MIDI language into the personal computer's language and vice versa. This interface can be connected directly to a computer's serial or modem port. You can therefore set up your system and begin making music right away. See "Connecting a computer" on page 12.

CBX-T3 Compatibility

The CBX-T3 is compatible with various music data, including General MIDI level 1, giving you a broad base of musical possibilities.

Third Party Song Data

The CBX-T3 is compatible with various third-party song data collections, including: the acclaimed General MIDI standard (General MIDI Level 1), general third party supplied data song collections for computer, and, in combination with Yamaha's MDF2 MIDI data filer, the CBX-T3 can playback Yamaha's Disk Orchestra Collection software. The near future will see the release of substantial number of General MIDI compatible song data collections. Have fun extending your music library with third party data song collections — just for listening, or for practicing with Minus One play, etc.

Chapter 2

Sound module modes

Following are descriptions of each of the CBX-T3's sound modules. Use this information to help you decide which song collection you want to use with your system.

General MIDI Level 1

MIDI, the Musical Instrument Digital Interface, is a world-wide system that allows MIDI-compatible musical instruments and equipment to share musical information and control one another. General MIDI Level 1 standardizes Program Change numbers to particular voices, making it possible for the same performance, when played on different synthesizers or tone generators, to have similar-sounding voices. Thus data created for General MIDI can be played on various instruments with voices similar to the original recording. For example, when MIDI Program Change number 1 is sent to any tone generator that complies with the General MIDI standard, the voice selected will always be Grand Piano. However, because different manufacturers and models have different voice arrays, voices may sound different when played on a tone generator for which they were not intended. General MIDI Level 1 is the CBX-T3's default mode.

Disk Orchestra/Clavinova

The Disk Orchestra Collection is a series of music titles produced by Yamaha, covering areas such as popular music, classical music, and study. At present 58 Disk Orchestra Collection Music software titles have been released (as of January, 1993). Available on floppy disk, each disk contains 7 or 8 compositions, and each song is stored as MIDI data in Yamaha's ESEQ file format. By using Yamaha's MDF2 or DRC-20, the CBX-T3 can play back the Disk Orchestra Collection. The Disk Orchestra/Clavinova mode makes playback quick and easy by setting the note assignments of the CBX-T3's voice and the Drum and Percussion sets to those used by the Disk Orchestra Collection.

C/M

The C/M mode, similar in principle to the Disk Orchestra mode, provides a degree of compatibility for songs recorded using third party desktop music systems. Namely MT-32. In this mode, the note assignments of the CBX-T3's voices and Drum and Percussion sets are set the same as those used by some popular desktop music systems, allowing quick and easy playback, without having to reassign voices, Parts, and MIDI channels.

Chapter 3

MIDI

The CBX-T3 can only produce sound if it receives control data from another device, and the format of this control data is called MIDI. MIDI is a communications protocol — a standard for exchanging information between electronic musical instruments, and between musical instruments and computers. MIDI devices communicate, not through audio signals, but through digital signals carried by MIDI cables, meaning messages are sent between MIDI devices as a series of numbers, which is also how computers communicate with each other. MIDI signals are processed in real-time, meaning that any action you perform on your MIDI keyboard will be instantly transmitted as a MIDI message to whatever MIDI device(s) you are connected.

MIDI is quite a comprehensive subject, so in this owner's manual we will just look at what is applicable to the CBX-T3. A good understanding of MIDI however, will allow you to get the most out of your system. If you want to know more about MIDI there are many good books available.

Your tone generator at a glance

CBX-T3 front panel

POWER switch
Turns the CBX-T3 on or off.

MIDI indicators
Indicate on which channel
MIDI data is being received.

MODE indicator switches
(GM-L1, DISK ORCH, C/M)
Switch and indicate the cur-
rent sound module (see
page 24) and set the device
number (see page 24).

PEAK indicator
Indicates the peak level of the
AUDIO IN signal.

AUDIO IN port
Connects the audio output of
a computer, CD player, or
cassette player. See "Con-
necting an audio source" on
page 22.

INPUT control
Controls and adjusts the
AUDIO IN signal.

MASTER VOLUME control
Adjusts the overall volume.

PHONES port
Plug in stereo headphones
with a 3.5 mm mini stereo
phone plug here. See "Con-
necting headphones" on
page 22.

CBX-T3 rear panel

MIDI ports

> MIDI IN
> Plug in another MIDI device
> to receive MIDI data.

> MIDI OUT
> Plug in another MIDI device
> to transmit or retransmit
> MIDI data.

> MIDI THRU
> Outputs MIDI data
> unchanged as received by
> the MIDI IN port.

HOST SELECT switch
(see "Setting the HOST
SELECT switch" on page 24).

TO HOST port
Connects your tone generator
to a computer.

DC IN port
> Plug in the power adaptor
> plug here.

LINE OUT (R and L/MONO) ports
Connects your tone generator to
an audio source, such as a stereo
system or powered speakers.

SER NO.
XXXXXXX

IN

OUT

MIDI

THRU

HOST SELECT

MIDI
PC-2
PC-1
Mac

TO HOST

DC IN

L/MONO

R   LINE
OUT

Setting Up

This part will guide you step by step through the process of setting up your CBX-T3. It is important that you read Chapter 5 before reading any of the other chapters. In all subsequent chapters, you only need to read the information that pertains to your particular system.

Chapter 5

Before you begin

Before you begin setting up your CBX-T3 tone generator, make sure that all equipment is turned off.

Depending on your system you will need additional equipment to make the CBX-T3 generate sound and to output that sound. Basically you'll require:

- A MIDI device that can send control data to the CBX-T3. For example: A MIDI master keyboard or a computer.
- An audio output device. For example: An audio amplifier with speakers, or powered speakers.
- The appropriate adaptors and cables to connect your system up.

Important safety instructions

You're almost ready to set up your tone generator, but before you begin, first read these important safety instructions.

For your safety and the protection of your equipment always follow these precautions.

- Disconnect the power adaptor under these conditions:
  - If the power cord is frayed or in any other way damaged
  - If any liquid is spilled on the CBX-T3
  - If there is a threat of lightning
- Always disconnect the CBX-T3's power adaptor by pulling the plug, not the cord.
- If you use an extension cord or power strip, do not exceed its power rating.
- Your CBX-T3 has no user serviceable parts. Refer any problems to your Yamaha dealer or service center.
- Do not place your CBX-T3 in places subject to extreme heat. For example: inside a car, near a window, or near a heater.
- Do not place your CBX-T3 in places subject to extreme moisture. For example: near an air conditioner, inside a bathroom, or outdoors.
- Place your tone generator on a level, stable surface.
- Because all user data (settings and internal voices) is lost when the CBX-T3 is turned off or when there is an inadvertent power failure (the CBX-T3 returns to its default values), we recommend that you make regular backup copies of your data by transferring the data to an external storage device. See "Performing a MIDI Bulk Dump" on page 28.
- Your CBX-T3 has been built to last, but it still requires your care. Therefore, never:
  - drop it
  - apply excessive force to its controls
  - place heavy objects on top of it
- Use only a soft, dry cloth to clean your CBX-T3. If necessary, a slightly damp cloth may also be used.
- Yamaha is not responsible for software produced for this product by third party manufacturers. Please direct any questions or comments about such software to the manufacturers or their agents.
- Store this manual safely for future reference.
- Be sure to follow all instructions and warnings relating to your system.

fff **Warning:** Electrical equipment may be hazardous if misused.

Plugging in the CBX-T3

Use only the AC power adaptor supplied with your CBX-T3 to provide power. To connect the power adaptor, follow these steps.

1. Make sure that the POWER switch of the CBX-T3 is turned off, and that the power adaptor is not plugged into a wall outlet or power strip.

2. Plug the DC IN plug into the CBX-T3's DC IN port.

Power adaptor
(PA-1505)

DC-IN plug

Wall outlet

CBX-T3 Rear Panel
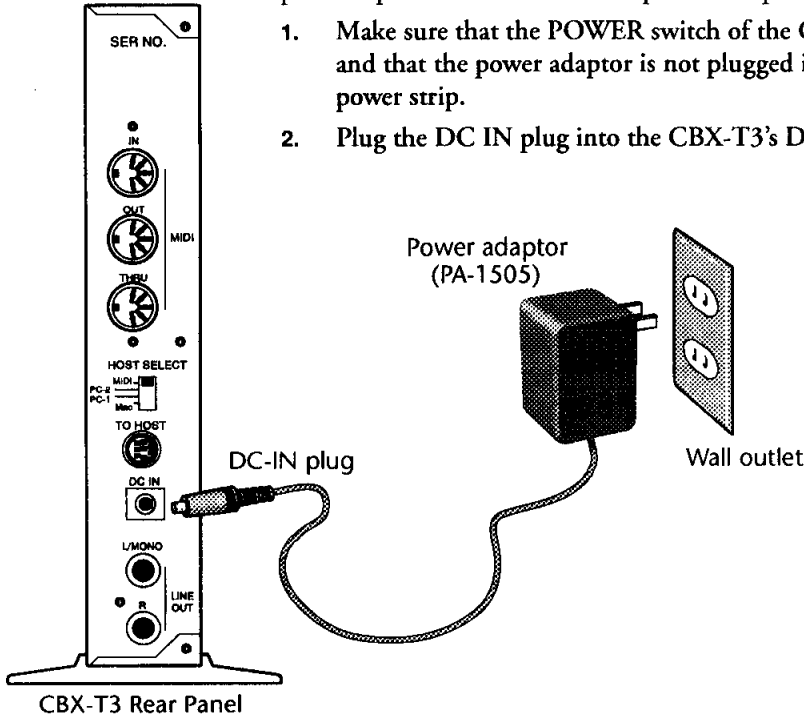
3. Plug the power adaptor into a wall outlet or power strip.

fff **Warning:**

*   Do not attempt to use a different AC adaptor to power the unit. The use of an incompatible adaptor may cause irreparable damage to the CBX-T3, and might pose a serious shock hazard!

*   Make sure that the supplied power adaptor is suitable for use with your AC mains supply. Special care must be taken when the CBX-T3 is purchased in another country or when you use an alternative electricity supply.

Connecting a computer

Your CBX-T3 can be connected to any computer that uses MIDI software. The CBX-T3 has MIDI IN, OUT, and THRU ports, in addition to a TO HOST port for making a direct connection to Macintosh or IBM-PC, PC-AT compatible and PS/2 type computers. Listed below are the various types of connections that can be made between the CBX-T3 and a computer.

Connecting an IBM-PC, PC-AT, or PS/2 compatible

There are two methods of connecting the CBX-T3 to an IBM-PC, PC-AT compatible or PS/2 type computer. The first method, the TO HOST connection, does not require a MIDI interface while the second method does.

♪ **Note:** The computer sequencing software you are using will most likely have a Thru mode. It is usually called MIDI Thru, Keyboard Thru, or Echo Back. This mode or function needs to be enabled if you want to listen to your keyboard.

Using the TO HOST port

To connect an IBM-PC, PC-AT compatible or PS/2 type computer directly to the CBX-T3, follow these steps.

1.   Connect the CBX-T3's TO HOST port to the PC's RS-232C port using an RS-232C to RS-422 (D-SUB9P → MINI DIN8P) conversion cable.

TO HOST port

RS-232C to RS-422 conversion cable

IBM-PC or PC-AT compatible
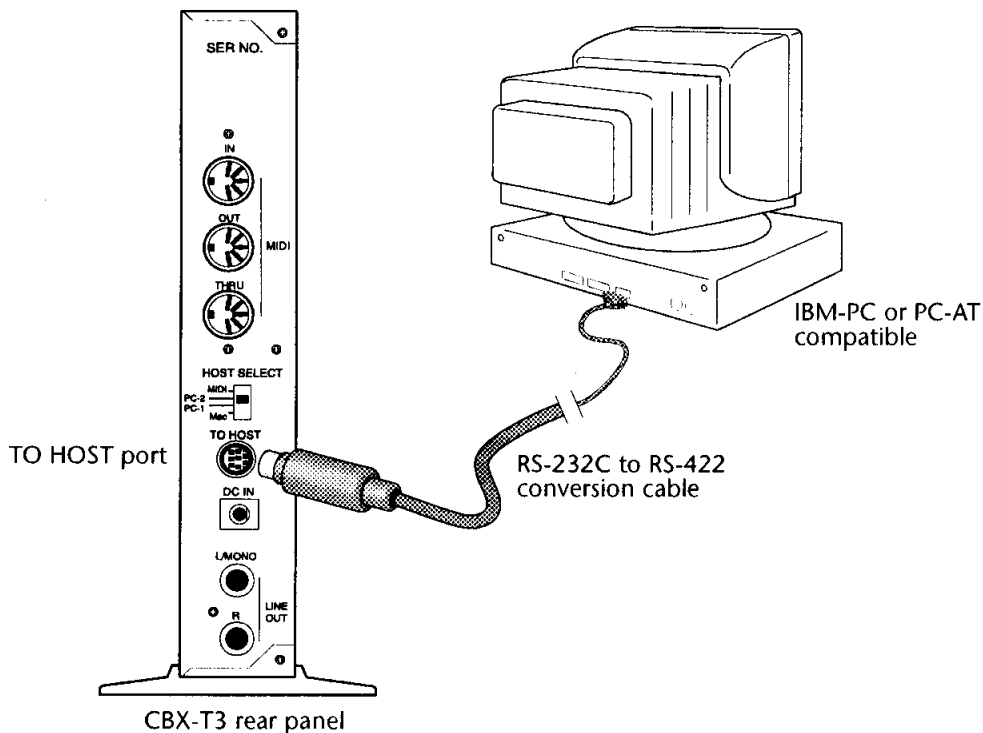
CBX-T3 rear panel

2.   Set the CBX-T3's HOST SELECT switch on the rear panel to PC-2.

♪ **Note:** The IBM PS/2 has a 25 pin port, and a 25 pin to 9 pin adaptor will be required in addition to the RS-232C to RS-422 conversion cable.

Using a MIDI interface card

You can also connect your IBM-PC, PC-AT compatible or PS/2 type computer to the CBX-T3 by using a MIDI interface. For this, you need to install a MIDI interface card into one of the expansion slots of your computer. Usually, a port in this card connects to a cable that leads to a MIDI interface — a small device with MIDI IN and Out ports. To connect an IBM-PC, PC-AT compatible or PS/2 type computer to the CBX-T3 using a MIDI interface card, follow these steps.

1. Make sure the appropriate MIDI interface card is installed in one of your expansion slots of your computer.

2. Connect the MIDI interface to the MIDI interface card slot.
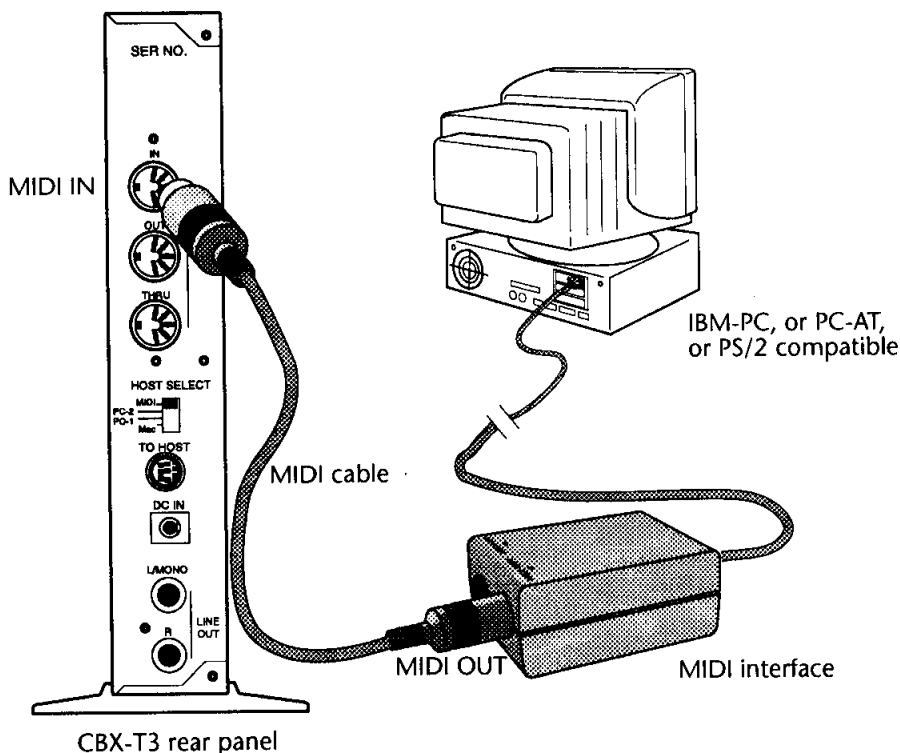
CBX-T3 rear panel

3. Use a standard MIDI cable to connect the MIDI OUT of the MIDI interface to the MIDI IN of the CBX-T3.

    The MIDI interface is not supplied and must be purchased separately.

4. Set the CBX-T3's HOST SELECT switch on the rear panel to MIDI.

♪ **Note:** Various third party MIDI interface cards are available and may or may not work with the CBX-T3. Please refer to the manufacturer's documentation for further details and installation instructions.

Connecting a Macintosh

There are two methods of connecting the CBX-T3 to a computer from the Apple Macintosh family. The first method, the TO HOST connection, does not require a MIDI interface while the second method does. In either case, if your application software package allows you to set the clock rate or speed of your MIDI interface, it will need to be set to 1 MHz. For more details, refer to the owner's manual supplied with your application software.

♪ **Note:** The computer sequencing software you are using will most likely have a Thru mode. It is usually called MIDI Thru, Keyboard Thru, or Echo Back. This mode or function needs to be enabled if you want to listen to your keyboard.

Using the TO HOST port

To connect a Macintosh computer directly to the CBX-T3, follow these steps.

1. **Connect the CBX-T3's TO HOST port to the Macintosh's modem port using a Macintosh interface cable (MINI DIN 8-PIN to MINI DIN 8-PIN).**

    If your MIDI application has a setting that enables it to use the modem port or the printer port, you can connect the cable to either port. If your application doesn't give you a choice, use the modem port.

TO HOST port

Modem port

Macintosh interface cable
(MINI DIN 8-PIN to MINI DIN 8-PIN)
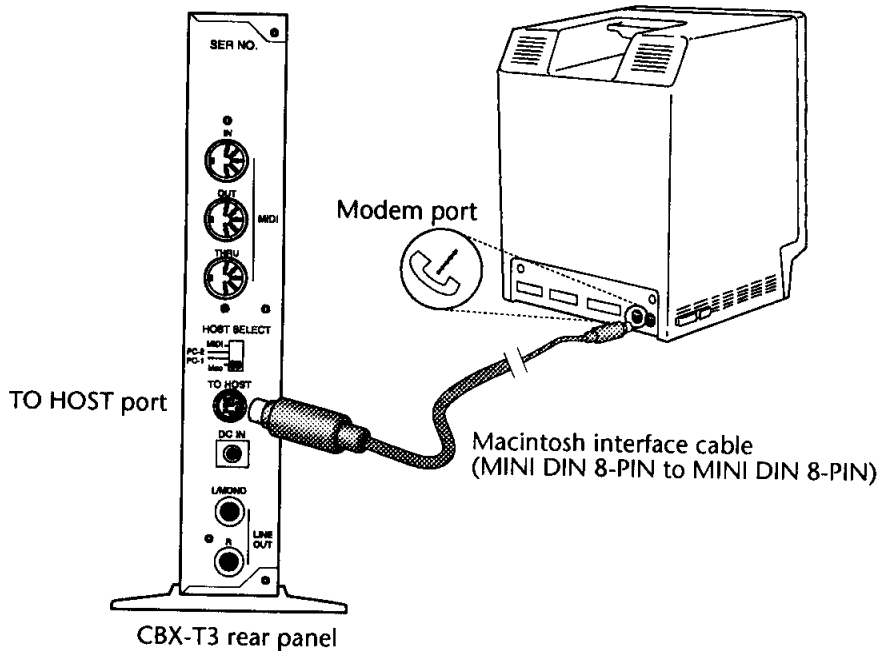
CBX-T3 rear panel

2. Set the CBX-T3's HOST SELECT switch on the rear panel to Mac.

Using a MIDI interface

To connect a Macintosh computer to the CBX-T3 using a MIDI interface, follow these steps.

1. **Connect a MIDI interface to the Macintosh's modem port.**

   The MIDI interface is not supplied and must be purchased separately.

   If your MIDI application has a setting that enables it to use the modem port or the printer port, you can connect the cable to either port. If your application doesn't give you a choice, use the modem port.

2. **Use a standard MIDI cable to connect the MIDI OUT of the MIDI interface to the MIDI IN of the CBX-T3.**
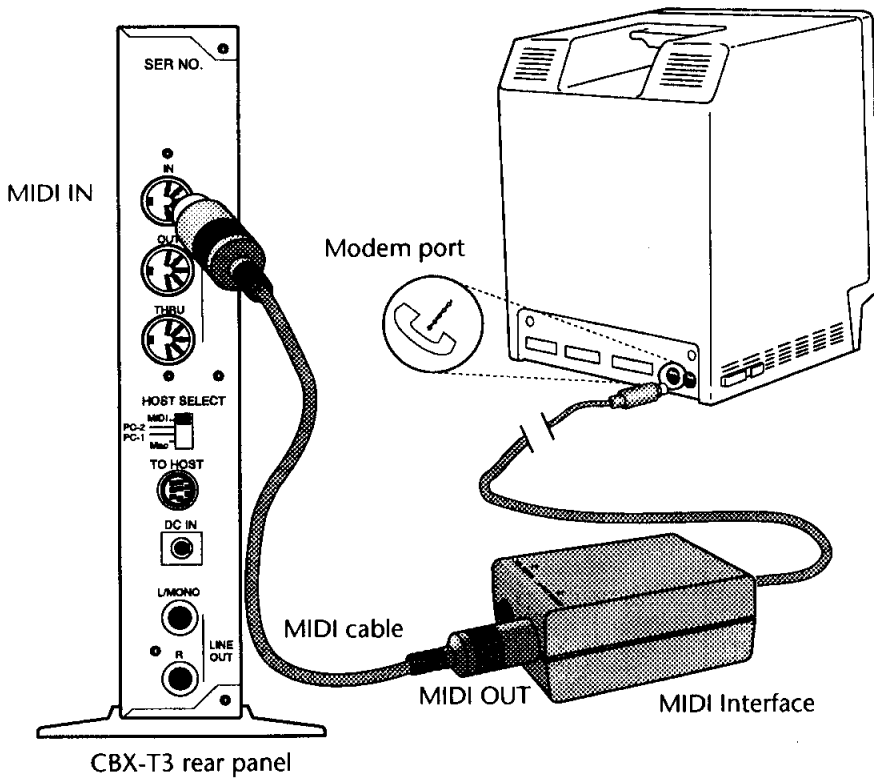
CBX-T3 rear panel

3. **Set the CBX-T3's HOST SELECT switch on the rear panel to MIDI.**

Connecting other computers

Using a MIDI interface

Various other computers may be connected to the CBX-T3, pro-
vided they can connect to a MIDI interface, or they have a built in
MIDI interface. To connect such a computer, follow these steps:

1. Connect the MIDI interface to the computer or locate the built-in
    MIDI IN and OUT ports.

2. Use a standard MIDI cable to connect the MIDI OUT of the
    MIDI interface or computer to the MIDI IN of the CBX-T3.

    The MIDI interface and cables are not supplied and must be pur-
    chased separately.

    Set the CBX-T3's HOST SELECT switch to MIDI.

Using the TO HOST port

In addition to the Macintosh and IBM-PC, PC-AT compatible or
PS/2 type computers there is one other computer type, popular in
Japan, that may be connected to the CBX-T3. This family of com-
puters is manufactured by NEC and it is known as the PC-9800
series. The CBX-T3 has a special HOST SELECT switch setting
for these models, namely PC-1. The PC-9800 family uses a differ-
ent baud rate, this is the only difference between PC-1 and PC-2.

Connecting MIDI devices

Your CBX-T3 is fully MIDI compatible, and can be connected to any MIDI device. Listed below are the instructions for connecting the CBX-T3 with various types of MIDI devices.

Connecting a MIDI keyboard or sequencer

To connect the CBX-T3 to a MIDI master keyboard such as the CBX-K3, or a sequencer as its primary tone generator, or to Yamaha's SY series as an extension tone generator, follow these steps.

1. Use a standard MIDI cable to connect the CBX-T3's MIDI IN to MIDI OUT of a MIDI keyboard or sequencer.

MIDI IN

MIDI keyboard or sequencer

MIDI OUT

MIDI cable

CBX-T3 rear panel
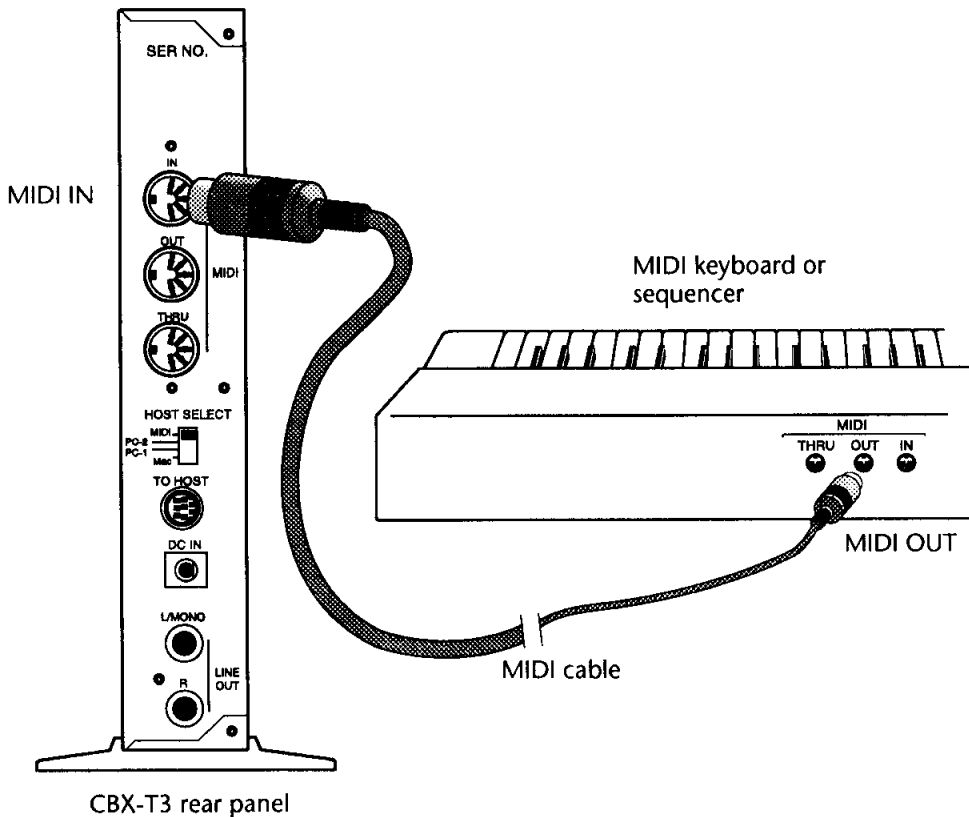
2. Set the CBX-T3's HOST SELECT switch to MIDI.

Connecting Yamaha's MDF2

Depending on the way the MDF2 is connected, it can be used to store the settings of the CBX-T3, by using the MIDI Bulk Dump function, or it can also be used to play back Yamaha's Disk Orchestra Collection. When two MIDI cables are used to connect the MDF2 and the CBX-T3, both features can be used. If only one cable is used, both features can also be used, however, doing so requires that the MIDI cable be manually switched for each function.

1. Use a standard MIDI cable to connect the CBX-T3's MIDI OUT to MIDI IN of the MDF2.

CBX-T3 rear panel
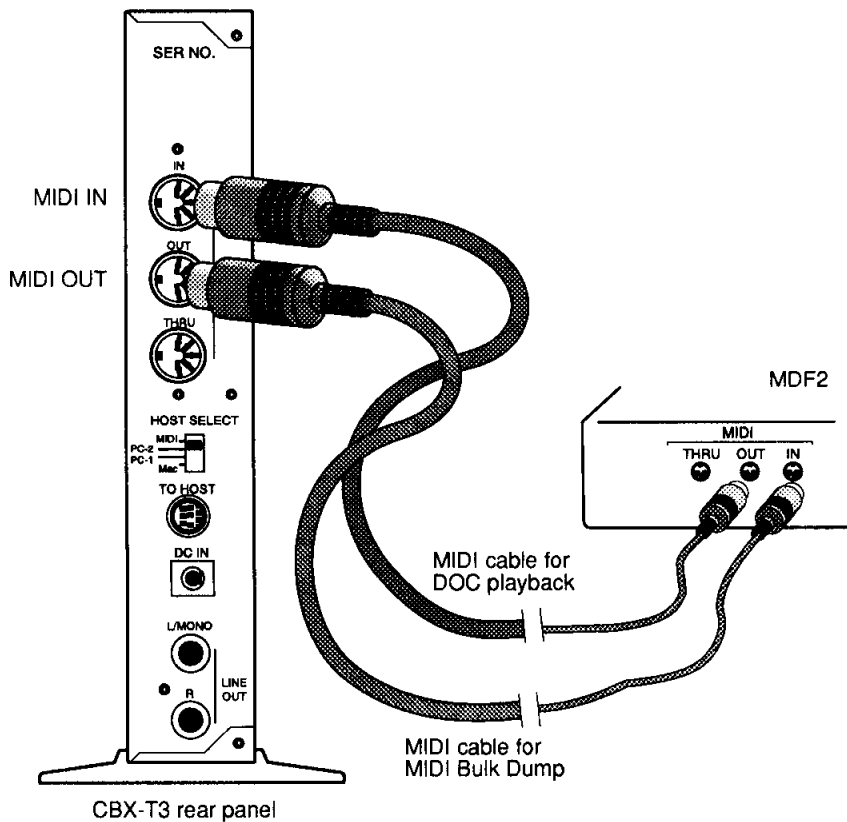
2. Use a second standard MIDI cable to connect the CBX-T3's MIDI IN to MIDI OUT of the MDF2.

3. Set the CBX-T3's HOST SELECT switch to MIDI.

Connecting Yamaha's Clavinova and MDF2

By combining the MDF2 and the Clavinova you can set up a system to play back music software from Yamaha's Disk Orchestra Collection. For this set-up you will need three standard MIDI cables.

1. Use the first standard MIDI cable to connect MIDI OUT of the Clavinova to MIDI IN of the MDF2.

2. Use the second standard MIDI cable to connect MIDI IN of the Clavinova to MIDI OUT of the MDF2.
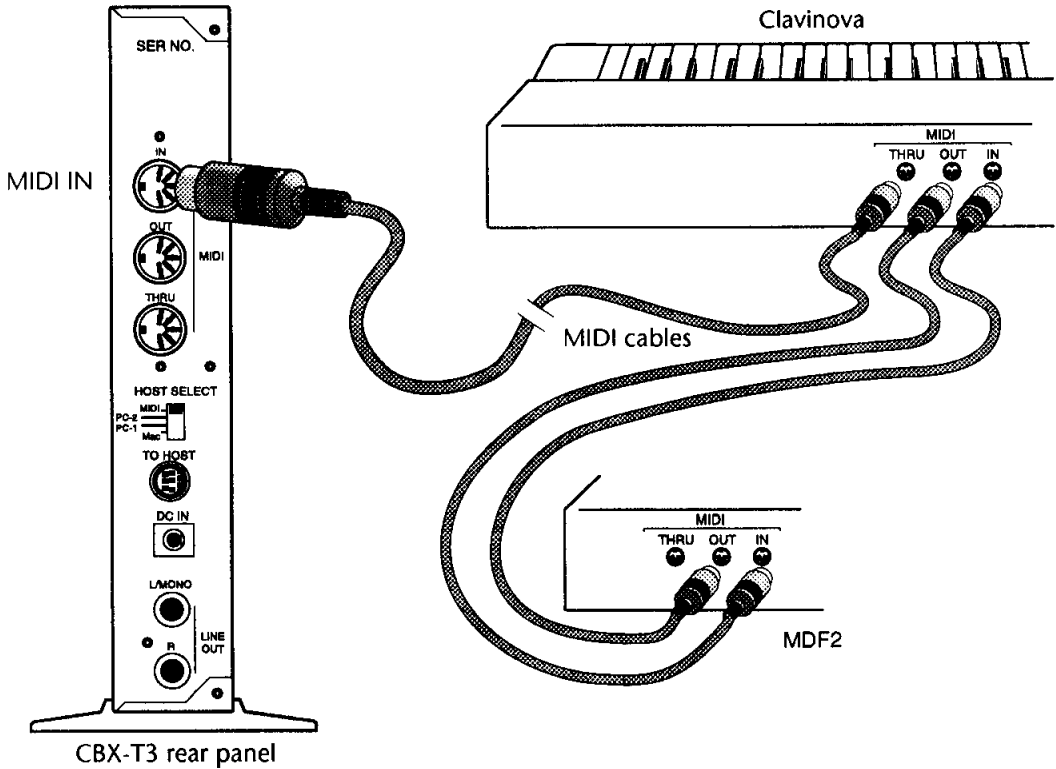
3. Use the third standard MIDI cable to connect MIDI THRU of the Clavinova to MIDI IN of the CBX-T3.

4. Set the CBX-T3's HOST SELECT switch to MIDI.

Chapter 9   *Connecting an audio output device*

The CBX-T3 cannot produce sound by itself. An auxiliary ampli-
fier and speakers are therefore required in order to produce sound.
Due to the CBX-T3's high quality stereo sound, a stereo amplifier
with speakers, or high quality powered speakers, such as Yamaha's
CBX-S3, or similar devices, are recommended. A monaural sys-
tem, however, can be used as well. The CBX-T3 is equipped with
standard phone jacks, so please obtain suitable cables or adaptors.
Connect the CBX-T3 to an audio output device by following these
steps.

1. Connect the LINE IN port of the audio output device with cables
    that have, at least at one end, standard phone plugs for the
    CBX-T3.

To LINE IN of
amplifier or powered
speakers

Standard phone
plugs

LINE OUT (R and
L/MONO) ports

CBX-T3 rear panel
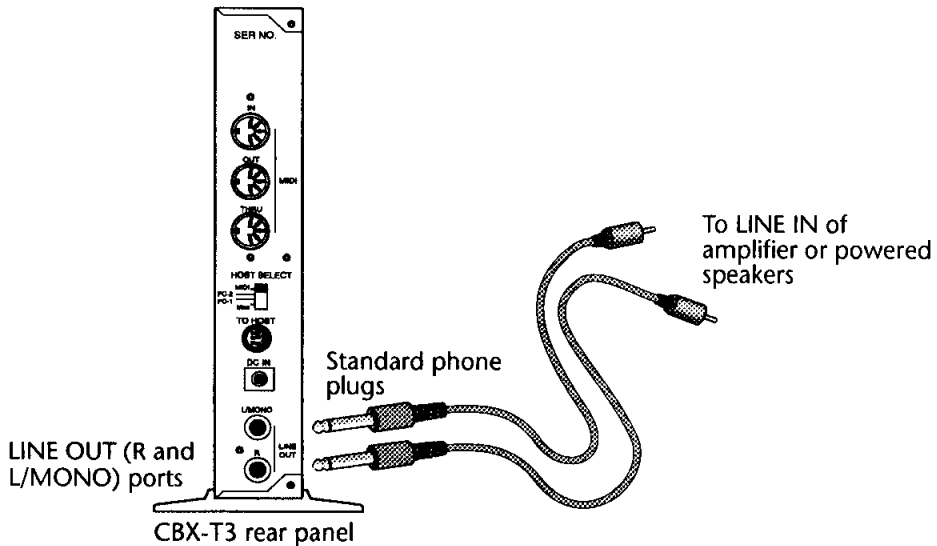
2. Connect the phone plugs to the respective LINE OUT (R and
    L/MONO) port's phone jacks of the CBX-T3. If you are not using
    a stereo system, use only the LINE OUT (L/MONO) phone jack.

fff **Warning:** Make sure that the CBX-T3 and audio output device
are turned off before making connections.

Chapter 10   *Connecting an audio source*

The audio output of a computer, MIDI tone generator, CD player, or cassette player can be combined with the audio output of the CBX-T3. This feature is useful if you don't have an audio mixer, or when playing the CBX-T3 simultaneously with another tone generator. To connect an audio source to the CBX-T3, follow these steps.

1. **Connect the audio output ports of the audio source device with a cable or cable adaptor that has a 3.5 mm mini stereo plug available for the CBX-T3.**

2. **Connect the 3.5 mm mini stereo plug to the AUDIO IN port of the CBX-T3.**

To LINE OUT of CD, amplifier, etc.

Audio IN port

3.5 mm mini stereo plug

CBX-T3 front panel
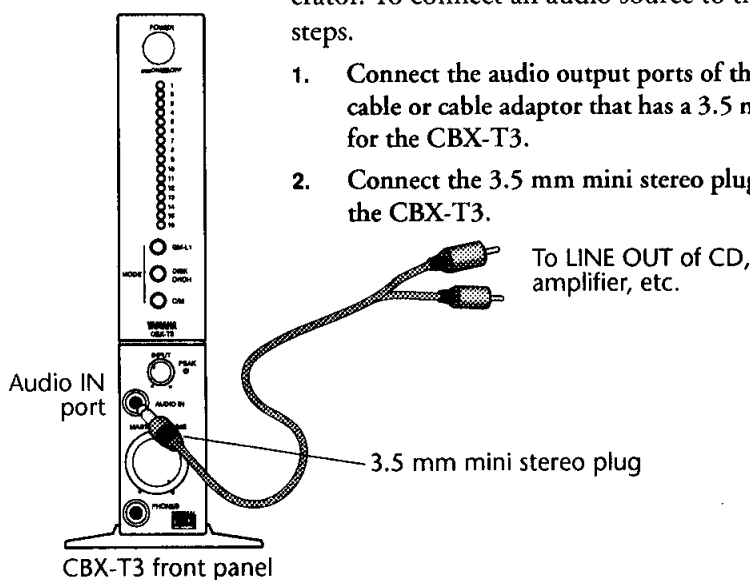
Chapter 11   *Connecting headphones*

You can also use headphones to listen to the CBX-T3. To connect headphones, follow these steps.

1. **Turn the MASTER VOLUME control down.**

2. **Insert the headphones plug into the PHONES port on the front panel of the CBX-T3.**

Headphones

Phones port

CBX-T3 front panel
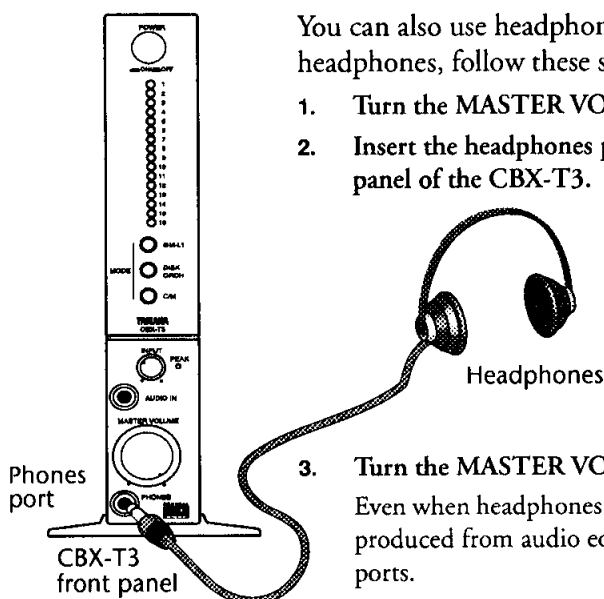
3. **Turn the MASTER VOLUME control back up to the desired level.**

Even when headphones are connected to the CBX-T3, sound will be produced from audio equipment connected to the LINE OUT ports.

Using the CBX-T3

This section contains all the basic information needed to begin using your tone generator.

Chapter 12 _The basics_

This chapter presents essential information. Please read it carefully.

Turning the CBX-T3 on and off
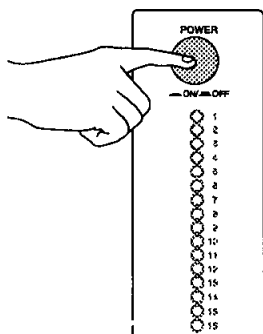
Following the instructions below first check all connections before turning on your tone generator.

Always follow this sequence when you turn the power on. Reverse the sequence when turning the CBX-T3 off.

1. Turn the MASTER VOLUME control down completely.
2. Turn on the MIDI keyboard (CBX-K3) or MIDI device.
3. Turn the CBX-T3 on by pressing its POWER button.
4. Turn on any audio equipment, such as a stereo system or powered speakers (CBX-S3).
5. Turn on the computer.
6. Adjust the MASTER VOLUME control to a reasonable level.

Have fun! You can now start using your tone generator. You might however, want to select the appropriate sound module first. See "Selecting a sound module" on page 24.

♪ **Note:** For information on how to operate peripheral equipment, refer to the Owner's manual of that equipment.

fff **Warning:** Any data or settings contained in the CBX-T3 will be lost when its power is turned off. Edited voices or system setup information, for example, will be deleted. However, you can save this information by using the MIDI Bulk Dump feature. See "Performing a MIDI Bulk Dump" on page 28.

Setting the HOST SELECT switch
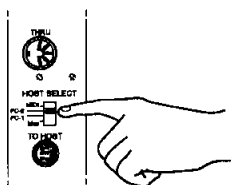
The HOST SELECT switch should be set to the host setting appropriate for your system (See Part 2 "Setting Up" for more details on each system and the appropriate host setting).

1. Determine the appropriate host setting for your particular system.

2. Move the HOST SELECT switch on the rear panel to the appropriate host setting (MIDI, PC-2, PC-1, or Mac).

Setting the device number

The device number is really the MIDI channel that will receive and send system exclusive messages (MIDI Bulk Dump). System exclusive messages can only be transferred when both the sending and receiving device are set to the same device number. If set to all (channel 1 through 16), the CBX-T3 can receive on any MIDI channel, but will send only from MIDI channel 1.

1. Turn the CBX-T3 off.

ƒƒƒ **Warning:** Turning off the CBX-T3 will cause all internal data to be lost.

2. Hold down any one of the MODE buttons (GM-L1, DISK ORCH, or C/M) and turn on the power of the CBX-T3.

   One or all of the green MIDI indicators will light, depending on which device number is currently selected.

3. Press any MODE button until the desired device number is selected.

4. Return to normal mode by turning the power off, then on again.

   Switching the power on while holding down one of the MODE buttons enters the CBX-T3 into a special system mode. The tone generator is unable to generate sound in this mode. Turning the power off then on again returns the system to normal mode.
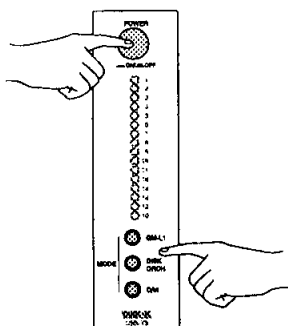
Selecting a sound module

The CBX-T3 has three sound module modes: General MIDI Level 1, Disk Orchestra Collection, and C/M. (For a detailed description of these modes see Chapter 2 "Sound module modes" on page 6.) The default sound module is General MIDI level 1. Each of these modules contains voices which are compatible with

voice tables which adhere to or provide a degree of compatibility to either international MIDI standards, Yamaha standards, or standards from other manufacturers.

MODE button	Sound Module Name	Description
GM-L1	General MIDI Level 1	Compatible with the international General MIDI Level 1 standard, providing maximum file compatibility between equipment from different manufacturers.
DISK ORCH	Disk Orchestra Collection	Compatible with Yamaha's Disk Orchestra Collection. The disks in this series can be played back on Yamaha's Clavinova, DRC-20, DOM-30, or MDF2.
C/M	C/M	Provides a degree of compatibility with third party sound modules. Namely MT-32.

1. **Select the desired Sound Module from the list above.**
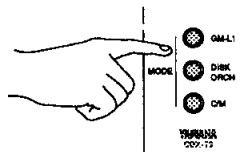
2. **Press the MODE button that corresponds to your selection.**

The MODE button will light indicating the selected sound module.

Selecting instrument voices

The CBX-T3 cannot select a voice by itself; in order to do this you must use equipment that is connected to your system, and is capable of sending MIDI Voice, Program Change, and system messages. Below are some examples of such equipment:

- A computer, such as a Macintosh running a sequencer application.
- A MIDI keyboard such as a MIDI master keyboard, or a synthesizer.
- Any equipment capable of playing back Yamaha's Disk Orchestra Collection: the Yamaha DRC-20 Disk player, the DOM-30 Disk Orchestra Module, and the MDF2 MIDI data recorder.

When the CBX-T3 is turned on initially, the default sound module mode is GM-L1, and all 16 Parts are assigned voice No. 1, Grand Piano. Change the assigned voice by following these steps.

1. **Make sure that the appropriate sound module mode is selected. See "Selecting a sound module" on page 24.**

2. **Make sure that your MIDI instrument or computer is properly connected to the CBX-T3, and properly set up to transmit a Program Change message.**

3. Make sure that the device number is set correctly. (See "Setting the device number" on page 24.)

4. Transmit a Program Change message together with the MIDI channel of the Part to be changed.
This can be done with a sequencer application running on a computer or by simply pressing the appropriate voice select buttons on your MIDI keyboard.

Your music will now play back with the newly selected voice.

Part 10 is used exclusively for Drum and Percussion voices. Continue reading for further details.

♪ **Note:** The DISK ORCH and C/M modes ignore Program Change and Bank selection messages for the Percussion Part (Part 10).

Selecting a percussion voice

Of the CBX-T3's 16 Parts, Part 10 is reserved for percussion voices. The percussion voices are an array of voices collectively called Drum and Percussion sets. To access and play the Drum and Percussion sets in Part 10 follow these steps.

1. Change the MIDI transmit channel of your MIDI keyboard or computer sequencer to channel 10.

2. Transmit a Program Change message to Part 10.
This can be done with a sequencer application running on a computer or by simply pressing the appropriate voice select buttons on your MIDI keyboard.

The percussion voices are arranged into 10 Drum and Percussion sets.

Pgm#	Program Change number	Drum and Percussion set name
1	0 - 7	Standard
9	8 - 15	Room
17	16 - 23	Power
25	24, 26 - 31	Electronic
26	25	Analog
33	32 - 39	Jazz (same as Standard kit)
41	48 - 55	Brush
49	56 - 124	Orchestra
126	125	Clavinova
127	126	RX
128	127	C/M

See the Drum and Percussion sets on page 53, or the quick-reference voice table card for a listing of all the CBX-T3's percussion sounds.

Playing the CBX-T3

You can begin playing music with your tone generator after setting up your system and making the appropriate settings.

Make sure: to complete these steps.

- Make the appropriate system connections. See "Setting Up" on page 10.
- Select the appropriate TO HOST setting. See "Setting the HOST SELECT switch" on page 24.
- Set the device number. See "Setting the device number" on page 24.
- Turn on the system. See "Turning the CBX-T3 on and off" on page 23.
- Select the correct sound module. See "Selecting a sound module" on page 24. Keep in mind that the default sound module mode is General MIDI level 1, meaning you may have to select the sound module each time you switch on your system.

With a MIDI keyboard

You can start making music right away on a connected MIDI keyboard.

1. Check if all the "Make sure" steps listed above have been completed.

2. Start playing the keys on your MIDI keyboard.

    One of the MIDI Indicators will start to flash. This indicates the MIDI channel on which the CBX-T3 receives its MIDI data. The tone generator will convert all this MIDI data into an audio signal, that can be heard from the speakers of the connected audio device.

    If you change the MIDI channel of your MIDI keyboard, the corresponding CBX-T3 LED will light.

With a computer or MIDI sequencer

When using a computer or MIDI sequencer, data can be sent to more than one channel. When received by the CBX-T3, this data will be played back on each channel. In this way, when a Program change message is received, the CBX-T3 can play a different voice on each channel. Also Volume, Pan, Reverb etc., can be controlled

using MIDI messages. For a detailed description, see "Controlling the CBX-T3 with MIDI messages" on page 38 and "MIDI Data Format" on page 59.

1. Check if all the "Make sure" steps on page 27 have been completed.

2. **Start playback from your computer software or MIDI sequencer.**

    Depending on your music data, one or more MIDI indicators will flash, indicating that MIDI data is being transmitted over the corresponding channels. The tone generator will convert this MIDI data into an audio signal that can be heard from the speakers of the connected audio device.

With Yamaha's MDF2 or DRC-20

By using a Yamaha MIDI data filer, the MDF2 or the DRC-20, you can play back Yamaha's Disk Orchestra Collection.

1. Check if all the "Make sure" steps on page 27 have been completed.

    For playback of the Disk Orchestra Collection, the sound module should be set to DISK ORCH.

2. **Start playback from your MDF2 or DRC-20.**

    Depending on your music data, one or more MIDI indicators will flash, indicating that MIDI data is being transmitted over the corresponding channels. The tone generator will convert this MIDI data into an audio signal that can be heard from the speakers of the connected audio device.

Performing a MIDI Bulk Dump

The internal settings of the CBX-T3 can be transmitted to an MDR (MIDI Data Recorder). Any of the following qualify as an MDR:

*   A MIDI sequencer program which can save and load MIDI Bulk Dump data, running on a computer.

*   A MIDI librarian program, running on a computer.

*   A dedicated MIDI data recorder, such as Yamaha's MDF2.

*   A music synthesizer with an MDR (MIDI Data Recorder) function. For example, Yamaha's SY99 music synthesizer.

Read "Setting the device number" on page 24, and "Setting Up" on page 10 for information on how to set the device number and on how to connect an MDR.

If you are using a computer with a MIDI sequencer program, settings transmitted as system exclusive messages can be stored as part of a song. When this song is played back, these settings will be restored to the CBX-T3 and the song will play back with the correct settings.

Because the CBX-T3 retains no information once its power is switched off or if there is a power failure, you should backup any internal data to an MDR. It is possible to save the following data:

- System mode settings
- Reverb effect type and depth settings
- Settings for each Part
- Drum setup
- Internal voice bank data (1...64)

If the HOST SELECT switch is set to MIDI, the data will be sent via the MIDI OUT port as a MIDI system exclusive (Bulk Dump) message. If the HOST SELECT switch is set to either Mac, PC1, or PC2, the data will be sent via the TO HOST port as a MIDI system exclusive (Bulk Dump) message.
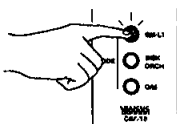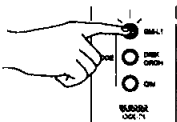
1. Set up your MDR to receive a MIDI system exclusive message.
2. Hold down the currently selected MODE button (the MODE button that is lit) for several seconds.

   The MODE button start to blink.

3. Press the same MODE button again, and the internal data will be transmitted through the MIDI OUT port or the TO HOST port.

   During transmission, the green MIDI indicators on the front panel light in sequence, from No. 16 to No. 1. Once the last indicator has lit, transmission is complete and the CBX-T3 will automatically return to normal mode.

Reference

This section is designed to provide you with specific information quickly. Simply look up the item you're interested in and read the accompanying text.

Using the CBX-T3 with a MIDI keyboard

This chapter explains how to connect the CBX-T3 with a MIDI keyboard. To set up such a system you will need:

- The CBX-T3 and its power adaptor (PA-1505).
- A MIDI master keyboard or synthesizer.
- A stereo amplifier and connecting cables, or stereo headphones. If your headphones are fitted with a 1/4" (6.35 mm) stereo phone plug, you will need a 1/4" stereo phone jack to 3.5 mm mini stereo phone plug adaptor.
- A standard MIDI cable (available from your Yamaha dealer).
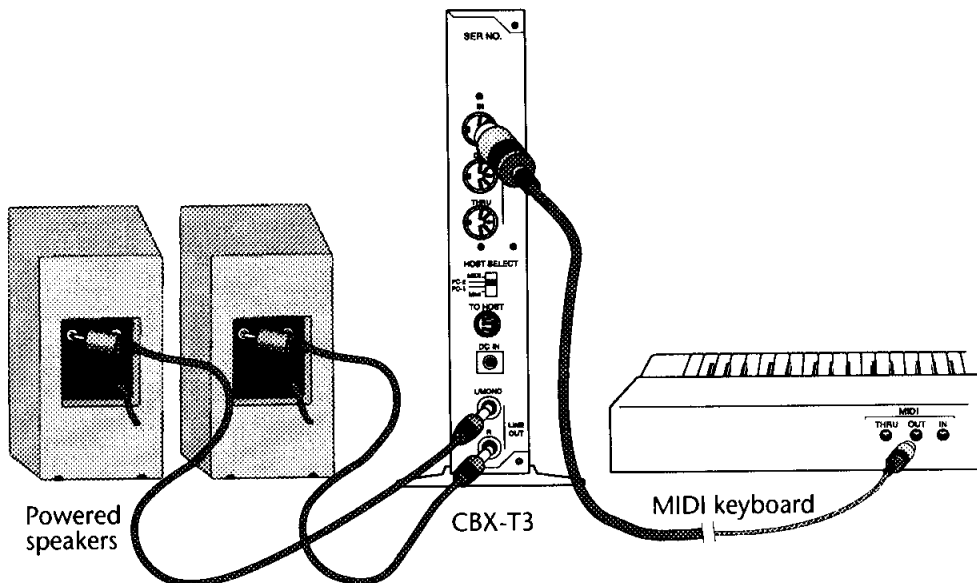
Powered speakers

CBX-T3

MIDI keyboard

Setting up the system

Before making any connections, be sure that all equipment is switched off, and that the CBX-T3's power adaptor is not plugged into an outlet, then follow these steps.

1. Connect the MIDI OUT port of your MIDI keyboard to the CBX-T3's MIDI IN port using the MIDI cable.

2. Connect the LINE OUT ports (R and L/MONO) of the CBX-T3 to the inputs of your amplifier or powered speakers using audio cables (if your amplifier has only one input, connect only the CBX-T3's L/MONO port). If you are using stereo headphones, connect them to the CBX-T3's PHONES port.

3. Set the CBX-T3's HOST SELECT switch to MIDI.

4. Turn down the MASTER VOLUME control of the CBX-T3.

5. Switch on the MIDI keyboard.

6. Turn on the CBX-T3.

7. Switch on your amplifier.

8. Set your MIDI keyboard's MIDI transmit channel to "1".

9. Increase the CBX-T3's volume to a reasonable level as you play the MIDI keyboard.

Once all steps are completed, Voice No. 1, Grand piano, will be assigned to the keyboard. If Voice No. 1, Grand piano, does not perform when you play the keyboard, go back and make sure that you've properly completed every item of the instructions.

Chapter 14

Using the CBX-T3 with a computer that has a MIDI interface

This chapter explains how to connect the CBX-T3 to a computer with a built-in MIDI interface or an external MIDI interface. To set up such a system up you will need:

- The CBX-T3 and its power adaptor (PA-1505).
- A MIDI master keyboard or synthesizer.
- A computer with a MIDI interface.
- MIDI sequencing software.
- A stereo amplifier and connecting cables, or stereo headphones. If your headphones are fitted with a 1/4" (6.35 mm) stereo phone plug, you will need to use a 1/4" stereo phone jack to 3.5 mm mini stereo phone plug adaptor.
- Two standard MIDI cables.
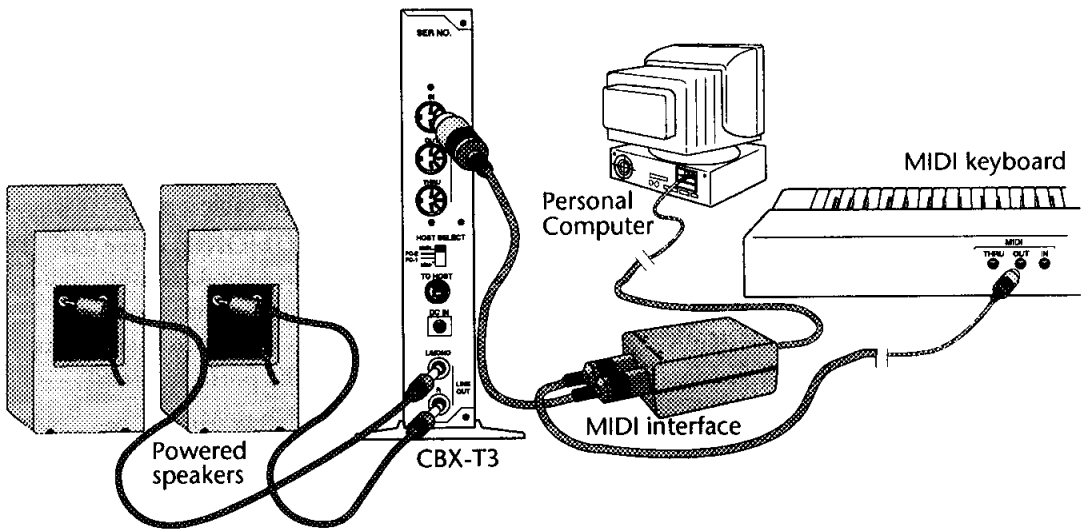
MIDI keyboard

Personal Computer

MIDI interface

Powered speakers

CBX-T3

Setting up the system

Before making any connections, be sure that all equipment is switched off, and that the CBX-T3's power adaptor is not plugged in to an outlet, then follow these steps.

1. Connect the MIDI OUT port of the MIDI keyboard to the MIDI IN port of the computer or the MIDI interface using a MIDI cable.

2. Connect the MIDI OUT port of the MIDI computer or MIDI interface to the CBX-T3's MIDI IN port using the other MIDI cable.

3. Connect the LINE OUT ports (R and L/MONO) of the CBX-T3 to the inputs of your amplifier or powered speakers using audio cables (if your amplifier has only one input, connect only the CBX-T3's L/MONO port). If you are using stereo headphones, connect them to the CBX-T3's PHONES port.

4. Connect the power adaptor to the CBX-T3's DC IN port.

5. Plug the power adaptor into a wall outlet.

6. Set the HOST SELECT switch to MIDI.

7. Switch on your MIDI keyboard.

8. Turn down the CBX-T3's MASTER VOLUME control, then turn on the CBX-T3's POWER switch.

9. Turn down your amplifier's volume control, then switch on your amplifier.

10. Switch on your computer and load your MIDI sequencing software.

11. **Set the computer sequencing software to MIDI Thru. Sometimes it is called MIDI Thru, Keyboard Thru, or Echo Back.**

    This mode or function needs to be enabled if you want to listen to your keyboard.

12. **Set your MIDI keyboard's MIDI transmit channel to "1".**

13. **To simplify operation, set sequencer tracks 1 through 16 to MIDI channels 1 through 16.**

    In this way, sequencer track 1 will correspond to the CBX-T3's Part 1, track 2 to the CBX-T3's Part 2, and so on.

14. **Select sequencer track "1".**

15. **Set your amplifier's volume control to a normal listening level.**

16. **Increase the CBX-T3's volume to a reasonable level as you play the MIDI keyboard.**

Once all steps are completed, Voice No. 1, Grand piano, will be assigned to channel 1. If Voice No. 1, Grand piano, does not perform when you play the keyboard, see Appendix B "Troubleshooting" on page 56.

Now tracks may be recorded, and the CBX-T3 is able to receive MIDI Program Change messages enabling different voices to be selected for each of its Parts.

Chapter 15

Using the CBX-T3 with a computer using the TO HOST port

This chapter explains how to connect the CBX-T3 directly to a computer using the TO HOST port. To set up such a system you will need:

- The CBX-T3 and its power adaptor (PA-1505).

- A MIDI master keyboard or synthesizer.

- A computer with a serial port (RS-232C or RS-422).

- MIDI sequencing software. For instructions on how to use the sequencer application software refer to its owner's manual.

- A stereo amplifier and connecting cables, or stereo headphones. If your headphones are fitted with a 1/4" (6.35 mm) stereo phone plug, you will need to use a 1/4" stereo phone jack to 3.5 mm mini stereo phone plug adaptor.

- One MIDI connecting cable and a special HOST cable. For more instructions see "Host computer connecting cables" on page 57.
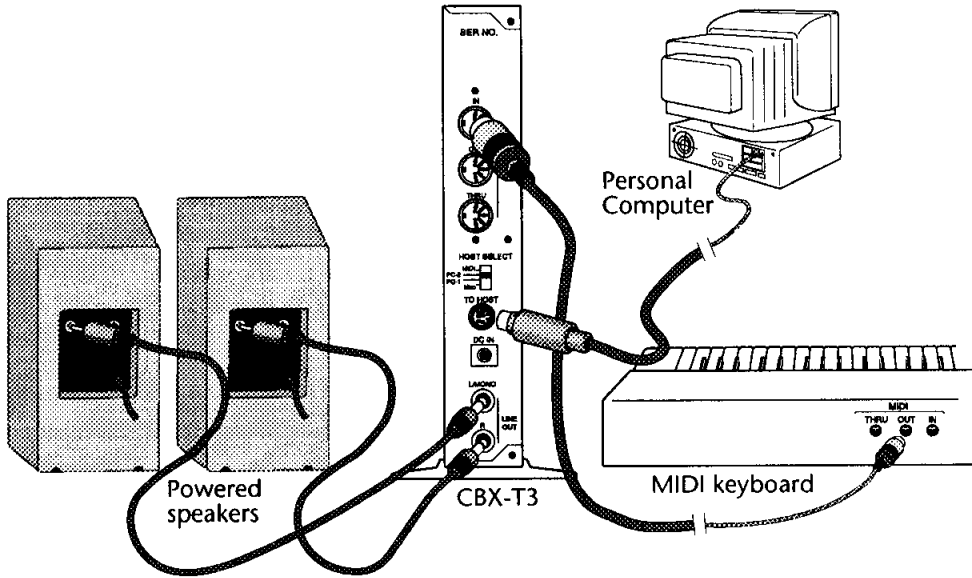
Setting up the system

Before making any connections, make sure that all your equipment is switched off, and that the CBX-T3's power adaptor is not plugged into an outlet, then follow these steps.

1. Connect the MIDI OUT port of the MIDI keyboard to the CBX-T3's MIDI IN port using the MIDI cable.

2. Connect the computer's serial port to the CBX-T3's TO HOST port using the HOST cable.

3. Connect the LINE OUT ports (R and L/MONO) of the CBX-T3, to the inputs of your amplifier or powered speakers using stereo audio cables (if your amplifier has only one input, connect only the CBX-T3's L/MONO port). If you are using stereo headphones, connect them to the CBX-T3's PHONES port.

4. Connect the power adaptor to the CBX-T3's DC IN port.

5. Plug the power adaptor into a wall outlet.

6. Set the CBX-T3's HOST SELECT switch to the type of computer being used: Mac or PC-2. For more information see "Connecting a computer" on page 12.

7. Switch on the MIDI keyboard.

8. Turn down the CBX-T3's MASTER VOLUME control, then turn on the CBX-T3's POWER switch.

9. Turn down the amplifier's volume control, then switch the amplifier on.

10. Switch on the computer, and load the MIDI sequencing software.

11. Set the computer sequencing software to MIDI Thru. Sometimes it is called MIDI Thru, Keyboard Thru, or Echo Back.

This mode or function needs to be enabled if you want to listen to your keyboard.

12. Set the CBX-T3's Sound module mode to GM-L1. For more information see "Selecting a sound module" on page 24.

13. Set your MIDI keyboard's MIDI transmit channel to "1".

14. Set the MIDI sequencer to Standard MIDI interface.

15. To simplify operation, set sequencer tracks 1 through 16 to MIDI channels 1 through 16.

   In this way, sequencer track 1 corresponds to the CBX-T3's Part 1, sequencer track 2 to the CBX-T3's Part 2, and so on.

16. Select sequencer track 1.

17. Set your amplifier's volume control to a normal listening level.

18. Increase the CBX-T3's volume to a reasonable level as you play the MIDI keyboard.

Once all steps are completed, Voice No. 1, Grand piano, will be assigned to channel 1. If Voice No. 1, Grand piano, does not perform when you play the keyboard, see Appendix B "Troubleshooting" on page 56.

Now tracks may be recorded, and the CBX-T3 is able to receive MIDI Program Change messages which enables different voices to be selected for each of the CBX-T3's Parts.

Chapter 16

MIDI connections

MIDI cables and ports are all standardized, so connecting two MIDI devices is easy. Following is information regarding ports, cables, and the directions that messages flow.

MIDI cables

A MIDI cable is a shielded, twisted-pair cable with a 5-pin male DIN plug at both ends. A male 5-pin DIN plug is a standard plug that, you guessed it, contains five small pins, each of which can be connected to a wire. Currently, MIDI only uses pins four and five to carry MIDI messages, and pin 2, which is used as a ground. Pins four and five are connected to the two wires in the MIDI cable. Pins one and three, currently unused, are available should MIDI specifications ever change.

There are different brands, lengths, and qualities of MIDI cables, but the above specifications apply to them all.

MIDI ports

There are three kinds of MIDI ports: MIDI IN, MIDI OUT, and
MIDI THRU. All three MIDI ports look the same: a female ver-
sion of a MIDI cable's plug, that is, a 5-DIN socket. Despite this,
each performs a slightly different function. All MIDI information
sent and received from a MIDI device passes through these MIDI
ports. Most MIDI devices have all three ports, but some have only
one or two.

MIDI In

MIDI messages are received by a MIDI device through its MIDI
In port. The messages are then sent to the device's microprocessor.
A MIDI In port only receives messages, it can't send them.

MIDI Out

It's the job of a MIDI device's MIDI Out port to send messages
from the device's microprocessor. As its name indicates, this port
only sends messages, it cannot receive messages from other MIDI
devices.

MIDI Thru

A MIDI device's MIDI Thru port transmits to another MIDI
device the information received through the MIDI In port. This
information, normally, does not pass through the microprocessor,
nor would information from the microprocessor be mixed in with
this information. MIDI Thru ports are useful when connecting
multiple MIDI devices.

Connecting MIDI Devices

With the above basic information, you can begin setting up a
MIDI system. As you do, its important to keep in mind that MIDI
messages travel through MIDI cables *one way only*. Therefore, a
single cable connecting two MIDI devices allows only one device
to send messages and the other to receive them. In order for both
devices to be able to send and receive messages, two cables are
required.

MIDI In

MIDI messages travel
only one way

MIDI Out
or
MIDI Thru
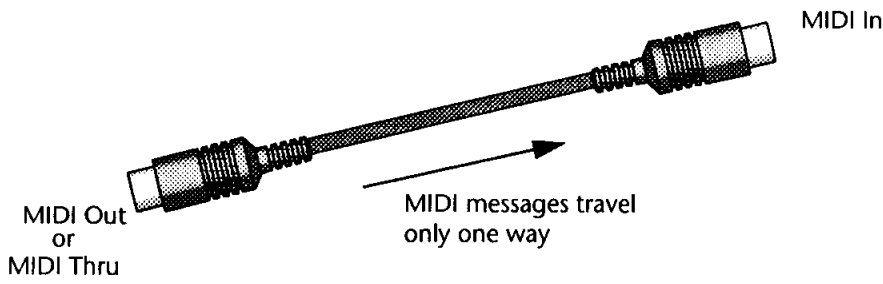
It is also vital to remember that a MIDI port which sends messages must be connected to a MIDI port that receives messages. Connecting two MIDI IN ports, or two MIDI Out ports, or a MIDI Out port with a MIDI Thru port will result in no information being transferred.

MIDI provides you with unlimited potential: any number of MIDI devices may be linked together. Following are some methods by which multiple MIDI devices may be connected together.

Daisy Chaining

A Daisy Chain of MIDI devices requires that all devices have a MIDI Thru port, and that one device serves as a Master, while the others function as Slaves. The Master device sends messages via its MIDI Out port to the next device's MIDI In port. Messages then travel from this second device via its MIDI Thru port to the third device's MIDI In port. This is also the how the message travels from the third to the fourth device, and so on down the line. Because the MIDI Thru port is used to connect the devices, the exact same information is sent from the Master device to all the slaves.

MIDI THRU box

If you are using MIDI devices that do not have MIDI Thru ports, it is still possible to connect them in a way similar to the Daisy Chain method. What is needed is a MIDI Thru box, which is a device that has one MIDI In port and multiple MIDI Thru ports. The Master device's MIDI Out port is connected to the MIDI Thru box's MIDI In port, and the Slaves devices' MIDI In ports are connected to the MIDI Thru ports of the MIDI Thru box. MIDI messages that enter the MIDI Thru box are sent simultaneously to all connected slaves.

Chapter 17

Controlling the CBX-T3 with MIDI messages

There are two general types of MIDI messages: Channel messages, which are sent and received on a specific MIDI channel, and system messages, which are sent and received regardless of the set MIDI channel.

Channel messages

The CBX-T3 can receive, but not send, Channel messages. There are two types of channel messages: Channel Voice messages and Channel Mode messages. Channel Voice messages carry performance information: keyboard performance data, control panel operations, etc. Channel Mode messages, on the other hand, effect how the receiving MIDI device responds to the received Channel Voice message. Channel Mode messages are much simpler, and generally contain less information than Channel Voice messages. Both types of messages are sent on specific MIDI channels, so only devices set to the specified channel will receive the messages. Instruments set to a different MIDI channel will be unaffected. When the CBX-T3's HOST SELECT switch is set to anything other than MIDI, MIDI data is echoed back as follows: HOST IN→ MIDI OUT, MIDI IN→ HOST OUT. Channel messages may be additionally subdivided as follows.

Note On/Note Off

A Note On message is transmitted when a keyboard key is pressed, followed by a Note Off message when the key is released. The CBX-T3's channel message note range is C-2 - G8, and its velocity range is 1-127 (applies only to Note On).

Control Change

Control Change messages consist of control setting change information, for example when the volume is increased or decreased. However, not all MIDI instruments recognize the same Control Change messages. This type of message is used to select the CBX-T3's voice banks. There are four voice banks: General MIDI (0-63), Internal (64-111), Disk Orchestra (112-126), and C/M (127). When a Program Change message is received immediately after a Bank Select message, the selected Program Change number will correspond to the selected voice bank.

The following parameters can be controlled using MIDI Control Change messages.

Control No.	Parameter	Data range
0	Bank Select MSB	0 - 127
32	Bank Select LSB	0 - 127
1	Modulation	0 - 127
5	Portamento Time	0 - 127
6	Data Entry MSB	0 - 127
38	Data Entry LSB	0 - 127
7	Main Volume	0 - 127
10	Panpot	0 - 127
11	Expression	0 - 127
64	Hold 1	0 - 127
65	Portamento	0 - 127
91	Reverb Depth	0 - 127

Program Change

Program Change messages are used to select instrument voices. Program Change messages consist of a channel number and the MIDI number of the selected voice (1-127). The CBX-T3 uses these messages to select the voice used by each Part, as well as the different Drum and Percussion sets for Part 10. For example, if a MIDI song file from the Disk Orchestra Collection is sent via MIDI (when the CBX-T3 is set to Disk Orchestra mode), from the beginning of the song, Program Change messages will select the correct voice for each Part. You can select one of two Program Change receive modes: 1. off: Ignore Program Changes, and 2. on: Respond to Program Changes. In Disk Orchestra mode, if a Program Change number that is not assigned to a voice is received, it is ignored. And in the Disk Orchestra mode and the C/M mode, Program Change numbers are ignored by Part 10 (Drum and Percussion sets).

Bank Select MSB and Bank Select LSB are used to select the CBX-T3's voice banks shown below.

MSB	LSB	Bank Name
0 - 63	0	General MIDI
64 - 111	0	INTERNAL
112 - 126	0	DISK ORCHESTRA
127	0	C/M (C/M - 64)

Pitch Bend Change

A Pitch Bend Change message sends information about a new setting for a pitch bend wheel or controller. It is usually sent when the pitch bend wheel on a MIDI master keyboard is used. If the CBX-T3 receives a Pitch Bend message, it will change the pitch of the note it is playing by bending it up or down. The CBX-T3 responds to 14-bit pitch bend data (-8192 ... +8191).

Channel Mode messages

Channel Mode messages set the MIDI channel receiving modes for different MIDI devices. There are four types of Channel Mode messages.

- Omni On/Poly
- Omni On/Mono
- Omni Off/Poly
- Omni Off/Mono

The first half of the mode name tells how the MIDI instrument monitors the incoming MIDI channels. If Omni is turned on it monitors and responds to all MIDI channels. If Omni is turned off it will only respond to MIDI messages sent on a specific MIDI channel. Poly means polyphonic and allows a MIDI instrument to play several notes simultaneously. Mono means monophonic and allows only one note at a time to be played.

Mode	Description
OMNI Mode On	A MIDI instrument that receives this message will respond to all messages from all channels, regardless of which MIDI channel the message was sent on. This message is usually sent by a controlling sequencer or computer, and it automatically turns off all notes being played by the receiving device.
OMNI Mode Off	This message changes the MIDI channel reception mode so that MIDI messages are received only on one or more specific channels, instead of receiving messages on all channels.
Poly Mode On	A MIDI instrument that receives this message will set its reception mode so that it plays polyphonically.
Mono Mode On	A MIDI device that receives this message will set its reception mode so that it plays monophonically.

System messages

System messages are not restricted to a specific MIDI channel, so all connected MIDI devices will receive and respond to the message.

An example of a system message would be timing and control data sent from a MIDI sequencer to a MIDI drum machine. Through the system message, the sequencer can tell the drum machine when to start playing, when to stop, and, by continuously sending time--clock data, play the drum machine in time with its own performance. System messages may additionally be subdivided as follows.

System exclusive messages

The format of a system exclusive message allows MIDI manufacturers to create customized MIDI messages to send between their MIDI devices. A device will only receive a system exclusive message if it has been sent by another device made by the same manufacturer. If an exclusive message is sent from a device made by different manufacturer, that message will be ignored. At the end of an exclusive message, a special signal is sent to let a device which is ignoring the signal know that it can begin receiving again. System exclusive messages allow remote editing of synthesizer or tone generator voices using voice editing software.

The CBX-T3 works with the following parameter changes.

- System Data parameter change
- Multi Common Data parameter change
- Multi Part Data parameter change
- Internal Voice Memory parameter change
- Drums Setup Data parameter change
- Preset Voice Memory parameter change
- Program Change Table parameter change
- System Information
- All Parameter Reset
- CBX-T3 Switch Remote
- General MIDI Mode On
- MIDI Master Volume
- Disk Music On

MIDI Bulk Dump

Voice settings can be saved to a MIDI sequencer, librarian, or MIDI data recorder using system exclusive messages. This is usually known as a MIDI Bulk Dump.

The following data can be saved using a MIDI Bulk Dump Requests.

- System Data
- Multi Common Data
- Internal Voice Memory
- Preset Voice Memory
- Program Change Table

Chapter 18   *Changing the system settings*

This section describes the various settings of the CBX-T3. These settings affect overall sound generation. They can, however, be overridden with the Part and Voice element parameters. To alter any of the current settings use your sequencer software to send MIDI exclusive messages to the CBX-T3. These messages, sent to specific parameters, include the values for the new settings.

♪ **Note:** Your particular sequencer software may not be capable of sending MIDI exclusive messages of the required type.

Selecting a master reverb type

The CBX-T3 is equipped with eight high quality reverb effects. With these you can simulate the reverb effects of a variety of locations, from small rooms to large concert halls. A selected Reverb effect is applied to all Parts. The following reverb effects can be simulated:

Reverb effect	Description	Detail	Reverb time (sec)	Left delay (ms)	Right delay (ms)
Hall 1	Reverb characteristics of a concert hall	Medium size hall	2.4	30	–
Hall 2	Reverb characteristics of a concert hall	Large size hall	3.2	60	–
Room 1	Reverb characteristics of a room	Large room	0.6	8	–
Room 2	Reverb characteristics of a room	Slightly smaller than Room 1, but with solid walls	0.9	12	–

Reverb effect	Description	Detail	Reverb time (sec)	Left delay (ms)	Right delay (ms)
Plate 1	Reverb characteristics of a steel plate type reverb unit	Short	3	16	–
Plate 2	Reverb characteristics of a steel plate type reverb unit	Hard	6	20	–
Delay 1	Delay and reverb used in parallel	Stereo delay effect	1.2	150	300
Delay 2	Delay and reverb used in series, first delay then reverb	Delay reverb effect	2	190	380

If you cannot hear the specified reverb effect, check the master reverb send level setting. For more information see "Setting the master reverb level" below. The master reverb level is set independently from the reverb effect, so if you select a different reverb effect, the reverb level will not change.

You can also apply a reverb effect to a specific Part. The Reverb send level can also be adjusted for each part. For more information see "Part reverb send level" on page 45.

To select a different reverb effect, a MIDI parameter change message for the REVERB TYPE parameter, with a new control setting value (between 0 and 7) must be sent to the CBX-T3. See Appendix E "MIDI Data Format" on page 68.

Setting the master reverb level

This setting affects the overall volume of the reverb effect. It can be set between -40 to +6 dB. If you want to set the reverb level independently for each Part, see "Part reverb send level" on page 45.

To select a different reverb level, a MIDI parameter change message for the REVERB OUTPUT LEVEL parameter, containing a new control setting value (between 0 and 7) must be sent to the CBX-T3. For more information see Appendix E "MIDI Data Format" on page 68.

Master tuning

The master tuning function adjusts the overall pitch of the CBX-T3. A MIDI parameter change message for the MASTER TUNE parameter can be sent to the CBX-T3 with the new tuning settings. The pitch value can be set between -100 to +100 cents (100 cents = 1 semitone).

Transpose

This function will allow the overall pitch of the CBX-T3 to be transposed up or down. Use a MIDI parameter change message to adjust the TRANSPOSE parameter value between -24 and +24 semitones.

Chapter 19   *Changing the Part settings*

The CBX-T3 has 16 different Parts. While there are many settings which may be applied to each Part, this chapter lists only a few of the more common ones. See Appendix E "MIDI Data Format" on page 69, for a detailed list of all the possible settings.

Unlike other parts, Part 10, Drum and Percussion sets, will not respond to all the parameter change messages. For example, it will ignore the following parameters: PC VALUE, VOLUME, PAN-POT, REVERB SEND LEVEL.

Part volume

The Part volume function adjusts the volume of a specific Part. A MIDI parameter change message can be sent to the VOLUME parameter of the CBX-T3 with a volume value between 0 and 127. When a Part's volume is set to 0, no sound will be produced by that Part.

This function makes it possible to balance the volume level of each Part, just like a mixing console.

The maximum volume level of each Part is affected by the volume of each voice element. The volume level for individual elements can be set independently. Also the maximum volume level of a part may also be affected by MIDI Control Change expression data or MIDI note velocity data.

♪ **Note:** Part 10, Drum and Percussion sets, ignores this parameter.

Part panpot

Pan alters the left or right position of each Part within the stereo sound field. The following settings are possible:

    8 : Voice

    9 : left → 15 : left center

    0 : center → 7 : right

To select a different pan position for a Part, a MIDI parameter change message for the PANPOT parameter, with a new control setting value, must be sent to the CBX-T3. For more information see Appendix E "MIDI Data Format" on page 69.

When set to Voice, the pan position of an individual voice element overrides this function.

♪ **Note:** Part 10, Drum and Percussion sets, is not affected by this parameter.

Part reverb send level

The reverb send level alters the reverb intensity of each Part. A MIDI parameter change message for the REVERB SEND LEVEL parameter can be sent to the CBX-T3, with a value between 0 and 8, for the new reverb level setting.

♪ **Note:** Part 10, Drum and Percussion sets, is not affected by this parameter.

Part MIDI receive channel

You can change the MIDI receive channel for each Part. As well, you can set a particular MIDI receive channel to OFF. This feature is especially helpful when you want another MIDI instrument in your system to play a particular Part. In such a case the CBX-T3 will ignore the MIDI data received by that Part, and another MIDI instrument, set to that Part's MIDI channel, can play the MIDI data it receives.

| Chapter 20 | *Editing Voices* |

There are four different voice banks for the CBX-T3's Parts 1 through 16 (except Part 10, which is only for Drum and Percussion sets):

- General MIDI (128 voices)
- Internal (64 voices)
- Disk Orchestra (72 voices)
- C/M (128 voices for Parts 1 through 9 and 64 voices for Parts 11 through 16)

The General MIDI, Disk Orchestra, and C/M preset voices are stored in the CBX-T3's internal ROM. ROM stands for Read Only Memory, meaning that these preset voices are stored permanently, and cannot be edited. To edit voices you must make use of the CBX-T3's other kind of memory — RAM, or Random Access Memory. Data can be read and edited with this type of memory. The CBX-T3's RAM has room for 64 voices, which are stored in the Internal voice bank. Every time the CBX-T3 is switched on, the first 64 voices from the General MIDI voice bank are automatically copied from the ROM to the RAM's Internal Voice Bank. RAM memory, however, is not permanent— each time the CBX-T3's power is turned off, its RAM memory is erased. Therefore, any voices which you have edited in the Internal voice bank and want to keep, must be saved before the CBX-T3's power is turned off. See "Performing a MIDI Bulk Dump" on page 28 for information on how to save voices.

You can use MIDI parameter change messages to change voices in the Internal voice bank. Following are some examples of the parameters that can be changed:

- Element level
- Element detune
- Element pitch rate scaling
- Portamento time
- Voice name

There are many other parameters that can be edited as well. For more information, refer to Appendix E "MIDI Data Format" on page 70. Also, for more information regarding MIDI, refer to Chapter 17 "Controlling the CBX-T3 with MIDI messages" on page 38.

Following are descriptions of some of the more common editing operations performed on voice elements.

Voice elements

Stored in the built-in ROM of the CBX-T3 are AWM Sound elements. These elements are the building blocks for the CBX-T3's 192 preset voices and 10 Drum and Percussion sets. Some voices consist of one element, some of two, and level, detune, and pan editing is possible for each individual element.

Adjusting the volume of voice elements

Voices which consist of two elements can have the volume of its individual elements independently adjusted. By altering the balance between two elements you can change the tonal characteristics of a voice. The volume of each element can be adjusted within the range of 0 to 127.

This function can also be used as an overall volume control, by equally increasing or decreasing the volume of both voice elements. Of course the volume of voices which consist of only one element can also be adjusted.

Individual elements volume level is also affected by the Part volume level to which they are assigned. Therefore if both elements of a voice are set to 127 but they do not perform at the maximum volume level, check that Part's volume level setting. See "Part volume" on page 44.

MIDI Control Change expression data also affects the maximum volume level of a Part. So if the maximum volume level is not being produced, it could be that MIDI Control Change expression data is being input to the CBX-T3 from your MIDI master keyboard, synthesizer, or MIDI controller.

To adjust the volume of a voice element, a MIDI parameter change message for the ELEMENT1 LEVEL or ELEMENT2 LEVEL parameter, with the new control setting value must be sent to the CBX-T3. See Appendix E "MIDI Data Format" on page 70.

Detuning voice elements

This function allows you to detune voice elements. By detuning a voice element you can produce a chorus type effect. If you want to produce a chorus type effect with a voice that has only one element, you must assign the same voice to two different Parts. Set both Parts to the same MIDI receive channel, then detune the element of one of the voices.

In certain cases you may wish to use an instrument that is actually out of tune. If this is the case, detuning one or both elements of a voice only slightly should produce this effect nicely.

Each voice element can be detuned between -32 and +32 cents. One octave contains 12 semitones, and one semitone equals 100 cents.

To detune a voice element, a MIDI parameter change message for the ELEMENT1 DETUNE or ELEMENT2 DETUNE parameter, with the new control setting value must be sent to the CBX-T3. See Appendix E "MIDI Data Format" on page 71.

Panning voice elements

This function allows you to position sounds anywhere between your right and left speakers, or stereo headphones. It works like the balance control normally found on stereo amplifiers, only in this case it can be used for individual voice elements. This function will only take effect if you are using a stereo system for your output. Also, a Part's pan position overrides the panning of voice elements. Following are the possible pan position settings:

9: left ... 0: center ... 7: right and 15: left center

To pan a voice element, a MIDI parameter change message for the PANPOT parameter, with the value of the new control setting, must be sent to the CBX-T3. For more information, refer to Appendix E "MIDI Data Format" on page 72.

Naming voices

Voices in the Internal memory bank can be given a new name. This is a good idea when you want to use a voice you've edited together with the preset voices. The maximum length of a voice name is eight characters, and only ASCII characters may be used.

To rename a voice, a MIDI parameter change message for the VC NAME 1 through VC NAME 8 parameters, with the ASCII value, must be sent to the CBX-T3.

space	!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
P	Q	R	S	T	U	V	W	X	Y	Z	[	¥	]	^	_
a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p
q	r	s	t	u	v	w	x	y	z	{	|	}	→	←	

For more information on how to send a MIDI parameter change message refer to Appendix E "MIDI Data Format" on page 71.

CBX-T3 preset voice and Drum and Percussion set lists

Voice list

Voice No.	Voice name	Elements	Voice bank Program Change number assignments			
			General MIDI	Disk Orchestra	C/M Parts 1...9	C/M Parts 11...16
	Piano					
1	Acoustic Grand Piano	1	1		1	1, 2, 5
2	Bright Acoustic Piano	1	2		2	6, 7
3	Electric Grand Piano	2	3	52	4, 5	3
4	Honky-tonk Piano	2	4	50	8	4
5	Electric Piano 1	2	5	51	7	8, 9, 10
6	Electric Piano 2	2	6		3, 6	
7	Harpsichord	1	7	15	17, 18, 19	
8	Clavi.	1	8	19	20, 21, 22	
	Chromatic Percussion					
9	Celesta1	1	9		23, 24	
10	Glockenspiel	1	10	20	102	
11	Music Box	2	11			
12	Vibraphone	1	12	17	98, 99	
13	Marimba	1	13	18	105	
14	Xylophone	1	14		104	
15	Tubular Bells	1	15		103	
16	Dulcimer	2	16			
	Organ					
17	Drawbar Organ	1	17		9	38, 39, 42, 43
18	Percussive Organ	1	18		10, 11	40, 44
19	Rock Organ	1	19		12	
20	Church Organ	1	20	77	13, 15	
21	Reed Organ	1	21		14	
22	Accordion	2	22	8	16	
23	Harmonica	1	23	42	88	
24	Tango Accordion	2	24			
	Guitar					
25	Acoustic Nylon Guitar	1	25	25	60	
26	Acoustic Steel Guitar	1	26	54	61	11, 12
27	Electric Jazz Guitar	1	27	26, 73	62	
28	Electric Clean Guitar	1	28	27, 55, 70	63	
29	Electric muted Guitar	1	29	71		
30	Overdriven Guitar	1	30			
31	Distortion Guitar	1	31			
32	Guitar Harmonics	1	32			
	Bass					
33	Acoustic Bass	1	33	29, 72	65, 66	29
34	Electric Bass fingered	1	34	30	67	24
35	Electric Bass picked	1	35		68	26
36	Fretless Bass	1	36		71, 72	28
37	Slap Bass 1	1	37		69	
38	Slap Bass 2	1	38		70	
39	Synth Bass 1	1	39		29, 31	
40	Synth Bass 2	1	40	32	30, 32	
	Strings					
41	Violin	1	41	10, 76	53	
42	Viola	1	42		54	
43	Cello	1	43		55, 56	
44	Contrabass	1	44		57	
45	Tremolo Strings	1	45			
46	Pizzicato Strings	1	46	57	52	

Voice No.	Voice name	Elements	Voice bank Program Change number assignments			
			General MIDI	Disk Orchestra	C/M	
					Parts 1...9	Parts 11...16
47	Orchestral Harp	1	47	58	58, 59	
48	Timpani 1	1	48		113	
	Ensemble					
49	String Ensemble1	1	49		49	35
50	String Ensemble2	1	50	75	50	34
51	Synth Strings 1	2	51		51	
52	Synth Strings 2	2	52			
53	Choir Aahs	1	53	43, 64		31
54	Voice Oohs	1	54			
55	Synth Voice	1	55			
56	Orchestral Hit	1	56		123	64
	Brass					
57	Trumpet	1	57	2	89, 90	47, 48
58	Trombone	1	58		91, 92	49, 50, 51
59	Tuba	1	59		95	
60	Muted Trumpet	1	60	41		
61	French Horn	1	61	3	93, 94	
62	Brass Section	1	62		96, 97	59
63	Synth Brass 1	2	63		25, 27	
64	Synth Brass 2	2	64		26, 28	
	Reed					
65	Soprano Sax	1	65		79	55
66	Alto Sax	1	66		80	56
67	Tenor Sax	1	67		81	57
68	Baritone Sax	1	68		82	58
69	Oboe	1	69	6	85	
70	English Horn	1	70		86	
71	Bassoon	1	71	81	87	
72	Clarinet	1	72	5	83, 84	
	Pipe					
73	Piccolo	1	73		75, 76	
74	Flute	1	74		73, 74	
75	Recorder	1	75		77	
76	Pan Flute	1	76		78	
77	Bottle Blow	2	77		111	
78	Shakuhachi	2	78		108	
79	Whistle	1	79		109, 110	
80	Ocarina	1	80			
	Synth Lead					
81	Lead 1 (square)	2	81		48	
82	Lead 2 (saw tooth)	2	82			
83	Lead 3 (calliope)	2	83			
84	Lead 4 (chiff)	2	84			
85	Lead 5 (charang)	2	85			
86	Lead 6 (voice)	2	86			
87	Lead 7 (fifths)	2	87			
88	Lead 8 (bass+lead)	2	88			
	Synth Pad					
89	Pad 1 (new age)	2	89		33	
90	Pad 2 (warm)	2	90			
91	Pad 3 (polysynth)	2	91			
92	Pad 4 (choir)	2	92		35	
93	Pad 5 (bowed)	2	93		36	
94	Pad 6 (metallic)	2	94			
95	Pad 7 (halo)	2	95			
96	Pad 8 (sweep)	2	96			
	Synth Effect					
97	SFX 1 (rain)	2	97		42	
98	SFX 2 (soundtrack)	2	98		37	
99	SFX 3 (crystal)	2	99			

Voice No.	Voice name	Elements	Voice bank Program Change number assignments			
			General MIDI	Disk Orchestra	C/M Parts 1...9	C/M Parts 11...16
100	SFX 4 (atmosphere)	2	100		38	
101	SFX 5 (brightness)	2	101			
102	SFX 6 (goblins)	2	102			
103	SFX 7 (echoes)	2	103			
104	SFX 8 (sci-fi)	2	104			
	Ethnic					
105	Sitar	1	105	28	64	
106	Banjo	1	106	56		
107	Shamisen	1	107			
108	Koto	1	108		106	
109	Kalimba	1	109			
110	Bag pipe	2	110			
111	Fiddle	1	111			
112	Shanai	1	112			
	Percussive					
113	Tinkle Bell	2	113			
114	Agogo	1	114			
115	Steel Drums	2	115	59		
116	Woodblock	1	116			
117	Taiko Drum	1	117		118	
118	Melodic Tom	1	118		114	
119	Synth Drum	1	119		116	
120	Reverse cymbal	1	120			
	Sound Effects					
121	Guitar Fret Noise	1	121			
122	Breath Noise	1	122			
123	Seashore	2	123			
124	Bird Tweet	2	124			
125	Telephone Ring	1	125		124	
126	Helicopter	2	126			
127	Applause	2	127			
128	Gun Shot	1	128			
	Various					
129	SynHarmo	2			34	
130	SynWarm	2			39	
131	SynFunny	1			40	
132	SynEcho1	2			41	
133	SynOboe	2			43	
134	SynEcho2	2			44	
135	SynSolo	2			45	
136	SynReedOrgan	2			46	
137	SynBell	2			47	
138	MalletSy	1			100	
139	MalletWind	2			101	
140	Sho	1			107	
141	Breathy	2			112	
142	DeepSnare	1			115	
143	Syn Tom2	1			117	
144	TaikoRim	1			119	
145	Cymbal	1			120	
146	Castanet	1			121	
147	Triangle	1			122	
148	Bird	1			125	
149	Jam	2			126	
150	EffectWater	2			127	
151	EffectJungle	2			128	
152	Acoustic Steel guitar 2	2				13
153	Electric muted guitar 2	2				14
154	Electric muted guitar 3	1				15
155	Slap Bass 3	2				16

Voice No.	Voice name	Elements	Voice bank Program Change number assignments			
			General MIDI	Disk Orchestra	C/M Parts 1...9	C/M Parts 11...16
156	Slap Bass 4	2				17
157	Slap Bass 5	2				18, 22
158	Slap Bass 6	2				19
159	Slap Bass 7	2				20
160	Slap Bass 8	2				21
161	Slap Bass 9	2				23
162	Electric Bass fingered 2	2				25
163	Electric Bass picked 2	2				27
164	Choir Aah 2	1				30
165	Choir Aah 3	2				32
166	Choir Aah 4	2				33
167	String Ensemble 3	2				36, 37
168	Percussive Organ 2	2				41, 45, 46
169	Brass section 2	2				54, 61, 62, 63
170	Electric Piano DX	1		14		
171	Synth Piano	2		53		
172	Celesta 2	1		16		
173	Clavinova tone	2		69		
174	Jazz Organ	2		12, 66, 83		
175	Combo Organ	2		44		
176	Pipe Organ	2		11, 65		
177	Slap Bass 10	2		31		
178	Brass section 3	2		1, 61		53
179	Pop Brass	1		74		52, 60
180	Synth Brass 3	2		21, 67		
181	Saxophone 1	2		4, 68		
182	Saxophone 2	2		78		
183	Synth crystal	2		23		
184	Synth Wood	2		45		
185	String Ensemble 4	2		9, 63		
186	Synth Strings 3	2		46		
187	Synth Choir 2	2		47		
188	Flute 2	1		7, 62, 80		
189	Acoustic Grand piano 2	1		13, 49		
190	Bright Acoustic piano 2	1		48		
191	Timpani 2	1		24		
192	Electric bass Heavy	2		79		

Standard, Room, Power, and Electronic Drum and Percussion sets

Note#	pgm# Note	1 Standard Set (GM)	9 Room Set	17 Power Set	25 Electronic Set
27	D#0				
28	E0				
29	F0	Scratch Push	↩	↩	↩
30	F#0	Scratch Pull	↩	↩	↩
31	G0	Stick	↩	↩	↩
32	G#0	Click Noise	↩	↩	↩
33	A0	Metronome Click	↩	↩	↩
34	A#0	Metronome Bell	↩	↩	↩
35	B0	Acoustic Bass Drum	↩	↩	↩
36	C1	Bass Drum 1	↩	MONDO Kick	Elec BD
37	C#1	Side Stick	↩	↩	↩
38	D1	Acoustic Snare	↩	Gated SD	Elec SD
39	D#1	Hand Clap	↩	↩	↩
40	E1	Electric Snare	↩	↩	Gated SD
41	F1	Low Floor Tom	Room Low Tom 2	Room Low Tom 2	Elec Low Tom 2
42	F#1	Closed Hi-Hat	↩	↩	↩
43	G1	High Floor Tom	Room Low Tom 1	Room Low Tom 1	Elec Low Tom 1
44	G#1	Pedal Hi-Hat	↩	↩	↩
45	A1	Low Tom	Room Mid Tom 2	Room Mid Tom 2	Elec Mid Tom 2
46	A#1	Open Hi-Hat	↩	↩	↩
47	B1	Low-Mid Tom	Room Mid Tom 1	Room Mid Tom 1	Elec Mid Tom 1
48	C2	Hi-Mid Tom	Room Hi Tom 2	Room Hi Tom 2	Elec Hi Tom 2
49	C#2	Crash Cymbal 1	↩	↩	↩
50	D2	High Tom	Room Hi Tom 1	Room Hi Tom 1	Elec Hi Tom 1
51	D#2	Ride Cymbal 1	↩	↩	↩
52	E2	Chinese Cymbal	↩	↩	Reverse Cymbal
53	F2	Ride Bell	↩	↩	↩
54	F#2	Tambourine	↩	↩	↩
55	G2	Splash Cymbal	↩	↩	↩
56	G#2	Cowbell	↩	↩	↩
57	A2	Crash Cymbal 2	↩	↩	↩
58	A#2	Vibraslap	↩	↩	↩
59	B2	Ride Cymbal 2	↩	↩	↩
60	C3	Hi Bongo	↩	↩	↩
61	C#3	Low Bongo	↩	↩	↩
62	D3	Mute Hi Conga	↩	↩	↩
63	D#3	Open Hi Conga	↩	↩	↩
64	E3	Low Conga	↩	↩	↩
65	F3	High Timbale	↩	↩	↩
66	F#3	Low Timbale	↩	↩	↩
67	G3	High Agogo	↩	↩	↩
68	G#3	Low Agogo	↩	↩	↩
69	A3	Cabasa	↩	↩	↩
70	A#3	Maracas	↩	↩	↩
71	B3	Short Whistle	↩	↩	↩
72	C4	Long Whistle	↩	↩	↩
73	C#4	Short Guiro	↩	↩	↩
74	D4	Long Guiro	↩	↩	↩
75	D#4	Claves	↩	↩	↩
76	E4	Hi Wood Block	↩	↩	↩
77	F4	Low Wood Block	↩	↩	↩
78	F#4	Mute Cuica	↩	↩	↩
79	G4	Open Cuica	↩	↩	↩
80	G#4	Mute Triangle	↩	↩	↩
81	A4	Open Triangle	↩	↩	↩
82	A#4	Shaker	↩	↩	↩
83	B4				
84	C5				
85	C#5	Castanets	↩	↩	↩
86	D5	Taiko-Drum High	↩	↩	↩
87	D#5	Taiko-Drum Low	↩	↩	↩

Standard, Analog, Brush, Orchestra, and Disk Orchestra Drum and Percussion sets

Note#	pgm# Note	26 Analog Set	41 Brush Set	49 Orchestra Set	126 Disk Orchestra
27	D#0			Closed Hi-Hat	
28	E0			Pedal Hi-Hat	
29	F0	※	※	Open Hi-Hat	
30	F#0	※	※	Ride Cymbal	BRUSH ROLL
31	G0	※	※		※
32	G#0	※	※	※	HH closed-heavy
33	A0	※	※	※	
34	A#0	※	※	※	Crash CYM-light
35	B0	※	※	※	BD-light
36	C1	Analog Bass drum	Bass Drum 1	Concert BD	SD+RIM-heavy
37	C#1	※	※	※	RIDE CYM-cup
38	D1	Analog Snare Drum	Brush Swish	Concert SD	SD+RIM-light
39	D#1	※	Brush Slap	Castanets	BRUSH CYMBAL
40	E1	Electric Snare	Brush Roll	Concert SD	SD echo 2
41	F1	Analog Low Tom 2	Low Floor Tom	Timpani F	BD-normal
42	F#1	Analog CHH	Closed Hi Hat	Timpani F#	RIM SHOT
43	G1	Analog Low Tom 1	High Floor Tom	Timpani G	SD-heavy
44	G#1	Analog CHH	Pedal Hi-Hat	Timpani G#	BRUSH SHOT
45	A1	Analog Mid Tom 2	Low Tom	Timpani A	SD-light
46	A#1	Analog OHH	Open Hi-Hat	Timpani A#	HH-pedal
47	B1	Analog Mid Tom 1	Low-Mid Tom	Timpani B	SD-echo
48	C2	Analog Hi Tom 2	Hi-Mid Tom	Timpani C	TOM-4
49	C#2	※	※	Timpani C#	HH-closed-normal
50	D2	Analog Hi Tom 1	High Tom	Timpani D	TOM-3
51	D#2	※	※	Timpani D#	HH-open
52	E2	Chinese Cymbal	※	Timpani E	TOM-2
53	F2	※	※	Timpani F	TOM-1
54	F#2	※	※	※	RIDE CYM-normal
55	G2	※	※	※	E.TOM 3
56	G#2	※	※	※	Crash CYM-normal
57	A2	※	※	Crash Cymbal	E.TOM 2
58	A#2	※	※	※	Crash CYM-normal
59	B2	※	※	Concert Cymbal	E.TOM 1
60	C3	※	※	※	CONGA-low
61	C#3	※	※	※	CABASA
62	D3	Analog Hi Conga	Mute Hi Conga	※	CONGA-high
63	D#3	Analog Mid Conga	Open Hi Conga	※	METRONOME
64	E3	Analog Low Conga	Low Conga	※	BONGO-high
65	F3	※	※	※	TIMBALE-low
66	F#3	※	※	※	CLAVES
67	G3	※	※	※	TIMBALE-high
68	G#3	※	※	※	CASTANETS
69	A3	※	※	※	CUICA-low
70	A#3	※	※	※	COWBELL
71	B3	※	※	※	CUICA-high
72	C4	※	※	※	HANDCLAPS
73	C#4	※	※	※	AGOGO-low
74	D4	※	※	※	
75	D#4	Analog Claves	Claves	※	AGOGO-high
76	E4	※	※	※	BONGO-low
77	F4	※	※	※	CUICA-low
78	F#4	※	※	※	TAMBOURINE
79	G4	※	※	※	Crash CYM-normal
80	G#4	※	※	※	TRIANGLE-closed
81	A4	※	※	※	NOISE
82	A#4	※	※	※	TRIANGLE-open
83	B4				
84	C5				
85	C#5	※	※	※	※
86	D5	※	※	※	※
87	D#5	※	※	※	※

RX and C/M Drum and Percussion sets

	pgm#	127		pgm#	127 (cont'd)		pgm#	128
Note#	Note	RX	Note#	Note	RX (cont'd)	Note#	Note	C/M
27	D#0	Bass Drum 1	88	E5	Acoustic Snare	27	D#0	
28	E0	Bass Drum 1	89	F5	Acoustic Snare	28	E0	
29	F0	Bass Drum 1	90	F#5	Acoustic Snare	29	F0	
30	F#0	Bass Drum 1	91	G5	Acoustic Snare	30	F#0	
31	G0	Bass Drum 1	92	G#5	Acoustic Snare	31	G0	
32	G#0	Bass Drum 1	93	A5	Acoustic Snare	32	G#0	
33	A0	Bass Drum 1	94	A#5	Acoustic Snare	33	A0	
34	A#0	Bass Drum 1	95	B5	Electric Snare	34	A#0	
35	B0	Acoustic Bass Drum	96	C6	Acoustic Snare	35	B0	Acoustic B Drum
36	C1	Bass Drum 1	97	C#6	Electric Snare	36	C1	Acoustic B Drum
37	C#1	Bass Drum 1	98	D6	Electric Snare	37	C#1	Rim Shot
38	D1	Bass Drum 1				38	D1	Acoustic S Drum
39	D#1	Bass Drum 1				39	D#1	Hand Clap
40	E1	Low Floor Tom				40	E1	Electric S Drum
41	F1	High Floor Tom				41	F1	Acoustic L Tom
42	F#1	Low Tom				42	F#1	Closed High Hat
43	G1	Hi Mid Tom				43	G1	Acoustic L Tom
44	G#1	Acoustic Bass Drum				44	G#1	Open Hi-Hat 2
45	A1	Bass Drum 1				45	A1	Acoustic N Tom
46	A#1	Side Stick				46	A#1	Open Hi-Hat 1
47	B1	Low Floor Tom				47	B1	Acoustic M Tom
48	C2	High Floor Tom				48	C2	Acoustic H Tom
49	C#2	Acoustic Snare				49	C#2	Crash Cymbal
50	D2	Low Tom				50	D2	Acoustic H Tom
51	D#2	Side Stick				51	D#2	Ride Cymbal
52	E2	Acoustic Snare				52	E2	
53	F2	Hi Mid Tom				53	F2	
54	F#2	Hand Clap				54	F#2	Tambourine
55	G2	Cowbell				55	G2	
56	G#2	Cabasa				56	G#2	Cowbell
57	A2	Closed Hi Hat				57	A2	
58	A#2	Tambourine				58	A#2	
59	B2	Open Hi-Hat				59	B2	
60	C3	Crash Cymbal 1				60	C3	High Bongo
61	C#3	Chinese Cymbal				61	C#3	Low Bongo
62	D3	Ride Bell				62	D3	Mute Hi Conga
63	D#3	Ride Cymbal 1				63	D#3	Open Hi Conga
64	E3	Low Conga				64	E3	Low Conga
65	F3	Open Hi Conga				65	F3	High Timbale
66	F#3	Mute Hi Conga				66	F#3	Low Timbale
67	G3	Low Bongo				67	G3	High Agogo
68	G#3	Hi Bongo				68	G#3	Low Agogo
69	A3	Low Timbale				69	A3	Cabasa
70	A#3	High Timbale				70	A#3	Maracas
71	B3					71	B3	Short Whistle
72	C4					72	C4	Long Whistle
73	C#4	Claves				73	C#4	Quijada
74	D4	Low Agogo				74	D4	
75	D#4	High Agogo				75	D#4	Claves
76	E4					76	E4	
77	F4					77	F4	
78	F#4	Short Whistle				78	F#4	
79	G4					79	G4	
80	G#4					80	G#4	
81	A4					81	A4	
82	A#4					82	A#4	
83	B4					83	B4	
84	C5	Electric Snare				84	C5	
85	C#5	Electric Snare				85	C#5	
86	D5	Electric Snare				86	D5	
87	D#5	Acoustic Snare				87	D#5	

Troubleshooting

Symptom	Action
No sound	Check that all your equipment is switched on.
	Check the audio connections, including cables.
	Make sure the CBX-T3's MASTER VOLUME control is turned up.
	Check the settings on your amplifier, or mixer; input select, volume, speakers, headphones, etc.
	If you still have no sound, the problem must be somewhere between the CBX-T3's outputs and your speakers.
If there is no problem between your CBX-T3's outputs and your speakers, your CBX-T3 might not respond to your MIDI keyboard.	Check the MIDI connections.
	Make sure your MIDI keyboard's MIDI transmit channel matches that of the CBX-T3 Part you want to play, see page 44.
	Check whether the MIDI indicators on the front panel light. This will tell you whether or not the CBX-T3 Part is receiving MIDI data.
	Make sure that the HOST SELECT switch is set correctly.
The MIDI indicators show that MIDI data is received, but no sound is heard.	Make sure that CBX-T3's MASTER VOLUME control is turned up.
	Check the Part volume setting, see page 44.
	Check the Part voice element volume, see page 47.
Sound is produced from only one speaker.	Check the audio connections, including cables.
	Check the Part pan setting, page 44.
	If the Part pan is set to voice, check the voice element pan setting, page 48.
The voice elements pan position has been edited, but the effect cannot be heard.	Make sure that the Part pan setting is voice, see page 44.
Two or more voices are playing the same thing.	Check the Parts' MIDI channel assignment, see page 45.
Bulk dump messages cannot be sent or received.	Check the MIDI connections.
	Make sure that the CBX-T3's device number matches the transmitting or receiving unit's device number, see page 24.
The reverb effect cannot be heard.	Check the master reverb level setting, see page 43.
	Check the Part reverb send depth, see page 45.
MIDI program change numbers don't select the correct voices.	Check the sound module mode, see page 24.
The pitch sounds wrong.	Check the master tuning, see page 43.
	Check the voice elements' detuning, see page 47.

MIDI and TO HOST cable specifications

MIDI In, Out, and Thru

Standard MIDI cable, for MIDI In, Out, and Thru connections. Maximum length 15 meters.

```
DIN 5-PIN                                              DIN 5-PIN
              4 o————————————o 4
              2 o————————————o 2   (GND)
              5 o————————————o 5
```
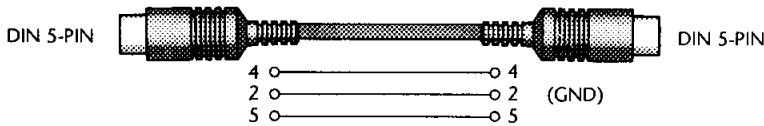
TO HOST port to the Macintosh printer or modem port

Apple Macintosh Peripheral cable (#M0197)

```
MINI DIN                                        MINI DIN
8-PIN                                           8-PIN
          1 o————————————o 2   (HSK i)
          2 o————————————o 1   (HSK o)
          3 o————————————o 5   (RxD -)
          4 o————————————o 4   (GND)
          5 o————————————o 3   (TxD -)
          6 o————————————o 8   (RxD +)
          7 o————————————o 7   (GP i)
          8 o————————————o 6   (TxD +)
```
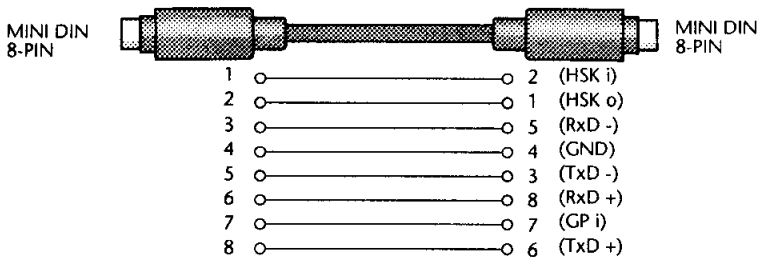
TO HOST port to the IBM-PC, PC-AT compatible or PS/2 type computers

DB-25 (female) for IBM PC and compatibles

If your IBM PC compatible or PS/2 type computer is equipped with a standard 25-pin male asynchronous communication adaptor, a 8-pin MINI DIN to D-SUB 25-pin conversion cable should be used to connect to the TO HOST port on the CBX-T3. Do not use a cable that is longer than 1.8 meters.

```
MINI DIN                                        D-SUB
8-PIN                                           25-PIN
          1 o————————————o 5 (CTS)
          2 o————————————o 4 (RTS)
          3 o————————————o 3 (RxD)
          4 o————————————o 7 (GND)
          8 o———┘
          5 o————————————o 2 (TxD)
```
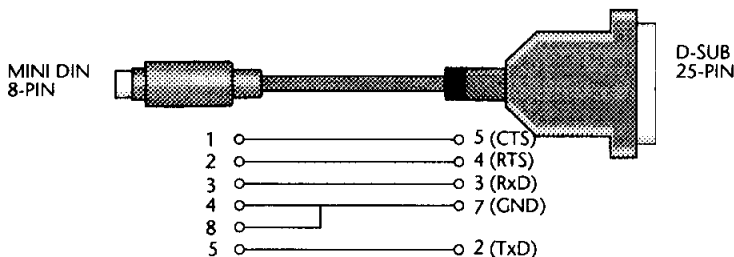
DB-9 (female) for IBM PC-AT and compatibles

If your IBM PC-AT compatible type computer is equipped with a standard 9-pin male serial port, a 8-pin MINI DIN to D-SUB 9-pin conversion cable should be used to connect to the TO HOST port on the CBX-T3. Do not use a cable that is longer than 1.8 meters.

```
MINI DIN                                        D-SUB
8-PIN                                           9-PIN
          1 o————————————o 8 (CTS)
          2 o————————————o 7 (RTS)
          3 o————————————o 2 (RxD)
          4 o————————————o 5 (GND)
          8 o———┘
          5 o————————————o 3 (TxD)
```

Specifications
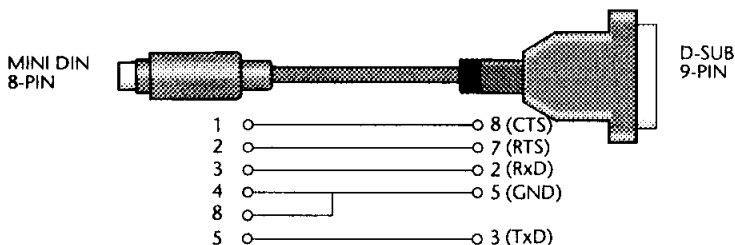
Internal ROM voices	192 instrument voices and 10 drum & percussion sets
Internal RAM voices	64 internal voices locations
Polyphony	28-note DVA (Dynamic Voice Allocation)
Multi-timbral	16 voices simultaneous (voices assigned to 16 Parts)
Sound sampling	AWM (Advanced Wave Memory)
Reverb effects	Yamaha custom DSP (Digital Signal Processor)
Sound module mode	General MIDI LEVEL1 Disk Orchestra (Yamaha) C/M (semi-compatibility with various desktop music systems)
Controls	MASTER VOLUME control INPUT control
Buttons & switches	POWER ON/OFF switch GM-L1, DISK ORCH, and C/M MODE buttons
Indicators	MIDI channel × 16 PEAK × 1
LINE OUT (R and L/MONO) ports	1/4" (6.35mm) mono jack socket x 2
AUDIO IN port	3.5 mm stereo mini jack × 1
PHONES port	3.5 mm stereo mini jack × 1
MIDI ports	IN, OUT, and THRU (5-PIN DIN socket)
TO HOST port	8-PIN mini DIN socket
Host computer selection and data transfer rate	MIDI - 31,250 bps (bits per second) Mac - 31,250 bps PC-1 -31,250 bps PC-2 - 38,400 bps
Power supply voltage	15 V, 500 mA
DC IN port	2.1 mm mini power type (for use with PA-1505 adaptor)
Dimensions (W × D × H)	91 × 217 × 224.1 mm (3.59" × 8.55" × 8.83") including stand
Weight	1.0 kg (2.20 lbs)

Specifications are subject to change without notice.

MIDI Data Format

1. MIDI receive and send diagrams

MIDI receive conditions

```
MIDI ──────┬──────────────────────── $FE ACTIVE SENSING
        Rxch ≠ off
           ├──────────────────────── $8n NOTE OFF
           ├──────────────────────── $9n NOTE ON
           ├──────┬───────────────── $Bn, $00 BANK SELECT MSB
           │      ├───────────────── $Bn, $20 BANK SELECT LSB
           │      ├───────────────── $Bn, $01 MODULATION
           │      ├───────────────── $Bn, $05 PORTAMENT TIME
           │      ├───────────────── $Bn, $06 DATA ENTRY MSB
           │      ├───────────────── $Bn, $26 DATA ENTRY LSB
           │         ≠ off
           │    ─<cc>──────────────── $Bn, $07 MAIN VOLUME
           │      ├───────────────── $Bn, $0A PANPOT
           │         ≠ off
           │    ─<cc>──────────────── $Bn, $0B EXPRESSION
           │      ├───────────────── $Bn, $40 HOLD 1
           │      ├───────────────── $Bn, $41 PORTAMENT
           │      ├───────────────── $Bn, $5B REVERB DEPTH
           │      ├───────────────── $Bn, $64, $00, $65, 00, $06, $mm
           │      │                      PITCH BEND SENSITIVITY
           │      ├───────────────── $Bn, $64, $01, $65, 00, $06, $mm, $26, $11
           │      │                      FINE TUNING
           │      ├───────────────── $Bn, $64, $02, $65, 00, $06, $mm
           │      │                      COARSE TUNING
           │      ├───────────────── $Bn, $64, $7F, $65, 7F
           │      │                      RPN RESET
           │      ├───────────────── $Bn, $78, $00 ALL SOUND OFF
           │      ├───────────────── $Bn, $79, $00 RESET ALL CONTROLLERS
           │      ├───────────────── $Bn, $7B, $00 ALL NOTE OFF
           │      ├───────────────── $Bn, $7C, $00 OMNI OFF
           │      ├───────────────── $Bn, $7D, $00 OMNI ON
           │      ├───────────────── $Bn, $7E, $mm MONO
           │      └───────────────── $Bn, $7F, $00 POLY
           │         ≠ off
           ├────<pc>──────────────── $Cn PROGRAM CHANGE
           ├──────────────────────── $Dn CHANNEL PRESSURE
           └──────────────────────── $En PITCH BENDER
```

n   = MIDI channel
Rxch = Receive channel
cc   = CONTROL CHANGE volume, expression

MIDI receive conditions (Cont'd)

```
MIDI ─┬────────────── $F0, $43, $1x, $1B, $7F, $cc, $F7 CBX-T3 Switch Remote
      ├────────────── $F0, $7E, $7F (or $xv), $09, $01, $F7 GENERAL MIDI MODE ON
      ├────────────── $F0, $7F, $7F (or $xv), $04, $01 MIDI MASTER VOLUME
      ├────────────── $F0, $43, $73, $01, $14, $F7 DISK MUSIC ON
  <Exc>─── ≠ off
      ├────────────── $F0, $43, $1v, $27, $30, $00, $00 Parameter change
      │                              :   :   :          (System)
      ├────────────── $F0, $43, $1v, $27, $30, $00, $0A Parameter change
      │                              :   :   :          (MULTI common)
      ├────────────── $F0, $43, $1v, $27, $30, $00, $10 Parameter change
      │                              :   :   :          (MULTI part)
      ├────────────── $F0, $43, $1v, $27, $30, $03, $10 Parameter change
      │                              :   :   :          (Interval Voice Memory)
      ├────────────── $F0, $43, $1v, $27, $30, $33, $10 Parameter change
      │                              :   :   :          (Drums setup)
      ├────────────── $F0, $43, $1v, $27, $30, $35, $06 All Parameters Reset
      │
      └────────────── $F0, $43, $2v, $7A, (LM 0068RQ), ─┐
                                                        │
         ┌──────────────────────────────────────────────┘
         ├────────── $30, $00, $00 Dump request
         │               :   :   :          (System)
         ├────────── $30, $00, $0A Dump request
         │               :   :   :          (MULTI common)
         ├────────── $30, $00, $10 Dump request
         │               :   :   :          (MULTI part)
         ├────────── $30, $03, $10 Dump request
         │               :   :   :          (Internal Voice Memory)
         ├────────── $30, $33, $10 Dump request
         │               :   :   :          (Drums setup)
         │           $30, $35, $02
         ├────────── $24, $00, $00 Dump request
         │               :   :   :          (Program Change Table)
         ├────────── $24, $08, $00 Dump request
         │               :   :   :          (System information)
         ├────────── $24, $08, $10 Dump request
         │               :   :   :          (Preset Voice Memory)
         └────────── $25, $18, $0F
```

Exc = Exclusive on/off
MD = Sound Module Mode
x   = ignored
v   = device number ($0 - $F)
cc = See the appendix table.

MIDI send conditions

```
                        ≠ MIDI
HOST IN ————<sel>————————————————————————————————————————————————————► MIDI
                                                                    │
                                                        <Exc> ≠ off │

$F0, $43, $1v, $27, $30, $00, $00 Parameter change ————————————————┤
                 :   :   :              (System)                   │
$F0, $43, $1v, $27, $30, $00, $0A Parameter change ————————————————┤
                 :   :   :              (MULTI common)             │
$F0, $43, $1v, $27, $30, $00, $10 Parameter change ————————————————┤
                 :   :   :              (MULTI part)               │
$F0, $43, $1v, $27, $30, $03, $10 Parameter change ————————————————┤
                 :   :   :              (Internal Voice Memory)    │
$F0, $43, $1v, $27, $30, $33, $10 Parameter change ————————————————┤
                 :   :   :              (Drums setup)              │
              $30, $35, $02                                        │
$F0, $43, $1v, $27, $24, $00, $00 Parameter change ————————————————┤
                 :   :   :              (Program Change Table)     │
$F0, $43, $1v, $27, $24, $08, $00 Parameter change ————————————————┤
                 :   :   :              (System information)       │
$F0, $43, $1v, $27, $24, $08, $10 Parameter change ————————————————┘
                 :   :   :              (Preset Voice Memory)
              $25, $18, $0F
```

sel = Host Select
Exc = Exclusive on/off

2. Channel messages

Channel messages determine such sound qualities as timbre, pitch, and amplitude.

2.1 Transmission

The CBX-T3 does not transmit channel messages. When the HOST SELECT switch is set to PC-2, PC-1, or MAC, MIDI data is echoed back as follows:
- HOST IN → MIDI OUT
- MIDI IN → HOST OUT.

2.2 Reception

2.2.1 Note ON/OFF

The Note on/off message signals the beginning of a note and describes the pitch and attack velocity of the note.

$9n, $kk, $vv

n	Specifies the MIDI channel	$00-$0F (0-15)	channel 1-16
kk	Specifies the pitch in half steps	$00-$7F (0-127)	C-2-G8
vv	Specifies the key attack velocity	$00-$7F (0-127)	only used for note on

2.2.2 Control Change

The Control Change message conveys various MIDI device settings to the CBX-T3. Below is the general format of a Control Change message.

$Bn, $kk, $vv

n	Specifies the MIDI channel	$00-$0F (0-15)	channel 1-16
kk	Specifies the parameter to be changed	$00-$7F (0-127)	See the detailed list below
vv	Specifies the value of the new control settings	$00-$7F (0-127)	

Following are the individual Control message formats supported by the CBX-T3.

Bank Select MSB (0)

$Bn, $00, $vv

n	Specifies the MIDI channel	$00-$0F	(0-15)	channel 1-16
vv	Specifies the voice bank to be selected	$00-$3F	(0-63)	GM-LEVEL1
		$40-6F	(64-111)	INTERNAL VOICE
		$70-7E	(112-126)	DISK ORCHESTRA
		$7F	(127)	C/M

If a Program Change message is received immediately after Bank Select Data (or message) has been received, the Program Change number will correspond to the selected voice bank. In C/M mode, however, Bank selection is ignored.

Bank Select LSB (32)

$Bn, $20, $vv

n	Specifies the MIDI channel	$00-$0F	(0-15)	channel 1-16
vv	Specifies the voice bank to be selected	$00	(0)	GM-LEVEL1
		$00	(0)	INTERNAL VOICE
		$00	(0)	DISK ORCHESTRA
		$00	(0)	C/M

If a Program Change message is received immediately after Bank Select Data (or message) has been received, the Program Change number will correspond to the selected voice bank. In C/M mode, however, Bank selection is ignored.

Modulation (1)

$Bn, $01, $vv

n	Specifies the MIDI channel	$00-$0F (0-15)	channel 1-16
vv	Specifies the new modulation value	$00-$7F (0-127)	

Portamento Time (5)

$Bn, $05, $vv

n	Specifies the MIDI channel	$00-$0F (0-15)	channel 1-16
vv	Specifies the new Portamento time value	$00-$7F (0-127)	

Data Entry MSB (6)
$Bn, $06, $vv

n	Specifies the MIDI channel	$00~$0F (0~15)	channel 1~16
vv	Specifies the value of the new control settings	$00~$7F (0~127)	

Used to select parameter value specified by, 2.2.7RPN (Registered Parameter Number).

Data Entry LSB (38)
$Bn, $26, $vv

n	Specifies the MIDI channel	$00~$0F (0~15)	channel 1~16
vv	Specifies the value of the new control settings	$00~$7F (0~127)	

Used to select parameter value specified by, 2.2.7RPN (Registered Parameter Number).

Main Volume (7)
$Bn, $07, $vv

n	Specifies the MIDI channel	$00~$0F (0~15)	channel 1~16
vv	Specifies the new master volume value	$00~$7F (0~127)	

Panpot (10)
$Bn, $0A, $vv

n	Specifies the MIDI channel	$00~$0F (0~15)	channel 1~16
vv	Specifies the new Panpot value	$00~$7F (0~127)	

When a Part's PANPOT position is set to VOICE, the pan position is adjusted relative to the pan position of the elements used by the voice.
When a Part's PANPOT position is not set to VOICE, the elements pan position is ignored and complete adjustment of pan position is possible.

Expression (11)
$Bn, $0B, $vv

n	Specifies the MIDI channel	$00~$0F (0~15)	channel 1~16
vv	Specifies the new Expression value	$00~$7F (0~127)	

Hold 1 (64)
$Bn, $40, $vv

n	Specifies the MIDI channel	$0~$F (0~15)	channel 1~16
vv	Specifies the new Hold 1 value	$00~$7F (0~127)	

Portamento (65)
$Bn, $41, $vv

n	Specifies the MIDI channel	$00~$0F (0~15)	channel 1~16
vv	Specifies the new portamento value	$00~$7F (0~127)	

1. Portamento works as follows:
   - When a key of a higher pitch than the currently held key is played the pitch sweeps up from a value 100 cents below the key's pitch.
   - When a key of a lower pitch than the currently held key is played the pitch sweeps down from a value 100 cents above the key's pitch.

Reverb Depth (91)
$Bn, $5B, $vv

n	Specifies the MIDI channel	$00~$0F (0~15)	channel 1~16
vv	Specifies the new Reverb Depth value	$00~$7F (0~127)	

2.2.3 Program Change
You can select one of two Program Change receive modes.
- 1. off: Ignore Program Change
- 2. on: Respond to Program Change

In Disk Orchestra mode, if a Program Change number that is not assigned to a voice is received, it is ignored.

2.2.4 Pitch Bend
Responds to 14-bit pitch bend data.
(-8192 ~ +8191)

2.2.5 Channel Pressure

2.2.6 Channel Mode message

The following Channel Mode messages can be received.

2nd byte	3rd byte	
120 ($78)	0 ($00)	All sound off
121 ($79)	0 ($00)	Reset all controllers
123 ($7B)	0 ($00)	All Note Off
124 ($7C)	0 ($00)	Omni Off
125 ($7D)	0 ($00)	Omni On
126 ($7E)	0 - 16 ($00~$10)	Mono
127 ($7F)	0 ($00)	Poly

2.2.6.1 All Sound Off

All sounds produced on a particular channel (Part) are muted. However, channel messages for particular channels (Parts) such as Note ON and Hold ON are still carried out.

2.2.6.2 Reset All Controllers

Controllers are set to the following values.

Controller	Reset value
Pitch Bend change	0 (neutral)
Channel Pressure	0 (Off)
Modulation	0 (Off)
Expression	127 (Maximum)
Hold 1	0 (Off)
Portamento	0 (Off)
RPN	Not set. The internal data does not change.

2.2.6.3 All Note Off

Turns OFF all notes which are ON in a particular channel. However, when Hold 1 is on, sound generation will not stop until Hold 1 stops.

2.2.6.4 Omni Off

Processing is the same as that for All Note Off.

2.2.6.5 Omni On

Processing is the same as that for All Note Off.

2.2.6.6 Mono

Processing is the same as that for All Note Off. If the 3rd byte (Mono value) is between 0...16, the relevant Part is set to Mode 4 (m=1).

2.2.6.7 Poly

Processing is the same as that for All Note Off. The relevant Part will be set to Mode 3.

2.2.7 RPN (Registered Parameter Number)

Select the control parameter, giving RPN MSB and RPN LSB, then put the parameter value in the Data Entry.
The unit responds to the following RPN.

RPN MSB LSB	Data Entry MSB LSB	
$00 $00	$mm ---	Pitch Bend Sensitivity mm: $00 - $18 (0 - 24 semitones) Up to two octaves can be specified in half semi-steps. Range is set to two semitones when the power is turned on.
$00 $01	$mm $11	Master fine tuning (mm, 11): ($00, $00) - ($40, $00) - ($7F, $7F) (-8192*100/8192 - 0 - +8191*100/8192 cents)
$00 $02	$mm ---	Master coarse tuning mm: $28 - $40 - $58 (-24 - 0 +24 semitones) ---: ignored
$7F $7F	--- ---	RPN reset ---: ignored Set the status so that the RPN number is not specified. The internal set value does not change.

3. System exclusive message

3.1 Parameter Change

The unit handles the following parameter changes.

1. System Data parameter change
2. Multi Common Data parameter change
3. Multi Part Data parameter change
4. Internal Voice Memory parameter change
5. Drums Setup Data parameter change
6. Preset Voice Memory parameter change
7. Program Change Table parameter change
8. System Information
9. All Parameters Reset
10. CBX-T3 Switch Remote
11. General MIDI Mode On
12. MIDI Master Volume
13. Disk Music On

Parameter change transmission is switched off only when Exclusive is set to off.
The parameter change format is as follows.

```
11110000 F0= Exclusive status
01000011 43= YAMAHA ID
0001nnnn nnnn= Device Number
00100111 27= Model ID
0aaaaaaa aaaaaaa = Start Address b20 - b14
0aaaaaaa aaaaaaa = Start Address b13 - b7
0aaaaaaa aaaaaaa = Start Address b6 - b0
0ddddddd ddddddd = Data
         |        |
0ccccccc ccccccc = Check-sum
11110111 F7= End of exclusive
```

Data is correctly processed if the Dump request receive address corresponds with the Start Address and the Dump request's byte count is correct.
For the Start Address and byte count, see the tables on page 67 to page 73.
The sending device must add the header to each parameter attribute. For example, when sending System and Multi parameters with only one header, the receiver can only identify System parameters. Therefore, the sending device must not send different attributes with one header.
- System
- Multi
- Internal voice
- Drums Part
- All parameters reset

Do not send more than 256 bytes in one transmission.
If you have a Dump request of more than 256 bytes, split it into packets, then transmit them at 20ms intervals.
The check sum's lowest 7-bit value is zero after adding the Start Address, Data and check sum.
While sending the data, the HOST in echo back does not function.

3.1.1 System Data parameter change
Refer to appendix tables <1-1> and <1-2>.

3.1.2 Multi Common Data parameter change
Refer to appendix tables <1-1> and <1-3>.

3.1.3 Multi Part Data parameter change
The actual address value = the address at the top of each block + the offset address.
Refer to appendix tables <1-1> and <1-4>.

3.1.4 Drums Setup Data parameter change
The actual address value = the address at the top of each block + the offset address.
If a different Drum and Percussion set is selected, the Drum Setup parameters are initialized.
Refer to appendix tables <1-1> and <1-5>.

3.1.5 Internal Voice Memory parameter change
The actual address value = the address at the top of each block + the offset address.
Refer to appendix tables <1-1> and 1-6>.

3.1.6 Preset Voice Memory parameter change
This data can be sent, but it is ignored if received.
The actual address value = the address at the top of each block + the offset address.
Refer to appendix tables <1-1> and <1-6>.

3.1.7 Program Change Table parameter change
This data can be sent, but it is ignored if received.
Refer to appendix tables <1-1> and <1-7>.

3.1.8 System Information parameter change
This data can be sent, but it is ignored if received.
Refer to appendix tables <1-1> and <1-8>.

3.1.9 All Parameters Reset

```
11110000 F0 = Exclusive status
01000011 43 = YAMAHA ID
0001nnnn nnnn = Device Number
00100111 27 = Model ID
00110000 30 = Start Address b20 - b14
00110101 35 = Start Address b13 - b7
00000110 06 = Start Address b6 - b0
00000000 00 = Data
00010101 15 = Check-sum
11110111 F7 = End of exclusive
```

Reset the system. All internal parameters are reset to the default (factory) settings.

3.1.10 CBX-T3 Switch Remote

```
11110000 F0 = Exclusive status
01000011 43 = YAMAHA ID
0001xxxx xxxx = Ignored
00011011 1B = Switch Remote ID
01111111 7F = Switch Remote sub ID
0ddddddd ddddddd = Data
11110111 F7 = End of exclusive
```

The screen is the same as when the switch is turned on.

The following data is received even if Exclusive is set to off.

Data	Switch
6	GM-LEVEL1
7	DISK ORCHESTRA
8	C/M

3.1.11 General MIDI Mode On

```
11110000 F0 = Exclusive status
01111110 7E = Universal Non-Real Time
01111111 7F = ID of target device
00001001 09 = Sub-ID #1 = General MIDI
Message
00000001 01 = Sub-ID #2 = General MIDI On
11110111 F7 = End of exclusive
or
11110000 F0 = Exclusive status
01111110 7E = Universal Non-Real Time
0xxxnnnn nnnn = Device Number, xxx =
Ignored
00001001 09 = Sub-ID #1 = General MIDI
Message
00000001 01 = Sub-ID #2=General MIDI On
11110111 F7 = End of exclusive
```

The Sound Module mode changes to General MIDI mode when the ON data is received.

The above data is received even if Exclusive is set to off.

3.1.12 MIDI Master Volume

```
11110000 F0 = Exclusive status
01111111 7F = Universal Real Time
01111111 7F = ID of target device
00000100 04 = Sub-ID #1=Device Control
Message
00000001 01 = Sub-ID #2=Master Volume
01111111 11 = Volume LSB
0mmmmmmm mm = Volume MSB
11110111 F7 = End of exclusive
or
11110000 F0 = Exclusive status
01111111 7F = Universal Real Time
0xxxnnnn nnnn = Device Number, xxx =
Ignored
00000100 04 = Sub-ID #1 = Device Control
Message
00000001 01 = Sub-ID #2 = Master Volume
01111111 11 = Volume LSB
0mmmmmmm mm = Volume MSB
11110111 F7 = End of exclusive
```

When the Volume MSB is received, the master Volume is set.

The above data is received even if Exclusive is set to off.

3.1.13 Disk Music On

```
11110000 F0 = Exclusive status
01000011 43 = YAMAHA ID
01110011 73 = Instrument Classified
(CLAVINOVA)
00000001 01
00010100 14 = Disk Music On
11110111 F7 = End of exclusive
```

The Sound Module mode changes to Disk Orchestra when ON data is received.

The above data is received even if Exclusive is set to off.

3.2 Dump request

The CBX-T3 handles the following Dump requests.

1. System Data
2. Multi Common Data
3. Multi Part Data
4. Internal Voice Memory
5. Preset Voice Memory
6. Program Change Table

Dump request can only be switched off by setting Exclusive to off.

This unit cannot make Dump requests.

Following are the CBX-T3's Dump request formats.

```
11110000 F0 = Exclusive status
01000011 43 = YAMAHA ID
0010nnnn nnnn = Device Number
01111010 7A = Format number
01001100 4C = "L"
01001101 4D = "M"
00100000 20 = " "
00100000 20 = " "
00110000 30 = "0"
00110000 30 = "0"
00110110 36 = "6"
00111000 38 = "8"
01010010 52 = "R"
01010001 51 = "Q"
0aaaaaaa aaaaaaa = Start Address b20 -
b14
0aaaaaaa aaaaaaa = Start Address b13 -
b7
0aaaaaaa aaaaaaa = Start Address b6 - b0
0sssssss sssssss = Byte Count b20 - b14
0sssssss sssssss = Byte Count b13 - b7
0sssssss sssssss = Byte Count b6 - b0
00000000 00
00000000 00
00000000 00
00000000 00
00000000 00
00000000 00
00000000 00
00000000 00
00000000 00
0ccccccc ccccccc = Check-sum
11110111 F7 = End of exclusive
```

Data is correctly processed if the Dump request receive address corresponds with the Start Address and the Dump requests' byte count is correct.

For the Start Address and byte count, see the tables on page 67 to page 73.

The check sum's lowest 7-bit value is zero after adding the Start Address, Data and check sum. Dump request, the sending device must add a header for each parameter attribute.
For example, if System and Multi Common parameters are sent together under one Dump request header, the recipient may recognize one and not the other, or may ignore the request altogether. Therefore, different attributes should be transmitted with different headers.

- System
- Multi common
- Multi Part
- Internal voice
- Drums Part
- All parameters reset

3.2.1 System Data parameter change
Refer to appendix tables <1-1> and <1-2>.

3.2.2 Multi Common Data parameter change
Refer to appendix tables <1-1> and <1-3>.

3.2.3. Multi Part Data parameter change
Refer to appendix tables <1-1> and <1-4>.

3.2.4 Drums Setup Data parameter change
Refer to appendix tables <1-1> and <1-5>.

3.2.5 Internal Voice Memory parameter change
Refer to appendix tables <1-1> and <1-6>.

3.2.6 Preset Voice Memory parameter change
Refer to appendix tables <1-1> and <1-6>.

3.2.7 Program Change Table parameter change
Refer to appendix tables <1-1> and <1-7>.

3.2.8 System Information parameter change
Refer to appendix tables <1-1> and <1-8>.

4. Status FE (Active sensing)
A) Sending
Not sent.
B) Receiving
After receiving one FE message, if no MIDI data is received for more than 300msec, the unit will activate ALL SOUND OFF, ALL NOTE OFF and RESET ALL CONTROLLERS, as if no FE message had been received.

<Appendix table 1-1>
Parameter base address

Parameter change

Start Address (H)	Description
30 00 00	System
30 00 0A	Multi common
30 00 10	Multi part 10
30 00 28	Multi part 1
:	:
30 02 60	Multi part 15
30 02 78	Multi part 16
30 03 10	Internal voice 0
30 03 70	Internal voice 1
:	:
30 31 50	Internal voice 62
30 32 30	Internal voice 63
30 33 10	Drums part key#27
30 33 13	Drums part key#28
:	:
30 35 00	Drums part key#107
30 35 03	Drums part key#108
30 35 06	All parameters reset

	<Program Change table>
24 00 00	GM-LEVEL1
24 02 00	DISK ORCHESTRA
24 04 00	C/M TYPE1
24 06 00	C/M TYPE2
24 08 00	System Information
24 08 10	Preset voice 0
24 08 70	Preset voice 1
:	:
25 16 50	Preset voice 190
25 17 30	Preset voice 191

Voice Memory
Parameter change

Offset Address (H)	Description
00 00	Common parameter
00 18	Element1 parameter
00 3C	Element2 parameter

The actual address value = the address at the top of each block + the offset address.

\<Appendix table 1-2\>

MIDI Parameter Change table (System)

Address (H)	Size (H)	Data (H)	Parameter	Description	Default value (H)
30 00 00 30 00 01#	02	1C - E4	MASTER TUNE	-100 - +100[cent] 1st b3-0 → b7-4 2nd b3-0 → b3-0	08 00 (80)
30 00 02	01	28 - 58	TRANSPOSE	-24 - +24 semitones	40
30 00 03	01	00 - 10	DEVICE NUMBER	0 - 15, 16: all	10
30 00 04	01	00 - 01	EXCLUSIVE	0:off, 1:on	01
30 00 05	01	00 - 01	PROGRAM CHANGE	0:off, 1:on	01
30 00 06	01	00 - 01	CONTROL CHANGE VOLUME, EXPRESSION	0:off, 1:on	01
30 00 07	01	00 - 7F	SOUND MODULE MODE	0: GM-LEVEL1 1: DISK ORCHESTRA 2: C/M	00
30 00 08	01	00 - 7F	MASTER VOLUME	0 - 127 (=F0 7F 7F 04 01 xx vv F7)	7F
TOTAL SIZE	09				

Note: An address with a # cannot be used as a Start Address.

\<Appendix table 1-3\>

MIDI Parameter Change table (MULTI common)

Address (H)	Size (H)	Data (H)	Parameter	Description	Default value (H)
30 00 0A	01	00 - 07	REVERB TYPE	0: Hall 1 1: Hall 2 2: Room 1 3: Room 2 4: Plate 1 5: Plate 2 6: Delay 1 7: Delay 2	00
30 00 0B	01	03 - 36	REVERB TIME	3 - 54	21
30 00 0C	01	18 - 46	REVERB OUTPUT LEVEL	-40 - +6[dB]	3E
TOTAL SIZE	03				

<Appendix table 1-4>

MIDI Parameter Change table (MULTI part)

Offset Address (H)	Size (H)	Data (H)	Parameter	Description	Default value (H)
00 00	02	00 - 7F	VOICE BANK	0-63: GM LEVEL1 64-111: INTERNAL 112-126: DISK ORCHESTRA 127: C/M (=Bx 00 vv 20 00)	38
00 01#		00 - 7F	PC VALUE	(=Cx vv)	00
00 02	01	00 - 10	RX.CHANNEL	0 - 15 16: off	n
00 03	01	00 - 01	MONO/POLY MODE	0: Mono (=Bx 7E 01) 1: Poly (=Bx 7F 00)	01
00 04 00 05#	02	1C - E4	DETUNE	-100 - +100[cent] 1st b3-0 → b7-4 2nd b3-0 → b3-0 (=Bx 64 01 65 00 06 vv 26 vv)	08 00 (80)
00 06	01	28 - 58	NOTE SHIFT	-24 - +24 semitones (=Bx 64 02 65 00 06 vv)	40
00 07	01	00 - 7F	VOLUME	0 - 127 (=Bx 07 vv)	64
00 08	01	00 - 0F	VELOCITY SENSE	0 - 15	08
00 09	01	00 - 0F	PANPOT	8: voice 9: left : 15: left center 0: center : 7: right (=Bx 0A vv' except voice)	08
00 0A	01	00 - 7F	NOTE LIMIT LOW	C-2 - G8	00
00 0B	01	00 - 7F	NOTE LIMIT HIGH	C-2 - G8	7F
00 0C	01	00 - 08	REVERB SEND LEVEL	0: min : 8: max (=Bx 5B vv')	04
00 0D	01	39 - 47	LFO SPEED	-7 - +7	40
00 0E	01	31 - 4F	LFO DEPTH	-15 - +15	40
00 0F	01	00 - 7F	LFO DELAY	-64 - +63	40
00 10	01	39 - 47	EG.ATTACK RATE	-7 - +7	40
00 11	01	39 - 47	EG.RELEASE RATE	-7 - +7	40
00 12	01	00 - 18	PITCH BEND RANGE	0 - 24 semitones (=Bx 64 00 65 00 06 vv)	02

Offset Address (H)	Size (H)	Data (H)	Parameter	Description	Default value (H)
00 13	01	00 - 0F	MOD LFO PITCH DEPTH	0 - 15	0F
00 14	01	00 - 7F	Ignored	0 - 127	00
00 15	01	28 - 58	CAF PITCH CONTROL	-24 - +24 semitones	40
00 16	01	00 - 0F	CAF LFO PITCH DEPTH	0 - 15	00
00 17	01	00 - 7F	Ignored	0 - 127	00
TOTAL SIZE	18				

Note:
n: block number (0 - F)   Part 1 n = 1
                                          : :
                                    Part 9 n = 9
                                    Part 10 n = 0
                                    Part 11 n = A
                                          : :
                                    Part 16 n = F
x: MIDI channel number (0 - F)
Parameters other than the following will be ignored when n = 0 (rhythm).
   • PC VALUE
   • VOLUME
   • PANPOT
   • REVERB SEND DEPTH
vv': Written after conversion.
An address which has a # cannot be used as a Start Address.
The actual address value = the address at the top of each block + the offset address.

<Appendix 1-5>
MIDI Parameter Change table (Drums Setup)

Offset Address

(H)	Size (H)	Data (H)	Parameter	Description
00 00	01	00 - 7F	LEVEL	0 - 127
00 01	01	00 - 0F	PANPOT	9: left
				:
				15: left center
				0: center
				:
				7: right
00 02	01	00 - 08	REVERB LEVEL	0: min
				:
				8: max
TOTAL SIZE	03			

Note: The actual address value = the address at the top of each block + the offset address.

<Appendix 1-6>
MIDI Parameter Change table (VOICE Memory)

(1) Common parameters

Offset Address (H)	Size (H)	Data (H)	Parameter	Description	Default value (H)
00 00	01	00 - 01	VOICE MODE	0: 1element 1: 2element	00
00 01	01	00 - 7F	ELEMENT1 LEVEL	0 - 127	7F
00 02	01	00 - 7F	ELEMENT2 LEVEL	0 - 127	7F

Offset Address (H)	Size (H)	Data (H)	Parameter	Description	Default value (H)
00 03	01	20 - 5F	ELEMENT1 DETUNE	-32 - +31	40
00 04	01	20 - 5F	ELEMENT2 DETUNE	-32 - +31	40
00 05	01	00 - 7F	PORTAMENT TIME	0 - 127	01
00 06	01	00 - 0F	MOD LFO PITCH DEPTH	0 - 15	0F
00 07	01	00 - 7F	Ignored	0 - 127	00
00 08	01	00 - 0F	CAF LFO PITCH DEPTH	0 - 15	00
00 09	01	00 - 7F	Ignored	0 - 127	00
00 0A	01	00 - 05	ELEMENT1 PITCH RATE SCALING	0: 100% 1: 50% 2: 20% 3: 10% 4: 5% 5: 0%	00
00 0B	01	00 - 7F	ELEMENT1 PITCH RATE SCALING CENTER NOTE	0 - 127 (C-2 - G8)	3C
00 0C	01	28 - 58	ELEMENT1 NOTE SHIFT	-24 - +24 semitones	40
00 0D	01	28 - 58	ELEMENT2 NOTE SHIFT	-24 - +24 semitones	40
00 0E	01	00 - 05	ELEMENT2 PITCH RATE SCALING	0: 100% 1: 50% 2: 20% 3: 10% 4: 5% 5: 0%	00
00 0F	01	00 - 7F	ELEMENT2 PITCH RATE SCALING CENTER NOTE	0 - 127 (C-2 - G8)	3C
00 10	01	20 - 7F	VC NAME 1	ASCII character	
00 11	01	20 - 7F	VC NAME 2	ASCII character	
00 12	01	20 - 7F	VC NAME 3	ASCII character	
00 13	01	20 - 7F	VC NAME 4	ASCII character	
00 14	01	20 - 7F	VC NAME 5	ASCII character	
00 15	01	20 - 7F	VC NAME 6	ASCII character	
00 16	01	20 - 7F	VC NAME 7	ASCII character	
00 17	01	20 - 7F	VC NAME 8	ASCII character	
TOTAL SIZE	18				

Note: The actual address value = the address at the top of each block + the offset address.

(2) Element parameter

Offset Address (H)	Size (H)	Data (H)	Parameter	Description	Default value (H)
00 00 00 01#	02	00 - 8B	WAVEFORM	0 - 139 1st b3-0 → b7-4 2nd b3-0→ b3-0	00 00 (00)
00 02	01	31 - 4F	EG AR	-15 - +15	40
00 03	01	31 - 4F	EG RR	-15 - +15	40

Offset Address (H)	Size (H)	Data (H)	Parameter	Description	Default value (H)
00 04	01	00 - 7F	LEVEL SCALING BREAK POINT1	C-2 - G8	40
00 05	01	00 - 7F	BREAK POINT2	C-2 - G8	40
00 06	01	00 - 7F	BREAK POINT3	C-2 - G8	40
00 07	01	00 - 7F	BREAK POINT4	C-2 - G8	40
00 08 00 09#	02	00 - FF	LEVEL SCALING OFFSET1	-128 - +127 1st b3-0 → b7-4 2nd b3-0 → b3-0	08 00 (80)
00 0A 00 0B#	02	00 - FF	OFFSET2	-128 - +127 1st b3-0 → b7-4 2nd b3-0 → b3-0	08 00 (80)
00 0C 00 0D#	02	00 - FF	OFFSET3	-128 - +127 1st b3-0 → b7-4 2nd b3-0 → b3-0	08 00 (80)
00 0E 00 0F#	02	00 - FF	OFFSET4	-128 - +127 1st b3-0 → b7-4 2nd b3-0 → b3-0	08 00 (80)
00 10	01	00 - 0F	PANPOT	9: left : 15: left center 0: center : 7: right	00
00 11	01	00 - 07	LFO SPEED	0 - 7	04
00 12	01	00 - 7F	LFO DELAY	0 - 127	00
00 13	01	00 - 7F	Ignored	0 - 127	00
00 14	01	00 - 0F	LFO PITCH MOD DEPTH	0 - 15	00
00 15	01	00 - 07	LFO AMP MOD DEPTH	0 - 7	00
00 16	01	00 - 01	PITCH LFO WAVE	0: triangle 1: sample&hold	00
00 17	01	00 - 02	P-EG RANGE	0: 1/2 oct 1: 1 oct 2: 2 oct	01
00 18	01	00 - 01	P-EG VELOCITY SWITCH	0: on 1: off	01
00 19	01	00 - 07	P-EG RATE SCALING	0 - 7	00
00 1A	01	00 - 3F	P-EG R1	0 - 63	3F
00 1B	01	00 - 3F	P-EG R2	0 - 63	3F
00 1C	01	00 - 3F	P-EG R3	0 - 63	3F
00 1D	01	00 - 3F	P-EG RR	0 - 63	3F
00 1E	01	00 - 7F	P-EG L0	-64 - +63	40
00 1F	01	00 - 7F	P-EG L1	-64 - +63	40
00 20	01	00 - 7F	P-EG L2	-64 - +63	40
00 21	01	00 - 7F	P-EG L3	-64 - +63	40
00 22	01	00 - 7F	P-EG RL	-64 - +63	40

Offset Address (H)	Size (H)	Data (H)	Parameter	Description	Default value (H)
00 23	01	00 - 07	VELOCITY CURVE	0: curve-1	00
				1: curve-2	
				2: curve-3	
				3: curve-4	
				4: curve-5	
				5: curve-6	
				6: curve-7	
				7: curve-8	
TOTAL SIZE	24				

Note: An address with a # cannot be used as a Start Address.
In Disk Orchestra mode, the voice velocity curve setting is ignored. It is always set to curve-8.
The actual address value = the address at the top of each block + the offset address.

<Appendix 1-7>

MIDI Parameter Change table (Program Change table)

Offset Address (H)	Size (H)	Data (H)	Parameter	Description
00 00	02	00 - FF	SERIAL VOICE#	0 - 191,
00 01#			TO PC#1	255: off voice
:			:	
:			:	
:			:	
01 7E	02	00 - FF	SERIAL VOICE#	0 - 191,
01 7F#			TO PC#128	255: off voice
TOTAL SIZE	100			

Note: An address with a # cannot be used as a Start Address.
The actual address value = the address at the top of each block + the offset address.

<Appendix 1-8>

MIDI Parameter Change table (System information)

Address (H)	Size (H)	Data (H)	Parameter	Description
24 08 00	10	23	STRING	ASCII '#'
24 08 01#		30	STRING	ASCII '0'
24 08 02#		30	STRING	ASCII '0'
24 08 03#		36	STRING	ASCII '6'
24 08 04#		38	STRING	ASCII '8'
24 08 05#		20	STRING	ASCII ' '
24 08 06#		20	STRING	ASCII ' '
24 08 07#		56	STRING	ASCII 'V'
24 08 08#		45	STRING	ASCII 'E'
24 08 09#		52	STRING	ASCII 'R'
24 08 0A#		3D	STRING	ASCII '='
24 08 0B#		31	STRING	ASCII '1'
24 08 0C#		2E	STRING	ASCII '.'
24 08 0D#		30	STRING	ASCII '0'
24 08 0E#		30	STRING	ASCII '0'
24 08 0F#		20	STRING	ASCII ' '
TOTAL SIZE	10			

Note: An address with a # cannot be used as a Start Address.

MIDI implementation chart

```
YAMAHA   [ Tone Generator ]                              Date:13-JAN-1992
         Model  CBX-T3   MIDI Implementation Chart       Version : 1.00
```

Function ...	Transmitted	Recognized	Remarks
Basic Default	x	1 - 16	memorized
Channel Changed	x	1 - 16	
Mode Default	x	3	
Messages	x	3,4(m = 1) *2	
Altered	**************	x	
Note	x	0 - 127	
Number : True voice	**************	0 - 127	
Velocity Note ON	x	o 9nH,v=1-127	
Note OFF	x	x	
After Key's	x	x	
Touch Ch's	x	o	
Pitch Bender	x	o 0-24 semi	12bit resolution
Control 0,32	x	o MSB only	Bank Select
1	x	o	Modulation Wheel
5	x	o	Portamento Time
6,38	x	o	Data Entry
7	x	o *1	Volume
Change 10	x	o	Panpot
11	x	o *1	Expression
64	x	o	Hold 1
65	x	o	Portamento
91	x	o(Reverb)	Effect Depth 1
100,101	x	o	RPN LSB,MSB
120	x	o	All Sound Off
121	x	o	Reset All Cntrls

```
+-----------------------------------+--------------+--------------------+
:Prog                               :              :                    :
:Change : True #                    : x            : o 0-127    *1      :
:                                   : ************ :                    :
+-----------------------------------+--------------+--------------------+
:System Exclusive   *3              : o            : o        *3        :
+-----------------------------------+--------------+--------------------+
:System : Song Pos.                 : x            : x                  :
: :      Song Sel.                  : x            : x                  :
:Common : Tune                      : x            : x                  :
+-----------------------------------+--------------+--------------------+
:System    :Clock                   : x            : x                  :
:Real Time :Commands:               : x            : x                  :
+-----------------------------------+--------------+--------------------+
:Aux  :Local ON/OFF :               : x            : x                  :
:     :All Notes OFF:               : x            : o(123-127)         :
:Mes- :Active Sense :               : x            : o                  :
:sages:Reset        :               : x            : x                  :
+-----------------------------------+--------------+--------------------+
:Notes: *1 ; receive if switch is on.
:      *2 ; m is always treated as "1" regardless of its value.
:      *3 ; transmit/receive if exclusive switch is on.
+-----------------------------------------------------------------------+

  Mode 1 : OMNI ON,  POLY    Mode 2 : OMNI ON,  MONO        o : Yes
  Mode 3 : OMNI OFF, POLY    Mode 4 : OMNI OFF, MONO        x : No
```

G

Glossary

A

Aftertouch: The pressure applied to a music keyboard key (or keys) while the key is being held down.

Application software: Computer programs designed to perform a particular job.

Attack rate: The speed at which a sound reaches its maximum initial volume.

Attack velocity: The downward speed at which a music keyboard key is pressed.

Audio signal: An electric signal of varying voltage that becomes sound when amplified and fed to a speaker.

AWM: (Advanced Wave Memory) A method of digitally reproducing natural sound developed by Yamaha.

B

Bit: The smallest unit of computer data, used to represent either a 1 or a 0. It is short for binary digit.

Bulk dump: The name for transferring setup data from a MIDI instrument to a music computer or MDR (MIDI Data Recorder).

Byte: A standard unit of computer data consisting of eight bits. A byte can represent a value from 0 though 255.

C

C/M: A sound module mode of the CBX-T3 which provides semi-compatibility with the C/M-64 and associated equipment.

Channel messages: MIDI messages sent and received only on an individual MIDI channel. A MIDI instrument will only receive the transmitting device's message if both are set to the same MIDI channel number. Channel messages consist of voice, Control Change, Program Change, Pitch Bend, Aftertouch and Mode data.

Channel mode message: A type of channel message that carries data about the MIDI receiving mode.

Channel voice message: A type of channel message that carries performance data between MIDI devices.

Computer: A device that manipulates data according to a series of instructions called a program. Most computers used with MIDI are personal computers, small and relatively inexpensive.

D

Default settings: The settings to which a device is set when the device is first turned on.

Detune: Detuning one voice element to produce a chorus effect.

Digital: Stored or transmitted as a numerical value.

Disk Orchestra Collection: Song collections available on floppy disk for use with Yamaha's Clavinova instruments (DRC-20, DOM-30, or MDF2). Each song is stored as MIDI data in Yamaha's ESEQ file format.

DSP: (Digital Signal Processor) An IC (Integrated Circuit) designed for digital audio data processing. Used by the CBX-T3 to create its reverb effects.

Dynamic allocation: The automatic allocation of notes to Parts.

E

Element: An individual CBX-T3 sound sample, these are used to make voices. Some voices consist of one element, some of two.

G

General MIDI: An addition to the MIDI 1.0 standard, this provides greater compatibility between different manufacturers' MIDI equipment when transferring MIDI song files.

H

Host connection: A direct connection between the CBX-T3 and a computer which does not have a MIDI interface, for the purpose of running music software. Connection is made directly to the computers' serial port (RS-422 or RS-232).

I

Internal voice bank: The CBX-T3 voice bank which contains 64 voices that can be edited.

M

Master keyboard: A music keyboard with no sound generators, designed to control other MIDI devices through MIDI messages.

MDR: (MIDI Data Recorder) Any device that records MIDI data. For example: a MIDI computer sequencer, a librarian program, a dedicated MIDI data recorder (such as Yamaha's MDF2),or a synthesizer with an MDR function (such as Yamaha's SY99 music synthesizer).

MIDI adaptor: A device that adds MIDI ports to a computer.

MIDI cable: A uniform cable with a 5-pin plug on each end, used exclusively to carry messages between MIDI devices.

MIDI channel: A MIDI message transmission scheme that allows messages to be sent to individual MIDI devices, without being received by all the devices on the network.

MIDI device: Any device equipped with one or more MIDI ports and a microprocessor capable of sending or receiving MIDI messages.

MIDI interface: An attachment that adds MIDI ports to a computer.

MIDI message: Music data sent from one MIDI device to another that communicates a single musical event or keyboard action, such as the beginning of a note or the pressing of a foot pedal.

MIDI port: A 5-pin socket built into a MIDI device to which a MIDI cable is connected. There are three kinds of MIDI ports: MIDI In, for receiving MIDI data; MIDI Out, for sending MIDI data; and MIDI Thru, which sends MIDI data received through the MIDI In port.

MIDI Song File: A computer file which contains MIDI song data. Can be used with most MIDI equipment.

MIDI: (Musical Instrument Digital Interface) A worldwide standard which enables electronic musical instruments to communicate with and control each other.

Modulation wheel: A wheel control on a synthesizer that adds a pitch bend or other effects when it is turned up or down.

Multi-timbral: Any MIDI instrument capable of producing multiple sounds at one time.

N

Note off: A MIDI message which conveys when a key on a music keyboard is released.

Note on: A MIDI message which conveys when a key on a music keyboard is pressed.

P

Panning: The positioning of a sound within the sound field of the left and right speakers.

Part: Sort of a MIDI storage space, Parts are assigned voices and receive MIDI data on individual MIDI channels. The volume, pan position, attack rate, release rate, reverb level, and MIDI receive channel can be set for each Part. The CBX-T3 has 16 Parts.

Polyphony: The number of notes that can be played simultaneously. The CBX-T3 is 28-note polyphonic.

Program Change message: A MIDI channel message that assigns a new voice to a Part.

R

Radio frequency interference: (RFI) The disruption of any electronic communication by unwanted reception of radio waves. Most commonly caused by household appliances.

RAM: (Random Access Memory) A memory IC whose data can be edited, but which requires a continuous electrical supply. The CBX-T3's internal voice bank is stored in RAM.

Release rate: The speed at which a sound decreases to zero volume

Release velocity: The upward speed of a key on a music keyboard when the key is released.

ROM: (Read Only Memory) A memory IC whose data cannot be edited, but which does not require a continuous electrical supply. The CBX-T3's voice elements are stored in ROM.

RX: The CBX-T3's RX Drum and Percussion set provides semi-compatibility for drum patterns and drum sequences recorded on such drum machines as the RM50.

S

Sampled sound: A digitally recorded sound.

Sampling: Process by which audio signals are transformed into a digitally stored waveform table.

SCSI port: (Small Computer System Interface) A computer port often used to connect peripheral devices.

Sequencer: A device which stores and sends musical notes.

Serial Port: A computer connection for receiving and transmitting digital data serially (RS-232C or RS-422).

Song: In MIDI, a combination of note sequences stored in memory.

Sound module mode: The CBX-T3 has three sound module modes: General MIDI, Disk Orchestra Collection, and C/M. Each uses the same voices, but different Program Change number assignments.

Start bit: A serial data bit that signals the beginning of a subsequent byte.

Status byte: The status byte identifies the type of MIDI message, and is the first byte of any MIDI message.

Stop bit: A serial data bit that signals the end of the preceding byte.

Synthesizer: An electronic instrument which makes sounds by creating and modifying waveforms, which are then performed through a loudspeaker.

System common message: A type of MIDI system message that coordinates song selection and tuning between devices.

System Exclusive messages: A type of specialized MIDI message intended for only for specific MIDI devices . These messages contain information such as manufacturer and product type. Bulk Dump message are a type of system Exclusive message.

System message: A type of MIDI message received by all MIDI devices in a MIDI network, regardless of the MIDI channel the devices are set to receive.

System real-time message: A type of MIDI system message that synchronizes performance timing among devices.

T

Transposition: Raising or lowering a musical composition to a new key.

Truncation: When a note is cut off to allow new notes to sound. Used when there are over 28 of the CBX-T3's notes trying to sound simultaneously.

V

Velocity-sensitive keyboard: A music keyboard that can sense the speed at which keys are pressed and released.

Voice bank: The CBX-T3's 192 instrument sounds are arranged into three voice banks: General MIDI, Disk Orchestra and C/M. Sixty four editable voices are held in the internal voice bank.

Voice: The CBX-T3 contains 192 instrument voices. Also known as a patch.

W

Waveform: For sound, a waveform is the graphic display of air pressure over time. For an audio signal, a waveform is the graphic display of voltage over time.

Index

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J.A. Wettergrens gata 1, Box 30053, 400 43 Göteborg, Sweden
Tel: 031-496090

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Tel: 31-87 30 88

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