Owners Manual
Second Edition

JLCooper Electronics
12500 Beatrice Street, LosAngeles, CA 90066, U.S.A.

MixMaster

MIDI Controlled Mixer

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JLCOOPER ELECTRONICS

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Greetings

Thank you for purchasing the JLCooper MixMaster, the MIDI Controlled Mixer. Used in conjunction with your MIDI sequencer, MixMaster is the heart of an expandable, MIDI-controlled, dynamic VCA automation system.

JLCooper first pioneered MIDI controllable VCA's back in 1985. This product represents years of research and development to bring you uncompromised audio quality combined with smooth and precise computer control.

As we manufacturers are so prone to say, to use this product to the fullest, please read the owners manual in its tedious entirety. If you are in a hurry, just turn to page 30 of the owners manual for the Advanced User Reference. Then if it doesn't work the way you expected, read the whole manual anyway!

Please fill out the enclosed warranty card and mail it in right away so that we can keep you abreast of any software updates as they become available.

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Front Panel

From left to right we have:
Power Switch

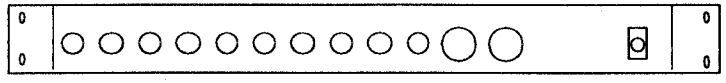
Activity LED
This LED indicates power on. Flashes off and on when MIDI is received, only if MixMaster has been programmed to respond to that data. Flashes steadily in LEARN mode until message is received.

MODE Button
When the MODE Button is out, MixMaster is in Consecutive Channel Mode. Reception of a MIDI Command in LEARN mode programs MixMaster to assign that command to control all eight VCA's, with each VCA responding to a different, consecutive MIDI Channel.

When the MODE Button is in, MixMaster is in Consecutive Parameter Mode. Reception of a MIDI Controller in LEARN mode programs MixMaster to assign that controller number to the first VCA channel. Each of the remaining VCA's respond to consecutively numbered controllers. All eight VCA's are on one MIDI channel.

LEARN Button
Press and release LEARN. Send MixMaster a single MIDI Command to "teach" MixMaster which MIDI Commands will control the VCA audio channels. Also, after pressing LEARN, reception of a Program Change of 32 or higher puts MixMaster into 4 X 2 Stereo Mode.

The actual affect of the LEARN Button is determined by the position of the MODE Button.



Rear Panel

Eight Audio Channels
Each channel has a tip-ring sleeve jack. Tip is the input to a Voltage Controlled Amplifier (VCA). Ring is the output.

Stereo Mix Input
This can be connected to the Stereo Mix Output of another MixMaster to create a larger mixer.

Stereo Mix Output
The "ring" contact is a mix of channels 1 through 4. The "tip" contact is a mix of channels 5 through 8. In Stereo mode, channels 1 through 4 can be panned to the tip or the ring.

MIDI IN
Receives Controllers or Notes to control the level of the eight VCA's.
Receives System Exclusive data to re-program the MIDI-to-VCA map.
Receives and Echoes MIDI data.

MIDI OUT
Echoes all MIDI data from MIDI In except System Exclusive.
Sends System Exclusive data dumps.
Sends Set ID number commands to other MixMasters.

POWER
Uses supplied 9 VAC 1 amp transformer

Audio Connections

MixMaster works with or without a mixing console. In a recording studio, you will want to connect MixMaster with a mixing console to take advantage of the console's bussing and equalization capabilities.

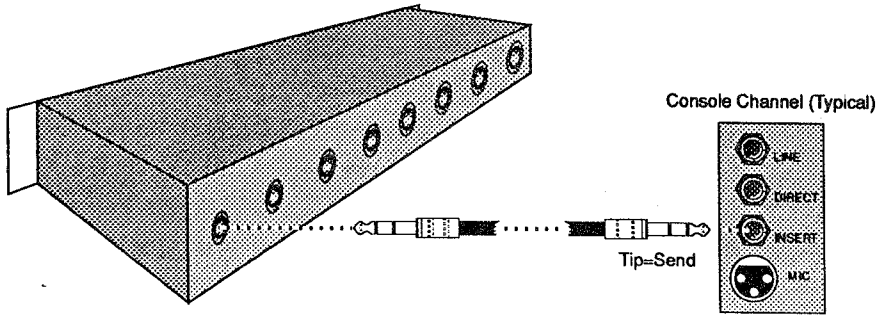
Each audio channel of MixMaster has a single 1/4" phono jack, the "tip-ring-sleeve" kind. These are sometimes called "stereo" jacks, though the 8 MixMaster inputs are not stereo.

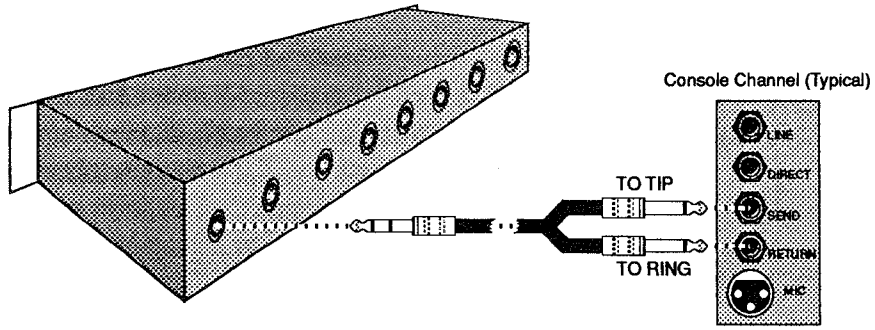
The tip of the jack is the input into the MixMaster channel. The ring of the jack is the output of the MixMaster channel.

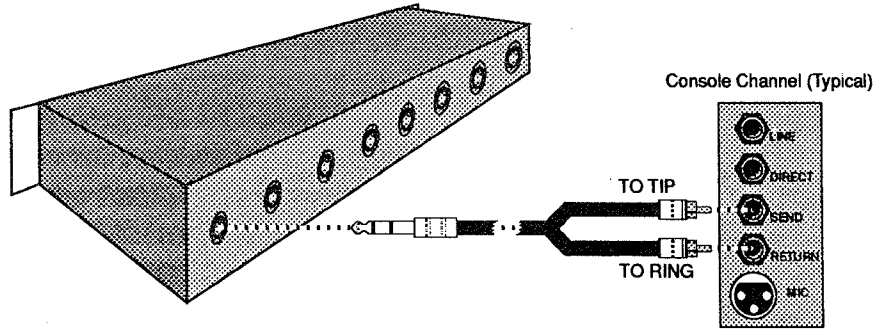
To connect MixMaster to the mixing console, use one cable per channel.

➤Each cable goes to the **MixMaster on one end**, and the consoles individual channel **insert points on the other**.

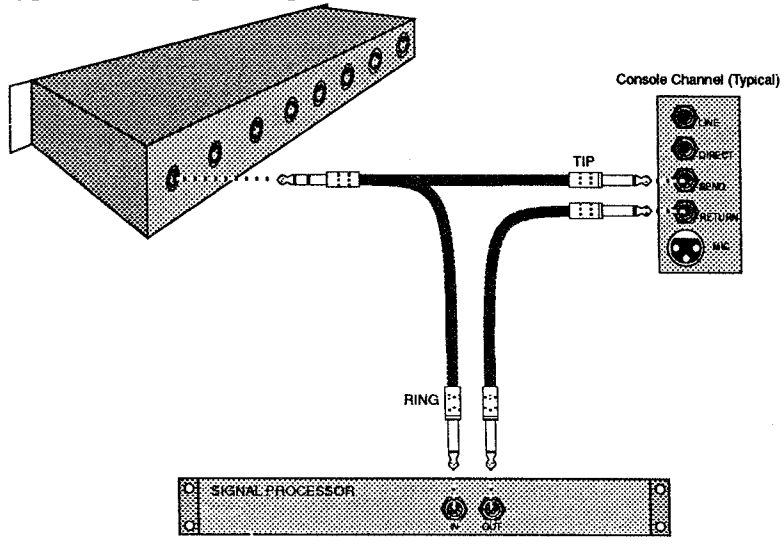
The cable end that plugs into MixMaster's eight inputs has a tip-ring-sleeve plug on it. The other end of the cable depends on your console. It will usually be another tip-ring-sleeve plug, or a "break out" to two RCA or 1/4" tip-sleeve plugs. See illustrations.







You can still use your channel inserts for signal processing by inserting MixMaster in series with the signal processor. A typical cabling example is shown here:



MixMaster and an Audio Patch Bay

For maximum flexibility you may wire all of MixMaster's audio channels to a patch bay. This gives you the ability to automate any channel, group, send, or return.

MixMaster without a Mixing Console

MixMaster's Stereo output permits MixMaster to function as an 8 X 1 or a 4 x 2 mixer.

Each channel of MixMaster as a tip-ring-sleeve type jack. The tip is the channel input. The way to access the inputs is as follows: The cable end that plugs into MixMaster's eight inputs has a tip-ring-sleeve plug on it. The other end of the cable should break out into 2 plugs, one for the tip connection, the other for the ring.

➤Connect the tip plug into the sound source.
➤Leave the ring plug disconnected.
➤*Important: Do not plug a 1/4" mono plug into any MixMaster channel.*

The output is a stereo jack, which can be connected to an amplifier or powered monitor. Again, use a cable that "breaks out" into two RCA or Phono plugs.

Cascading MixMasters without a Mixing Console

To create a larger mixer with more inputs, connect the stereo Mix Out of MixMaster to the Mix In of another MixMaster. Connect the last MixMaster to the amplifier.

MIDI Connections

Simplest setup. Connect the MIDI output of the sequencer to the MIDI input of the MixMaster.

If you plan on using a fader controller, such as the JLCooper FaderMaster, you should configure the system so that the FaderMaster's MIDI output goes to both the sequencer and MixMaster. This can easily be accomplished by connecting the output of FaderMaster to the input of the MIDI sequencer. Then connect the output of the MIDI sequencer to the input of MixMaster. The turn the sequencer's MIDI echo function ON.

If you plan on using any system exclusive librarian program, you will need to connect both the MIDI input and output, for two-way communication. Connect the MIDI output of MixMaster to the MIDI input of your computer, either directly or using a patch bay.

For maximum flexibility, connect the MIDI in and out to a MIDI patch bay, such as the JLCooper MSB Plus Rev 2. For specific examples of how to route the MIDI inputs and outputs, refer to the Applications chapter.

Chaining Multiple Units

If you have several MixMasters, and no MIDI patch bay, you may chain the MixMasters by connecting the MIDI output of one to the MIDI input of another.

Try out MixMaster to verify all of your audio connections:

Connect a source of a steady tone to the console's channel one. Adjust the trim (input gain) control on your console's channel. Verify your audio monitoring system by making sure that you can control the level of channel one by moving the console's fader.

Then patch in MixMaster according to the hookup diagrams on the previous pages. Turn MixMaster on. Verify that you can still control the level of channel one by moving the console's fader.

Connect the MIDI output of the controlling device to the MIDI input of MixMaster.

Set up the MIDI controlling device to send MIDI Volume (Controller #7) commands on MIDI channel 1.

Move the fader or slider on your controlling device. Verify that MixMasters Activity LED blinks off as you mode the slider.

Verify that you have control over VCA channel 1. MixMaster's VCA's behave as "unity gain attenuators." All this means is that when you send them the maximum MIDI value (127), that turns the VCA full on. When the VCA is full on, the level coming out of the VCA is equal to the level going into the VCA.

So, if you want to use the faders on a fader controller to add gain to the tape tracks, set the faders on your mixing console above the 0 dB mark.

MIDI Control of MixMaster

When you first turn on your MixMaster, it has been programmed so that the eight channels will respond to MIDI Volume messages (Controller 7), on consecutive MIDI channels 1 through 8.

➤Initialization Procedure
If you ever wish to restore this default condition, initialize the MixMaster's memory by holding in the LEARN button while powering up.

In "hard wired" Stereo Mode (page 21), the default has been programmed so that the first four channels will respond to MIDI Volume messages (Controller 7) and MIDI Pan (Controller 10) on consecutive MIDI channels 1 through 4.

LEARN

MixMaster comes from the factory with the VCA's set up to respond to MIDI Volume messages on channels 1 through 8.

However, you may want to re-program MixMaster, so that it responds to some other MIDI messages, on other MIDI channels. There are two obvious reasons for doing this.

First, you will probably want to use MIDI volume messages from your sequencer to control the volume of MIDI tone modules. So MixMaster should be re-programmed so that it does not respond to the Volume messages intended for a MIDI tone module.

Secondly, you may have more than 1 MixMaster. So each MixMaster needs a unique range of channels or controllers so you can control it independently.

MixMaster may be re-programmed using the LEARN button. (MixMaster may also be programmed using System Exclusive.)

What LEARN does

The LEARN button is pressed and released. Then you send MixMaster a sample of the type of MIDI message that you want to use to control it. The MIDI message that MixMaster receives is remembered, and used to control the first VCA channel. The remaining VCA channels are automatically programmed according to the position of the mode switch. The MODE switch selects either Consecutive Channels or Consecutive Parameters. Once programmed, all settings are retained in a special non-volatile memory, that uses no battery.

➤Consecutive Parameters simply means that MixMaster receives on only one MIDI Channel. Each VCA responds to a different Controller command. The value of the controller sets the level of the VCA.

➤Consecutive Channels means that MixMaster receives on eight MIDI Channels, but responds to only one kind of Controller command. Each VCA responds to a different MIDI channel. The value of the controller sets the level of the VCA.

The word "Consecutive" refers to the fact that the controller or channel numbers must be in continuous, ascending order. For example, in Consecutive Channel mode, the eight VCA's can respond to MIDI channels 1 through 8, or MIDI channels 2 through 9, etc.

(If you need a more complicated mapping than this, with individual channels being randomly programmable to any channel or controller, this can be done using System Exclusive messages.)

Consecutive Parameters or Channels: Which is better?

The answer will depend on your application, and in some cases it doesn't really matter.

The Advantage to using Consecutive Parameters is that, unlike Consecutive Channels, MixMaster only needs to use *one* MIDI channel. Also, using Consecutive Parameters avoids a possible problem with MIDI Volume with Consecutive Channels. (Volume messages intended to control MixMaster might accidentally affect the MIDI Volume of your tone modules being driven by the same sequence.) Another advantage is that you can use MIDI Note Commands to do muting at the same time.

The Advantage to using Consecutive Channels is that it might be a little easier to set up. For example, you don't have to worry about choosing which parameter, that is, which controller number to use.

(Many controller numbers already have specific purposes, such as Sustain or Depth.)

Also, it may be easier to edit sequencer tracks when each track consists of one MIDI channel of audio mix data. Finally, the possible difficulties suggested above will not apply if you are using a high-speed sophisticated interface such as a MIDI Time Piece™, which has an ample number of MIDI channels available so that it really doesn't matter if MixMaster is using eight.

Consecutive Channels (MODE switch out)

MixMaster will respond to one single type of MIDI message, on consecutive MIDI channels. This is the way you would program MixMaster if you wanted it to respond to, for example, MIDI Volume (Controller #7) on MIDI channels 8 through 16.

Hook up a source of MIDI data into the MIDI input of MixMaster. Something like a JLCooper FaderMaster is probably the easiest way to program MixMaster. Alternately you can use a keyboard controller slider, or the faders on a software sequencer such as Vision or Performer.

Be sure that MODE switch is released. Press and release the LEARN button. The LED flashes. Send a MIDI message into MixMaster of the desired type. The MIDI channel number should correspond to the MIDI channel that you want the first VCA to respond to. When the message is received, the LED comes back on steady.

For example, if you want the VCA's to respond to MIDI Volume on MIDI channels 8 through 16, press LEARN button. Send MixMaster a MIDI Volume message on channel 8.

Consecutive Parameters with Note Mutes (MODE switch in)

MixMaster will respond to consecutive controllers one MIDI channel. This is the way you would program MixMaster if you wanted it to respond to, for example, controller numbers 12 through 19 on MIDI channel 1, or controller numbers 32 through 39 on MIDI channel 16.

In this mode, MixMaster will respond to MIDI Note numbers to mute and un-mute channels.

Hook up a source of MIDI data into the MIDI input of MixMaster. Something like a JLCooper FaderMaster is probably the easiest way to program MixMaster. Alternately, you can use a keyboard controller slider, or the faders on a software sequencer such as Vision or Performer.

Be sure that MODE switch is pressed in. Press and release the LEARN button. The LED flashes. Send a MIDI message into MixMaster on the desired MIDI channel. The MIDI message number should correspond to the MIDI message number that you want the first VCA to respond to. When the message is received, the LED comes back on steady.

For example, if you want the VCA's to respond to MIDI channel 1, Controller numbers 12 through 19, Press the LEARN button. Send MixMaster a MIDI Controller #12 message on channel 1.

To program MixMaster to respond to Notes as mutes, Press the LEARN button again. The LED flashes. Send MixMaster a MIDI Note, on the same channel that the controllers are on. The note number received will be assigned to first VCA channel.

The remaining VCA's are assigned automatically to sequential note numbers.

Explanation of Using Notes for Mutes

Say that you have programmed MixMaster to respond to Controller numbers 12 through 19, as in the example above. This means that when you send MixMaster a MIDI Controller #12 message with a value of 127, MixMaster VCA channel 1 will turn full on. Likewise, when you send MixMaster a MIDI Controller #13 message with a value of 127, MixMaster VCA channel 2 will turn full on. Now, if you wanted VCA channel 2 to turn full off, you could send it a Controller #13 with a value of 000.

The other way to mute the VCAs is to send MixMaster a Note On. Using Notes for muting means that the previous level of the VCA can be retained, without having to send another controller value.

Sequential MIDI Note numbers are used. For example, if note number 36 is entered in LEARN, then VCA channel 1 is controlled by MIDI Note 36, VCA channel 2 is controlled by MIDI Note 37, etc.

To mute or un-mute a channel requires the reception of Note On commands only. Note OFF commands are ignored. The Velocity of the Note determines whether the VCA is muted or un-muted.

Note On's with velocities between 1 and 64 will mute the channel, Note On's with velocities between 65 and 127 will un mute the channel.

Why Velocity?

You might be inclined to ask why we do it this way. Wouldn't it be simpler to let a Note On turn on the channel, and a Note Off turn the channel off? Why involve yourself with velocity at all? The answer is that when you stop a sequencer in the middle of a sequence, many sequencers generate a large volume of Note Off messages, (or Note On's with velocities of 0). They do this to prevent notes from sticking, if the sequence has been stopped while notes were playing. But if we used Note Off's to un mute a channel, that means that whenever you stopped a sequencer, all of your channels would un mute, a most undesirable effect.

There are many ways to program mute messages of this kind into your sequencer. You could use a velocity sensitive MIDI keyboard. Pressing C0 (which is usually MIDI Note number 36) softly would mute VCA channel 1. Pressing the same note hard would un mute the channel, restoring it to the level it had before muting.

Alternately, you can manually enter the note messages into your sequencer's Event List.

If using a FaderMaster, in one of the User banks, assign the eight faders parameter to notes. (Hold the PARM button, and slide each fader until the display says No). Then assign the faders to note numbers 36 through 43. (Hold VAL and PARM #, slide each fader until the correct note number is displayed for that fader). Set the MIN to 63, and the MAX to 65.

Now moving a fader down will mute the channel. Moving the fader up would un mute the channel, restoring it to the level it had before muting.

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Mixing Without a Console

MixMaster has a Mix Output that functions as an 8 X 1 Mono or a 4 X 2 stereo mixer.

To use as an 8 X 1 Mono mixer.

Connect a stereo plug to MixMaster's Mix Output. The "ring" contact is a mix of channels 1 through 4. The "tip" contact is a mix of channels 5 through 8. To create a mono mix, you will need to make a cable that shorts the tip to the ring. This will give you a mono mix of channels 1 through 8, and the overall level will drop by 6 dB. Do not plug a mono plug into the mix output. This would result in the mix output for channels 1 through 4 being shorted to ground.

Even if you are not using the individual VCA outputs, you must still use tip-ring-sleeve type plugs on the eight inputs. On the other end of the cable, which usually breaks out into two RCA's or two mono phono plugs, leave the "ring" plug not connected to anything. Do not plug a mono plug into any channel input. This would result in the channel output being shorted to ground.

To use as a Stereo Mixer

There are two ways to put MixMaster into stereo mode. One method is to send it a Program Change command. That allows you to freely place it in or out of Stereo Mode. The other way lets you put MixMaster *permanently* into Stereo Mode, by removing a jumper wire.

First put MixMaster into Consecutive Channel Mode

Be sure that the MODE switch is in the OUT position.

Stereo Mode selection using Program Change

Press and release LEARN. The LED flashes. Send a MIDI Program Change (on any MIDI channel) into MixMaster. A Program Change ("patch number") of 32 or higher will put MixMaster into Stereo mode. A Program Change of less than 32 will put MixMaster back into Mono Mode.

When the Program Change is received, the LED comes back on steady. Now you must set the MIDI channel that MixMaster will respond to.

Press and release LEARN again. The LED flashes. Send a MIDI Volume command into MixMaster. The LED comes back on steady.

The MIDI channel number of that volume message will be assigned to the first VCA audio channel.

For example, if you send MixMaster a MIDI Volume command (Controller #7) on MIDI channel 1, then VCA's 1 through 4 will respond to MIDI Volume commands on MIDI channels 1 through 4 and MIDI Pan commands on MIDI channels 1 through 4.

Or, as another example,if you send MixMaster a MIDI Volume command (Controller #7) on MIDI channel 3, then VCA's 1 through 4 will respond to MIDI Volume commands on MIDI channels 3 through 6 and MIDI Pan commands on MIDI channels 3 through 6.

To restore back to MONO mode:
Press and release LEARN. The LED flashes. Send a MIDI Program Change command into MixMaster. A Program Change ("patch number") of 31 or less will put MixMaster into Mono mode. The LED comes back on steady.

Next, press and release LEARN again. The LED flashes. Send a MIDI Volume command into MixMaster. The LED comes back on steady.

The MIDI channel number of that volume message will be assigned to the first VCA audio channel.

Stereo Mode selection using Hardwire Method
The second way to put MixMaster into Stereo mode is called "hard wired" stereo. This makes MixMaster permanently in stereo, without permitting someone to accidently switch it back to mono.

This method is preferred in a permanent installation, like when MixMaster is used in Stereo as part of a Multi Media project, with the unit in an inaccessible location.

There is an internal jumper wire, which, if clipped, forces MixMaster to stay in stereo mode. Contact the factory for details.

Input Connections
Even if you are not using the individual VCA outputs 1 through 4, you must still use tip-ring-sleeve type plugs on the four inputs. On the other end of the cables, which usually break out into two RCA's or two mono phono plugs, leave the "ring" plug not connected to anything.

Important: Do not plug a mono plug into any channel input. This would result in the channel output being shorted to ground.

Output Connection
Connect a stereo plug to MixMaster's Mix Output. Channels 1 through 4 will be panned to either the "tip" contact or the "ring" contact.

Important: Do not plug a mono plug into the mix output. This would result in the mix output for channels 1 through 4 being shorted to ground.

The Stereo output may also be connected to the Stereo Input of another MixMaster.

Just a reminder
All Stereo Programming should be done with the MODE switch in the Out position. There is no "Consecutive Parameter" Mode in stereo.

System Exclusive Implementation

All MixMaster System Exclusive messages have the general form (in hex): $F0 $15 $17 CC ID <DATA> $F7

CC = 00 full configuration dump request
CC = 01 full configuration dump
CC = 02 given VCA level inquiry (What level are you?)
CC = 03 given VCA level response (I'm at this level.)
CC = 04 unit ID set

<DATA> S1, D1, S2, D2...for faders 1 through 8, followed by Note Mute assignments, if any. S = status byte with high bit reset. For example, $BO (Controller) appears as $30, $D0 appears as $50.

For example, send this message into an initialized MixMaster:
$F0 $15 $17 $00 $00 $F7

MixMaster will respond with:

$F0 [header]	$15 [JLCooper ID]	$17 [MixMaster ID]	$01 [full dump]	$00 [ID]
$30	$07	$31	$07	$32	$07	$33	$07	$34
$07	$35	$07	$36	$07	$37	$07	$00	$00
$00	$00	$00	$00	$00	$00	$00	$00	$00
$00	$00	$00	$00	$00	$F7			

This shows MixMaster is set to respond to Controller Number 7 on consecutive MIDI channels. There are no Note Mute assignments.

If you plan on using several MixMasters with any System Exclusive Editor / Librarian software, each MixMaster must have its own ID number. This is also called a local device number.

To set the ID numbers, first connect the MIDI output of one MixMaster to the MIDI input of the next MixMaster. Likewise, continue connecting the MIDI output of each MixMaster to the MIDI input of the next.

Turn on all of the MixMasters in the chain. Initialize the first MixMaster by holding in the LEARN button on power-up. (Warning, this will restore this MixMaster's initialized assignments.)

MixMaster automatically sends a message out which will configure all MixMasters in the chain to each have their own unique ID number. These numbers are retained in memory.

Applications

This chapter should give you a clearer picture of how MixMaster fits into your studio or stage application.

MixMaster On Stage

For a stage setup, one or several MixMasters in your rack can be controlled by the same sequencer that is driving your synthesizers and tone modules. In Consecutive Parameter mode, MixMaster would only use up one MIDI channel. Since each VCA is set to respond to its own controller number, you could have literally dozens of MixMasters under sequencer control.

But you might ask, "Why use MixMaster on stage at all, when you can already use the sequencer to control MIDI volume?" Here are four good answers:

1) If you've every tried to use MIDI Volume messages to control a tone module, you have experienced that many modules make a soft "zipper" noise, or have a grainy sound, or sometimes even a delayed response. Instead, try sending the audio output of the tone module to your sub mixer, and patch MixMaster into the channel inserts of the sub mixer. Or use MixMaster as the sub mixer!

If you now send MixMaster the Controller data, you will have a perfectly clean and smooth response.

2) Using MixMaster to bring down or mute the audio output of a MIDI tone module or signal processor will also bring down the hiss from that device, something that MIDI Volume cannot do.

3) MixMaster could be used to automatically trim the output of any non-MIDI device at the sub mixer, so that the house / monitor sound person has an easier job. (You start the sequencer, and the Hammond Organ audio output and the guitar direct boxes automatically balance themselves for the next song.)

4) There are all sorts of clever things you can do with a rack mounted, MIDI controlled mixer. For example, you could set your mod wheel to control the level of your vocal mic. As another example, you can set a JLCooper FaderMaster on top of your keyboard synthesizer, and use it as a remote controller for your keyboard sub mix.

MixMaster in the Recording Studio

We will assume that you are already using some sort of MIDI sequencing device. This could be a software based sequencer, such as Performer™, Vision™, CuBase™, Notator™, Pro4™, etc. (there are dozens!). This includes MIDI sequencing software integrated into a Hard Disk recording package, such as ProTools™. Or, you may be using a dedicated "hardware" sequencer, or a sequencer that is part of a keyboard workstation.

In addition to the sequencer already mentioned, you also have a multi-track tape recorder and some sort of MIDI synchronizer.

(JLCooper makes the PPS-2 and PPS-100 synchronizers, and the Sync•Link Macintosh MIDI Interface and synchronizer. All of these devices allow the tape recorder transport controls to start and stop the sequencer from any point in the song.)

So, in addition to being able to create virtual MIDI tracks, that play back in time with the music recorded on tape, the sequencer can drive MixMaster, to automate the volume changes on the tape tracks during mix down.

Programming and Controlling MixMaster

Typical MIDI devices used for programming and controlling MixMaster include the following: JLCooper FaderMaster, any computer sequencer with faders (such as Vision™, Performer™, or Notator™), any keyboard with programmable wheels or sliders, or any other fader controllers.

Setting up the Controlling Device

You will need to configure the controlling device to drive MixMaster. If you have a JLCooper FaderMaster, the task is simple. In its initialized condition, User Bank U3, for example, sends controller numbers 15 through 22. These numbers are not likely to affect your tone modules unless you have deliberately programmed the tone modules to respond to them.

To teach MixMaster to respond to these controller numbers, go into Consecutive Parameter mode. Check that MODE button is IN. Check that FaderMaster is on U3. Press and release LEARN. Move fader #1.

Consult your owners manuals to configure specific keyboards and sequencers to send controller data. Two examples of software sequencer configuration are given below.

Fader Setup on Performer™

To setup faders on Performer™, select Sliders from the Windows menu. From the Sliders menu, Add eight sliders for each MixMaster. Click and drag down the Slider names to select the Sliders, and Create a Console. Large, Vertical Sliders seem to best suggest a mixing console. Click on Data type to set the Controller number for each Slider. For example, if you have programmed MixMaster using LEARN to respond to Consecutive Parameters, using Controller numbers 12 through 19, then set the Source and Target for each slider to correspond to controller numbers 12 through 19.

Fader Setup on Notator™

Refer to the instructions in the Notator™ owners manual for using the Real time MIDI Generator. Enter the RMG by clicking the RMG box (to the left of the "EDIT" box on the main page. RMG conveniently defaults to the same default as MixMaster, MIDI Volume on consecutive MIDI channels. You may want to change the Status to make the faders send Controller numbers. Reprogram MixMaster using LEARN, Consecutive Parameter. That way the volume messages intended for MixMaster will not change the MIDI Volume of a tone module.

➤How to set up the MIDI cables for Recording a Mix on Your Sequencer:

The simplest way to do this is to connect the MIDI output of one the MIDI controlling devices mentioned above, to the MIDI input of the sequencer.

Turn the sequencer's ECHO function ON.

Connect the output of the MIDI sequencer to the input of MixMaster. If you have several MixMasters, you may either chain them together (MIDI out of one unit to the MIDI in of the next unit.) Or, use a MIDI patch bay to distribute the output of the sequencer to each MixMaster.

➤How to set up your MIDI cables for real-time mix editing using a FaderMaster.

Ideally, you should use a MIDI patch bay of some sort. Before programming the patch bay, consider for a moment what we are trying to do.

When you move a fader, the data should go to two places. It should go into the sequencer, so you can record the fader move. It should also go to MixMaster, so you will hear your tracks get louder and softer.

When you play back the sequencer, the mix data should pass through FaderMaster, and then go into MixMaster to automate the mix. Since it is passing though FaderMaster, you can modify and re-record the mix data onto a new track, using one of FaderMaster's MERGE modes.

The data that goes into FaderMaster should consist of controllers only, with no notes. This can be accomplished by using the patch bay to filter out notes, or configuring the sequencer to send only controllers to FaderMaster. The reason for filtering notes is to prevent the entire sequence from looping through FaderMaster and being re-recorded on onto your mix data tracks.

We will assume here that you have a MIDI patch bay with processing, such as a JLCooper MSB Plus Rev 2. Connect the MIDI input and output of all units (Sequencer, FaderMaster, MixMaster, tone modules etc.) to the MIDI patch bay.

Route the inputs to the outputs as follows:
➤FaderMaster MIDI output to Sequencer MIDI input.
➤FaderMaster MIDI output to MixMaster MIDI input.
➤Sequencer MIDI output to a Processor, set to filter out Notes.
➤Processor output to FaderMaster MIDI input.

Very Important: Set Sequencer's ECHO function OFF to prevent a feedback loop.

If you have computer-based sequencer with multiple, independently assignable MIDI outputs, you do not need to use a MIDI Processor to filter out Notes. Configure your Controller tracks, the one that contain the mix data, to go only to only one output of your MIDI interface. Route that output to the input of the FaderMaster.

Specifications

Input Level .....-10 dBm

Output Level (VCA full on) .....-10 dBm

Input Impedance 4.7kΩ

Output Impedance.....100Ω

(All measurements are unweighted and at nominal input level)

Frequency Response .....(+0.0, -1.4) 20Hz - 20kHz

THD (typical) 0.010%

S/N+N (typical) .....(30kHz bandwidth) -95 dB

Attenuation.....-87 dB

Cross Talk.....-60 dB

Power Supply..... 9 VAC, 1 Amp, 2.5 mm plug

Advanced User Reference

➤Connect Power
Use supplied 1 amp 9 Volt AC transformer.

➤Connect MIDI cables
The MIDI out of the sequencer / computer goes to the MIDI in of MixMaster.
If you are using more than one MixMaster, there are two ways to connect them.

Without a MIDI patch bay: Connect the MIDI output of the first MixMaster to the MIDI input of the second MixMaster. Continue daisy-chaining for all MixMasters.

With a MIDI patch bay: For each MixMaster, hook up a pair of cables (In and Out) to the patch bay.

➤Typical MIDI controllers used for programming and controlling MixMaster include the following: JLCooper FaderMaster, any computer sequencer with faders (such as Vision™, Performer™, or Notator™), any keyboard with programmable wheels or sliders, other fader controllers, etc.

➤Connect the MIDI output of the MIDI Controller to the MIDI input of the sequencer.

➤Turn the sequencer's ECHO function ON.

➤If using a JLCooper FaderMaster for real-time mix editing, turn the sequencer's ECHO function OFF. Hook up MIDI cables according to the information found in the Applications chapter.

➤Connect MixMaster to the Mixing console. Refer to the diagrams near the beginning of this manual.

➤Initial Program
As shipped from the factory, MixMaster's eight VCA channels are programmed to respond to MIDI Volume commands (Controller #7), on MIDI channels 1 through 8.

➤To Initialize MixMaster
Hold in the LEARN button on power-up.
This re-programs MixMaster to respond to MIDI Volume (Controller #7) on MIDI Channels 1 through 8.

➤To program MixMaster in LEARN mode, first hook up the MIDI output of some MIDI controller to MixMaster's MIDI input.

➤Learn Mode 1 (MODE button OUT, CC)
Consecutive Channels
Every VCA responds to the same type of MIDI command. Each VCA is on its own MIDI channel.

Mode button in the OUT position.
Press and release LEARN. LED flashes.

Move a slider or wheel on your controller to send a MIDI command into MixMaster. VCA 1 will be programmed to respond to the MIDI channel of that command. Remaining VCAs are assigned to consecutive MIDI channels.

Example demonstrating how to program MixMaster to respond to MIDI Volume (Controller #7) commands on MIDI channels 9 through 16.

First set up your controller to send a MIDI Volume Command (Controller #7) on MIDI channel 9. MODE button is OUT. Press and release LEARN. Move slider on your controller.

➤Learn Mode 2 (MODE button IN, CP)
Consecutive Parameters
Every VCA responds to the same MIDI channel. Each VCA responds to a different controller number.

Mode button in the IN position.
Press and release LEARN. LED flashes.

Move a slider or wheel on your controller to send a MIDI command into MixMaster. All VCAs will respond to the one MIDI channel of that command. VCA 1 will be programmed to respond to the same MIDI Controller number of that command. Remaining VCAs are assigned to consecutive Controller numbers.

Example demonstrating how to program MixMaster to respond to MIDI Controller numbers 12 through 19 on MIDI channel 3. First set up your controller to send a MIDI Controller #12 on MIDI channel 3. MODE button is IN. Press LEARN, then move slider on your controller.

➤To just "try out" MixMaster to verify all of your audio connections: Connect a source of a steady tone to the console's channel one. Adjust the trim control on your console's channel. Verify your audio monitoring system by making sure that you can control the level of channel one by moving a the console's fader.

Then patch in MixMaster according to the hookup diagrams on pages 6 and 7. Turn MixMaster on. Verify that you can still control the level of channel one by moving the console's fader.

Connect the MIDI output of the controlling device to the MIDI input of MixMaster. Set up the MIDI controlling device to send MIDI Volume (Controller #7) commands on MIDI channel 1.

Move the fader or slider on your controlling device. Verify that MixMasters Activity LED blinks off as you mode the slider. Verify that you have control over VCA channel 1.