Mix Mate

eight track automation system
owners manual

first edition
(c) 1988
J.L.Cooper Electronics

Greetings

Thank you for purchasing **MixMate**, the world's first self-contained mixdown automation system for the eight-track studio. The J.L.Cooper **MixMate** is an integrated system combining professional quality audio with internal computer control, including the most comprehensive array of synchronization options ever made available. When you mixdown with **MixMate**, you will be using the same read/write/update utilities found on console automation systems that typically cost $25,000 to $500,000. All in one single user friendly package. With the **MixMate PLUS** option,you also get an attractive graphic display of fader position, expanded memory, and disk archiving. Please fill out your warranty card and mail it soon, (no postage necessary in the U.S.) so we can keep you abreast of any software updates as they become available. If you have purchased MixMate without the PLUS option, it may be added at a later time. Contact your dealer or J.L.Cooper Electronics for details.

Contents

Chapter 1 GETTING STARTED

MixMate from J.L.Cooper has an amazing number of possible and improbable uses. Please do not be overwhelmed by the sheer number of options. Rather, be comforted by the fact that once you've completed your set-up, MixMate's "user transparent" design approach makes operation quite simple.There are really only three principle ways to run **MixMate**:

In NORMAL MODE, the "control smarts" reside within **MixMate**, a "stand alone " automation system. (Chapter 5)

In PLUS MODE, the "control smarts" reside within an external computer, using a special software package and circuit card option. (Chapter 6)

In the two LOBO MODES, **MixMate** has no intelligent control of its own VCAs, however its synchronization functions still operate. (Chapter 7)

MixMate will default to NORMAL on power up. If you have the PLUS option installed, **MixMate** will shift to PLUS mode upon first receipt of commands from the attached computer. You may also select modes manually.

PRINCIPLE MODE SELECTION IS MADE BY HOLDING THE SHIFT KEY AND PRESSING EITHER NORMAL, PLUS, LOBO 1, OR LOBO 2.
The LEDs indicate your selection.

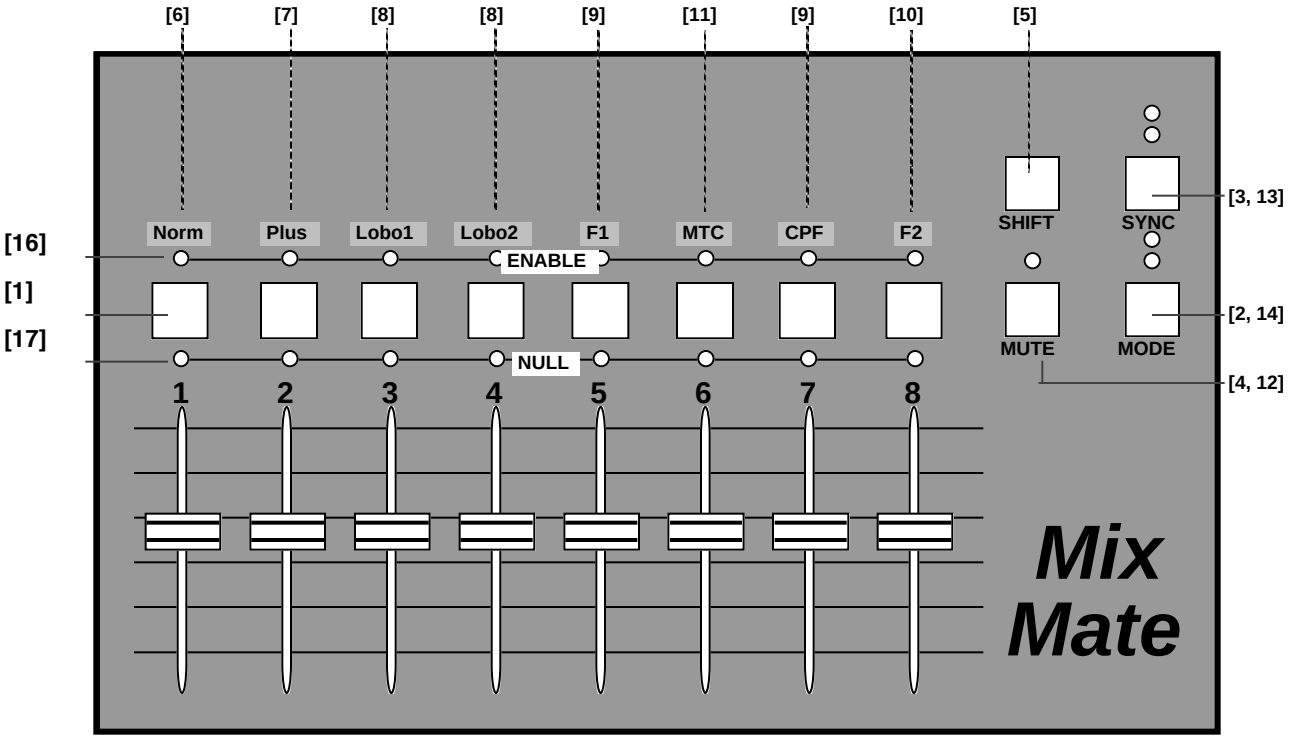
If you plan on using **MixMate** (NORMAL), we recommend that after you do your audio hook-up, and then make a decision regarding sync, go on ahead to chapter (5) and start mixing, skip chapter (7), and then read the remainder of the manual so you will know where to find things when you need them.

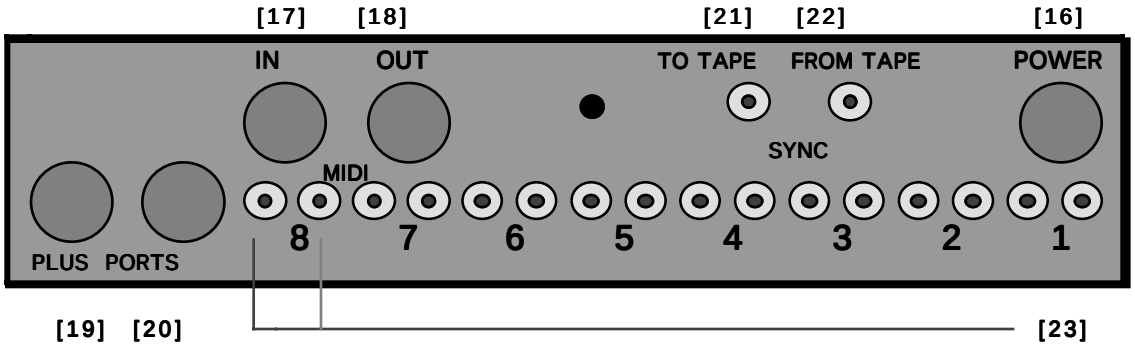
If you own a **MixMate** with the PLUS OPTION, skip chapter (5) and read chapter (6) to start mixing. Then read the remainder of the manual.

If you only plan on using **MixMate** as a brainless box of MIDI-controllable VCA's, mercilessly slaved to some computer-based event controller such as DigiDesign's Q-Sheet™ program, chapter (7) "LOBO Modes" will deal with your kind.

At the very end of the manual you will find two QUICK REFERENCE summaries.

Chapter 2 The Front and Rear Panel





switches

(1) ENABLES: Makes fader "live". Toggles fader from READ to either WRITE or UPDATE modes. In MUTE MODE, activates mute on specific audio channel.

(2) MODE: Selects Fader and Mute Edit Modes.

(3) SYNC: Selects SMPTE or FSK operation. While holding this button down, pressing button #1 or #2 will select either the FSK Fast or Slow mode.

(4) MUTE: Selects MUTE mode.

(5) SHIFT: Enables access to SHIFT functions

SHIFT functions:

(6) NORMAL: This puts **MixMate** into the standard self-contained mode. The unit will default to NORMAL when power is switched on.

(7) PLUS: This is used with the PLUS OPTION circuit card installed for graphic display and expanded memory.

(8) LOBO 1 and LOBO 2 : Allow the **MixMate** to send and respond to MIDI Controller or Note Commands in any range on a selected MIDI channel to allow an external sequencer or event controller to store fader/mute moves.

F1 and CPF: Future modes to be determined, your suggestions are welcome!

(9) ECHO (Labeled F2 on some units): Enables MIDI echo on.

(10) MTC: Enables output of MIDI Time Code when receiving SMPTE.

(11) ERASE: Clears memory.

(12) STRIPE: Initiates striping of selected sync tone to tape. While holding these two buttons down, you may select a SMPTE Frame Rate by pressing on keys #1 through #4.

(13) CHAN: Display and select MIDI channel (LOBO modes only).

(14) DUMP: Pressing SHIFT: SYNC: MODE will cause **MixMate** to perform a Systems Exclusive Dump of its memory.

(15)

leds

ENABLE: These generally either show the write enable status of a given channel's fader, or (in mute mode) show if a channel's mute is ON.

NULL: These show the agreement between the physical position of the fader and the actual level of the VCA. In Update Mode, the Null Leds show agreement between the fader and its "punch-in" position.
WRITE ON : WRITE MODE
UPDATE ON : UPDATE MODE
Both On : MANUAL MODE
Both Off : READ ALL MODE

FSK ON : "smart" FSK Mode or external MIDI Sync
SMPTE ON : SMPTE Mode

While holding SHIFT: SYNC, ENABLE LEDs #1 through #4 display the selected

leds

SMPTE Frame Rate.

While holding the SYNC key, Enable LEDs #1 and #2 display the selected FSK Fast/Slow mode.

rear panel

Power Connector... Insert the DIN plug of the power pack into this jack, not the MIDI connectors!

MIDI IN... This connects to the Midi Out of an attached sequencer which is either controlling (Lobo Mode) or supplying synchronization to the **MixMate.**

MIDI OUT This connects to the Midi In of an attached device which is relying upon **MixMate** for MTC or MIDI Clock data. When Echo function is enabled, data going into Midi In will echo out this port.

(16) PLUS PORT IN This would attach to the Midi Out of the Atari St or Macintosh computer running the Plus Option software.

(17) PLUS PORT OUT This would attach to the Midi In of the Atari ST or Macintosh computer running the Plus Option software.

(18) TO TAPE When striping FSK or SMPTE tone to tape, this jack provides the signal.

FROM TAPE The sync signal from the tape recorder attaches to this connector.

(19) IN and OUT (1-8) These are the audio signal jacks that either attach to the Insert points of the mixer board, or are attached between the tape deck and the mixer board.

(20)

(21)

(22)

(23)

Chapter 3 Hookup Audio

audio

The **MixMate** uses standard RCA connectors for both audio and sync. Each channel of audio is to be routed through a dbx VCA, which acts as an attenuator. This means that when the MixMate's fader is "full on", the signal level coming out of the **MixMate** will be equal to the signal level coming in ("unity gain"). The **MixMate** operates at -10dBm (that is,0 VU) so the Mix Mate may be either inserted into the signal path between your transport and your console, or into the console's individual channel insert points. Channel send goes into an IN, and OUT goes to the channel return.

Alternately, you may use your **MixMate** to automate the output level of synths, tone generators, or practically anything you wish! (Provided that the signal level is approximately -10dBm)

You'll notice that if you are automating tape tracks that you will only need to hook-up seven tracks, because one track will have a sync tone recorded on it. That will free up an extra VCA for you to find some interesting use for (an AUX send, perhaps).

power

The power supply uses a five-pin DIN plug. Just be sure that you plug it into the jack marked POWER.

verify

Turn power on by pushing the switch marked POWER. TRY OUT **MixMate** NOW TO VERIFY YOUR AUDIO HOOK UP. To use **MixMate** as a gain controller without sync, you may have MixMate in any mode. You can now control the level of each audio channel by moving the faders. (Leave the faders on your mixing console at 0 dB . Pressing the MUTE key puts **MixMate** into MUTE MODE [MUTE LED on]. Use the ENABLE keys above each fader to mute channels.)

plus

If you have the **MixMate PLUS** option, you'll need to use two MIDI cables to hook up the PLUS PORT OUT to your computer's MIDI IN. Hook up PLUS PORT IN to computer's MIDI OUT. (And vice versa.)

Chapter 4 Setting Up for Sync

CHOOSING SYNC TYPE

MixMate has available a wide array of synchronization options.This section is included to aid you in your selection. Remember that once you commit to a mode of syncing, you must stay in that mode of sync until the project you are working on is finished. You cannot stripe the tape with FSK and then expect **MixMate** to generate MTC, nor can you enter fader moves with respect to MIDI sync and expect the same moves to make sense when locked to SMPTE.

smpte

SMPTE was developed in the 1960's as a way to uniquely number each frame of a video tape for the purposes of editing. On audio tape SMPTE consists of an audio tone that shifts its phase in a special way called "bi-phase" to encode binary data. This tone is a continuous,"up-counting" data stream representing hours, minutes, seconds, and frames.

The frame rate may be either 24 frames/second (used for 35mm film), 25 (European video), 30 (general purpose tape sync), or 30 drop-frame (U.S. video).

MixMate will slave ("lock to") ALL formats of SMPTE. In addition, **MixMate** (Normal) will stripe ALL formats of SMPTE starting at 00:59:45:00. **MixMate PLUS** will stripe all formats of SMPTE starting at any user-selected SMPTE time.

If you choose to use **MixMate** in SMPTE mode, all the fader moves you make will be remembered with respect to hours:min:sec:frames.

While MixMate is reading SMPTE, you may elect to output MTC (MIDI Time Code).

mtc

MTC is a recent addition to the MIDI spec. MTC is merely a MIDI representation of SMPTE, that is, a way of sending hours:min:sec:frames on a MIDI cable. It is required to drive many of the new post-production oriented software packages,including Q-Sheet™ by DigiDesign, Auricle□II™ by Auricle Control Systems, and CUE™ by Opcode.
MTC IS NOT MIDI SYNC! MTC IS NOT SONG POINTER! At the time of printing this manual, MOST CONVENTIONAL SEQUENCERS OR DRUM MACHINES CANNOT READ MTC. However, this situation may change in the near future.

CHOOSE SMPTE: **IF** YOU ARE WORKING IN A VIDEO POST-PRODUCTION ENVIRONMENT,

IF YOU MUST HAVE A SOURCE OF MTC

IF YOU WANT TO LOCK **MIXMATE** TO AN EXIST

choose

ING SOURCE OF SMPTE (SYNCHRONIZER OR PRE-RECORDED TAPE).

IF YOU WANT TO LOCK **MIXMATE** TO TAPE WITHOUT USING A MIDI SEQUENCER.

MixMate employs the same "smart" FSK converter found in J.L. Cooper's popular **PPS-1.**

In the past, typical MIDI sync-to-tape FSK required you to roll back to the beginning of the song each time that you wanted to lock a MIDI device to tape. This is of course entirely unsuitable for automation purposes! Unlike ordinary sync tones , "smart" FSK has tempo AND song position encoded within it.

"smart" fsk

When this mode is selected, **MixMate** can stripe this special fsk tone when **MixMate** receives MIDI SYNC clocks from an external drum machine or sequencer.Upon tape playback, or when advancing or rewinding tape to do overdubs or mixdown, the FSK tone is fed back into **MixMate**. **MixMate** converts the FSK tone into a MIDI Song Position Pointer, followed by MIDI SYNC clocks, sent out of the MixMate's MIDI OUT, to your sequencer or drum machine. THIS ALLOWS YOUR SEQUENCER OR DRUM MACHINE AND THE **MixMate** TO CHASE AND LOCK TO TAPE.

This tone is completely compatible with the J.L.COOPER PPS-1. Since striping this special tone requires playing back a previously recorded sequence,this sync mode MUST BE USED WITH A SEQUENCER OR DRUM MACHINE.

CHOOSE FSK: **IF** YOU WANT TO LOCK A MIDI SEQUENCER OR DRUM MACHINE TO TAPE WHILE **MIXMATE** CONTROLS THE AUDIO.

Nothing exotic here. **MixMate** will respond in this mode to MIDI Song Position Pointer and slave to plain old MIDI SYNC clocks coming from a sequencer or drum machine, or an existing synchronizer. (By "existing" we simply mean one that you are already using). MIDI SYNC mode may also be used when you want to automate audio levels live on stage with a sequencer providing the timing. MIDI SYNC mode will also be used if you already have some type of synchronizer in place (e.g. Roland SBX-80, Fostex 4050, Steinburg SMP-24, etc.), and you don't want to change your set-up. The same clocks and song pointer that are driving your sequencer can also drive **MixMate**.

choose

CHOOSE MIDI SYNC: **IF** YOU WANT **MixMate** TO SLAVE ITS

midi sync

MEMORY TO A SEQUENCER OR DRUM

MACHINE.
IF YOU WANT TO STORE MOVES IN **MixMate** WITHOUT ANY TAPE ROLLING.

IF YOU WANT TO USE **MixMate** LIVE ON STAGE.
IF YOU ARE ALREADY SET-UP TO WORK WITH AN EXISTING SYNCHRONIZER THAT CAN GENERATE MIDI SYNC WITH SONG POINTER.

choose

There may be situations where you do not wish to "sync" **MixMate** at all. In the two LOBO modes, **MixMate** becomes a brainless box of MIDI controlled VCA's and Midi-generating faders and mute switches. You may wish to store the fader moves in some place other than the MixMate's memory. You could, for example, store the fader moves on a free track of a MIDI sequencer. If you are not using SMPTE (MTC) or FSK, syncing could then become the responsibility of the "host" system. See Chapter 7 for more details.
The sync hook-up will depend on your application . If you plan on locking to SMPTE or "smart" FSK, connect the SYNC TO TAPE output jack to enable you to record ("stripe") a tone on the last track of your tape. Typically this means track number eight on an eight track. You will need to route the signal through the mixing console to adjust the striping level. Connect the sync track output to the SYNC FROM TAPE input on **MixMate**.

otherwise

If you plan on locking to MIDI SYNC from an external sequencer, hook up a MIDI cable from the MIDI OUT of your sequencer to the MIDI IN of the **MixMate**. (Don't use the PLUS ports if present.)

If you plan on using the **MixMate** to sync a MIDI sequencer or drum machine to tape while controlling the mix at the same time, or for any MTC application, hook up BOTH MIDI and SYNC cables according to the illustration. You will also need to hook up another MIDI cable from the MIDI

hookup for sync

OUTPUT of the **MixMate** to the MIDI INPUT of the sequencer or drum machine.

If you chose to use **MixMate** in SMPTE or FSK modes you will first need to stripe the tape. IF YOU ARE USING A PRE-STRIPED TAPE OR OTHER SOURCE OF SMPTE, OR IF YOU ARE LOCKING TO MIDI SYNC, SKIP THIS SECTION and turn to page 15.

You will need to lay a SMPTE or FSK stripe down on tape to synchronize to. Generally, this is recorded on the highest track available. The quality of the stripe is going to be important to the success of the automation, so start with fresh, unspliced tape.

MixMate's stripe output level is approximately +2dB. You should set your record level to somewhere between -7 and -3VU. The higher the level the less vulnerable you will be to "drop out". However, on decks with poor track separation, you may opt for the lower level to avoid hearing the sync tone "spill" over into an adjacent track.

striping tape, general info

You should not in any way alter the tone, or you will corrupt the digital information encoded within it. Therefore, it is very important that NOISE REDUCTION BE DEFEATED DURING RECORD AND PLAYBACK. Fortunately, many multi-tracks with built-in noise reduction include a single track defeat option. Sometimes a sync tone will survive dbx™ processing but we cannot guarantee it. Also, since you have routed the sync signal through a mixing console channel, BE SURE THAT EQ IS BYPASSED. **MixMate**(NORMAL) will stripe any format of SMPTE beginning at {00:59:45:00}. **MixMate**(PLUS) can start striping at any Hour/Minute.

Press the SYNC key to Select SMPTE. (SMPTE LED ON). Check your hook up and start the multitrack in RECORD. If you are using **MixMate** (PLUS), select SET-UP on the menu bar of the computer. Select STRIPE. The screen will prompt you to select SMPTE format and start time. If you are using **MixMate**(NORMAL) select SMPTE format as follows. Press and hold down SHIFT key, and while holding press and hold STRIPE. (That's the same as the SYNC key).

The first four ("left side") Enable LEDs indicate the SMPTE format being striped.

LED 1:	24 frames/sec
LED 2:	25 frames/sec
LED 3:	30 frames/sec drop
LED 4:	30 frame/sec

While still holding SHIFT:STRIPE, you may use the first four ENABLE keys to change striping format. **MixMate** will stay set to the selected format until it is turned off, and will default to 30 frames/sec when power is turned back on.

striping tape, smpte

As soon as you release the keys, SMPTE generation will begin at once and the green LOCK LED will turn on.

Be sure to monitor the tape input level.

ALWAYS stripe SMPTE the length of the WHOLE tape, as it is impossible to go back later and add "a little extra" stripe. At the end of the tape, stop SMPTE generation by pressing the SHIFT key. The green LOCK LED will turn off. Stop the tape.

Striping with J.L.Cooper's "smart" FSK requires a MIDI sequencer or drum machine with a song already programmed in it. Leave your sequencer or drum machine set to INTERNAL SYNC. Also (very important), **make certain that it is set up to put out MIDI SYNC.** (Some sequencers have a disable option). The tempo of the song should not exceed 240 beats per minute. Check your hook up and set the multitrack to RECORD.

Press the SYNC key to Select FSK. (FSK LED ON). To start FSK generation, press and hold down SHIFT key and while holding press STRIPE. (That's the same as the SYNC key). The green LOCK LED will flash, and **MixMate** will produce a reference tone so you can adjust the record level. Start the tape transport and after about 15 seconds of leader tone, start the sequencer or drum machine in play. The green LOCK LED will come on steady to indicate the reception of MIDI start and clock commands.

Be sure to monitor the tape input level.

The **MixMate** sync tone perfectly follows any and every tempo change while keeping track of song position. At the end of the song, the green LOCK LED will start blinking again. Stop the tape. Press the SHIFT key again to return **MixMate** to normal operation.
Tap the SYNC key to select SMPTE or FSK. If you are driving **MixMate** with MIDI Sync, just ignore the sync LEDs because **MixMate** knows how to automatically sense incoming MIDI clocks.

If **MixMate** is locking to SMPTE, you may elect to have **MixMate** output

striping tape, fsk

MTC. To enable MTC output, press SHIFT key and while holding, press MTC. The LEDs indicate your selection. Follow any special instructions for MTC given by the manufacturer of the system or software.

If you have selected FSK as your mode of syncing and are planning on locking a sequencer or drum machine to tape, there are a few more things you should know. The **MixMate**, when it reads FSK off tape, will first look for a number in the tone to decode and send out as a MIDI Song Position Pointer. This is followed by a MIDI Continue command, and then MIDI SYNC clocks. This is the special feature that allows any MIDI sequencer or drum machine that can read Song Pointer to lock to tape no matter where you start the tape from!

Most sequencers and drum machines chase and lock almost instantaneously. However, a very few machines (most notably the KORG DDD-1) have sluggish chase times. **MixMate** easily accommodates these slower devices by providing a hidden function known as "SLOW CHASE". When "SLOW CHASE" enabled, **MixMate** waits a few seconds after sending out the Song Pointer, allowing time for the chase. Then MIDI SYNC clocks are sent as usual.

The result of all this is that the "slow" device will still chase and lock, but you will have to allow a little "pre-roll" time.That is, instead of fast winding to the exact part of the song that you want to edit or overdub, you will wind the tape to a point a few seconds before the part to allow everything time to lock up.

IF USING A KORG DDD-1, YOU MUST ENABLE THE "SLOW CHASE"

selecting sync, in

FUNCTION.
TO ENABLE "SLOW CHASE" PRESS AND HOLD SYNC KEY , AND WHILE HOLDING PRESS ENABLE KEY #2. **MixMate** defaults to "FAST CHASE" whenever you power up. ENABLE key #1 will select FAST CHASE, and the LEDs indicate your selection.

selecting sync, out

Chapter 5 MixMate (NORMAL)

section 1, fader and mute controls

MixMate has four fader edit modes. Tapping the MODE key cycles through the various edit modes you will use for mixing.

manual

MANUAL MODE is the simplest mode of operation. In MANUAL MODE, fader and mute moves are not memorized and incoming sync of any kind is completely ignored, except that it is translated to MTC or MIDI Clocks as appropriate, and sent out of the MIDI OUT connector. MANUAL MODE is used to verify audio and also to experiment with a mix while tape is rolling without committing moves to memory.

To put **MixMate** into MANUAL MODE, tap the MODE key until both WRITE and UPDATE LED's are lit.

write

WRITE MODE is the mode in which fader and mute moves are "recorded" by **MixMate**'s memory while locked to any type of sync. When an audio channel is put into WRITE MODE, fader and mute moves will replace (or "overwrite") all previously recorded moves on that audio channel.This overwriting can take place on any number of selected (ENABLED) channels. (Unlike some gain controllers, **MixMate** lets you move as many faders as you wish in a single pass.) Channels that are not ENABLED will be in playback or "READ" mode.

To put **MixMate** into WRITE MODE, tap the MODE key until just the WRITE LED is lit.Then use the individual channel ENABLE keys to toggle specific channels from "READ" to WRITE.

read all

READ ALL MODE is used for "playing back" moves stored in **MixMate**'s memory while locked to any form of sync. READ ALL MODE is a "safety" mode in that no new moves will be recorded while in this mode. **MixMate** automatically returns to this mode whenever it stops receiving sync. This mode will also likely be used on your final mixdown to two-track.

To put **MixMate** into READ ALL MODE, tap the MODE key until both WRITE and UPDATE LED's are off.

update

UPDATE MODE is a special editing mode. Fader moves that you have previously recorded will not be overwritten or replaced. The relative moves will be left intact but the overall gain will be "re-scaled" or "off-set". Since this mode isn't as "obvious" as the others,here is an example: Say you made some very complicated fader moves while riding a vocal track, with a channel enabled in WRITE MODE. You roll back tape to audit what you've done, and you like the results, but you just wish that the whole track were a bit softer. UPDATE MODE would allow you to shift up or down the level by adding or subtracting from the moves already entered, without

update example

having to re-enter all the moves. (But the **MixMate** will not under any circumstances exceed unity gain.)

UPDATE MODE is also used for editing Mute moves. When a mute key is pressed in UPDATE MODE, no change is made to the LED status, nor is the event written into memory. Rather, this tells **MixMate** to ignore any previously stored mute events until tape is stopped, or until you go to the READ ALL MODE.

To put **MixMate** into UPDATE MODE, tap the MODE key until just the UPDATE LED is lit. Then use the channel ENABLE keys to toggle specific channels from "READ" to UPDATE.

MUTE MODE is used to observe and change mute status. The MUTE key toggles **MixMate** in and out of MUTE MODE.

To mute a channel, put **MixMate** into MUTE MODE by pressing MUTE key. (MUTE LED on.) Now the individual channel ENABLE keys above each fader act as channel mute keys. When in MUTE MODE, the individual ENABLE LEDs indicate the mute status. ENABLE LED ON indicates that the channel is muted.

mute mode

If you were to mute some channels, and then go out of MUTE MODE (MUTE LED off), the channels would stay muted until you go back into MUTE MODE and then turn each channel back on with the ENABLE keys. In other words, any channel muted in MUTE MODE will stay muted, even if the MUTE MODE LED is off.

Also, any faders that have been enabled in some Fader Edit Mode will stay enabled when **MixMate** is put into MUTE MODE.

You can see now that the ENABLE keys and associated LEDs above each fader have a dual function, relating to either fader or mute status. Try to stay conscious of the fact that the MUTE key will determine just what all of the ENABLE keys and LEDs mean.

It is always best to begin a session with a "clean slate". To empty MixMate's memory press and hold SHIFT: ERASE. Continue holding for three seconds, until all NULL and ENABLE LEDs turn on to indicate that memory has been erased.

enable keys

You may want to set up some initial fader levels and mute conditions before actually storing moves. Put **MixMate** into MANUAL MODE, and start the tape transport (or other source of sync). Move the faders to get some general idea of what you plan on doing. Enter MUTE MODE by pressing MUTE key (MUTE LED on). Then use the ENABLE keys above each fader to mute channels (ENABLE LEDs on). Tap MUTE key again to return to MANUAL MODE. Leave the faders and mutes in the initial condi-

section 2, clearing memory

tion that you want for the beginning of the mix. For example, if the song starts with 12 bars of percussion on tracks 1 through 3, you may want to start the mix with tracks 4-8 muted.

section 3, mixing

You may enter fader moves or mute moves in any order, and in as many "passes" as you wish ,but for this example we suggest starting with MUTE MODE off (MUTE LED off). As stated in the last paragraph, any channels that you muted will stay muted even if you are not in MUTE MODE.

For the first pass, select WRITE MODE and ENABLE all eight faders by pressing the ENABLE keys above each channel.

Start the tape transport (or other source of sync). The green LOCK LED will turn on to show when **MixMate** is receiving sync. The LOCK LED should stay on steady without flickering. (Flicker may be indicative of faulty stripping. If you experience difficulty in achieving a good lock-up, see TROUBLESHOOTING, Chapter 9).

first pass

Make your fader moves for a rough mix. At the end of the song, stop the tape (or other source of sync). When the LOCK LED goes out, The faders will "disable" and return to the READ (playback only) mode. Now go back to the top of the song, enter MUTE MODE, and do a pass of mutes. Go back to the top again, play the song and audit the results of your mix. SMPTE USERS PLEASE NOTE. On your first pass after starting with a cleared memory, **MixMate** scans the faders and mutes as soon as sync comes in. **MixMate** stores the initial levels and mutes so that it will "know" how to set up the VCAs when you roll back to the very beginning of the song. In SMPTE mode, this set of starting conditions is associated in memory with a unique value of SMPTE, representing the beginning of the song. For this reason, DO NOT ATTEMPT TO DO A SECOND PASS OR MIX EDIT AT A SMPTE TIME <u>BEFORE</u> YOUR INITIAL STARTING TIME. Until MixMate recognizes the initial start SMPTE time, it will ignore any mute or fader moves.

Now that a rough mix has been committed to memory, you can take advantage of MixMate's powerful editing utilities for "fine tuning" your mix.

Before editing, here is a detailed explanation of the NULL LEDs that you can skim if you already understand what they are used for.

When **MixMate** is locked to tape and automating the VCAs, every fader move that you made in WRITE MODE is being "played back". The faders

smpte users please note

themselves are not moving, but the audio levels are changing nonetheless. The faders are simply resting in the last position that you left them at. So most of the time during playback, the physical position of a fader will have no relationship to the actual level of the VCA, which will continually vary just as you have programmed.

For example, **MixMate** may turn the audio level to full attenuation (i.e. all the way down), but the fader has been left "full on" from a previous pass. Suppose that you were to ENABLE the fader now to do a re-write of the channel. As soon as you moved the fader the gain of the VCA would jump up to meet the fader. NULL LEDs have been provided to avoid this situation. The NULL LED is lit when the physical position of the fader corresponds to the actual level of the VCA. Slide the fader down or up just until the NULL LED comes on. You can now ENABLE the fader to re-write the channel moves without any jump in level.

section 4, editing

In WRITE MODE you may selectively rewrite (that is, replace) any fader moves in any part of the song. Simply fast wind the tape to a point a few seconds before the offending fader moves.Start the tape, then use the NULL LEDs to help you find what the actual VCA level is at that point in the song. Slide the fader down or up just until the NULL LED comes on. Now the position of the fader accurately reflects the level of the VCA. Then ENABLE the fader(s) that you wish to rewrite, and enter the new moves. The faders may be ENABLED before the tape is rolling if you prefer.

null leds

As mentioned earlier, UPDATE MODE is useful for rescaling (or "offsetting") fader moves without actually replacing them. Any moves made in UPDATE MODE will be "added to" or "subtracted from" previous moves. To UPDATE a track, once again shuttle tape to some place in the song before the intended edit. Put **MixMate** into UPDATE MODE by tapping the MODE key until only the UPDATE LED is lit. Don't null the faders just yet. Decide what the nature of the update will be, whether you intend to scale the track up or down. If you plan on boosting the level, you'll want to start with the fader below center position. This will assure that you have enough "throw" to move the fader upward. Likewise, if you plan on scaling the track down, you'll want to start with the fader above center. If you are not really sure, then just move the faders to approximately center position . For the channels that you wish to update, use the ENABLE keys to toggle from READ into UPDATE MODE. (Be sure that you are not in MUTE MODE for now.)

Start tape (or other source of sync). The starting position of the fader is

editing in write mode

your "UPDATE reference". When the fader is above the reference, you are adding gain to the previously recorded moves. When the fader is below the reference, you are subtracting gain from the previously recorded moves. In UPDATE MODE, the NULL LEDs are lit when the physical fader is in agreement with the UPDATE reference.
When the update has been completed, be sure to return the fader to the UPDATE reference point (NULL LED on). This will assure that there is no jump in level after the update. Then exit UPDATE MODE (Either by stopping the tape or disabling the fader or tapping the MODE key).

editing in update mode

Keep in mind that you cannot exceed unity gain. That is, if a track is already full on you cannot go back and update it any higher. Updates are generally used sparingly and are less "busy" than moves made in WRITE MODE. Please note: Even if you now go into MUTE MODE, selected channels will still be in UPDATE MODE. They will stay in UPDATE MODE until you exit MUTE MODE and toggle the faders into READ MODE.(ENABLE LEDs off).
Mute editing requires a bit of planning. Once a region has been muted, there are really only five ways you might want to alter the mute:

(1) Completely remove it. (2) Make it last longer. (3) Make it terminate earlier. (4) Make it start later. (5) Make it start earlier.

All mute edits will be done in MUTE MODE (MUTE LED on).

(1) To completely remove a mute, first cue up the song to a point several seconds before the mute happens. Put the **MixMate** in UPDATE MODE and start the tape. Then, do the following in this order: Tap the desired mute button. You will not see a change of the LED, but you have informed **MixMate** that you want to erase any mute events encountered from then until tape is stopped. Let the song run until you are past the previously muted region and stop the tape. Then roll back and audit the results.

(2) To make a mute last longer, first cue up the song to a place just past the beginning of the mute event. Start the song in UPDATE MODE and press the mute button. Again, notice that there is no change of the the LED. Go into WRITE MODE. Leave the channel muted until you arrive at the new desired "mute off" point, then unmute the channel by pressing the mute button. Roll back to the top and audit the results.

(3) Making a mute terminate earlier is perhaps the simplest edit. With the song playing back put **MixMate** into WRITE MODE. You will see the ENABLE LED turn on, (signifying that the channel is muted), simply turn it off when desired. The new "mute off" point will be remembered. Let the song continue to run until it is past the previous "mute off" point for that track, then stop the tape.

(4) To make a mute start later,first cue up the song to a point several seconds before the mute happens. Put **MixMate** into UPDATE MODE and start the tape. Then, do the following in this order: Press the mute button.

editing mutes

Again, notice that the LED has not changed. Put **MixMate** into WRITE MODE. At the new desired start point, turn the mute on. Stop the tape before you reach the original mute off point (or you will erase it.) Roll back and audit the results.

(5) To make a mute begin earlier, cue up the song to a point before the place where you want the mute to begin. Put **MixMate** into WRITE MODE and roll tape. Mute the channel at the desired place, and then quickly put **MixMate** into READ ALL MODE or stop the tape. This should be done during the time the channel is muted.
There may be times during the mix where you suddenly find that you need to do an overdub track on your sequencer. But you will notice that you probably only have one MIDI input on your sequencer, and that input is presently occupied by the MIDI cable carrying sync from **MixMate**.

In ECHO ON MODE, data coming into MixMate's MIDI IN is "echoed" to the MIDI OUT, while being merged with the FSK-generated MIDI SYNC (Or SMPTE-generated MTC). That means that the one MIDI cable going into your sequencer can carry both keyboard data and sync.The MIDI OUT of your MIDI keyboard would go to the MIDI IN of **MixMate**. Please note that not every sequencer is capable of taking advantage of this. (That is, some sequencers are not designed to receive sync and song pointer while in record.)

IF YOU WANT TO DO AN OVERDUB ON YOUR MIDI SEQUENCER WHILE IT IS LOCKED TO FSK VIA **MixMate**, YOU WILL NEED TO ENABLE ECHO ON. TO ENABLE ECHO ON, PRESS AND HOLD SHIFT KEY AND WHILE HOLDING, PRESS ECHO (Labeled F2 on some units.)

MixMate defaults to ECHO OFF on power up.

You may continue to "fine tune" your mix in as many passes as you wish. (That's what automation is for, after all). When MixMate's memory is full,**MixMate** will drop out of WRITE (or UPDATE MODE), and return to READ ALL MODE.

When you are ready to commit your mixdown, simply start the multitrack and let **MixMate** do all the work.

You may wish to save the mix data by off-loading to some external storage medium. **MixMate** can dump its internal memory via MIDI Systems Exclusive. The storage device will usually be a computer with a patch-librarian program, but certain MIDI sequencers can also capture Sysex data. Hook up MIDI cables between the storage device and **MixMate**. To do a Sysex bulk data dump, press and hold SHIFT key and press STRIPE, then CHAN. Refer to the owner's manual of the storage device for specifics. Depending on how many moves are stored in MixMate, a dump may be as many as 16,000 bytes. (A Sysex dump may also be requested via MIDI. For more details, see MIDI IMPLEMENTATION, CHAP-

echo on feature for fsk and mtc users

TER 8). **MixMate** can accept a Sysex load of data at any time, provided that it is not receiving or sending sync at the same time.
To use **MixMate** live on stage, hook it up to your present MIDI distribution system (via a thru box or switchbox) so that **MixMate** can receive MIDI Sync from a sequencer or drum machine. **MixMate** will ignore channel information (notes, pitch bend or whatever) and only recognize MIDI Sync. Be sure to have your librarian program accessible if you plan on reloading **MixMate** before each song.

You may skip the next chapter.

section 5, end of session

saving

live on stage

Chapter 6 MixMate (PLUS)

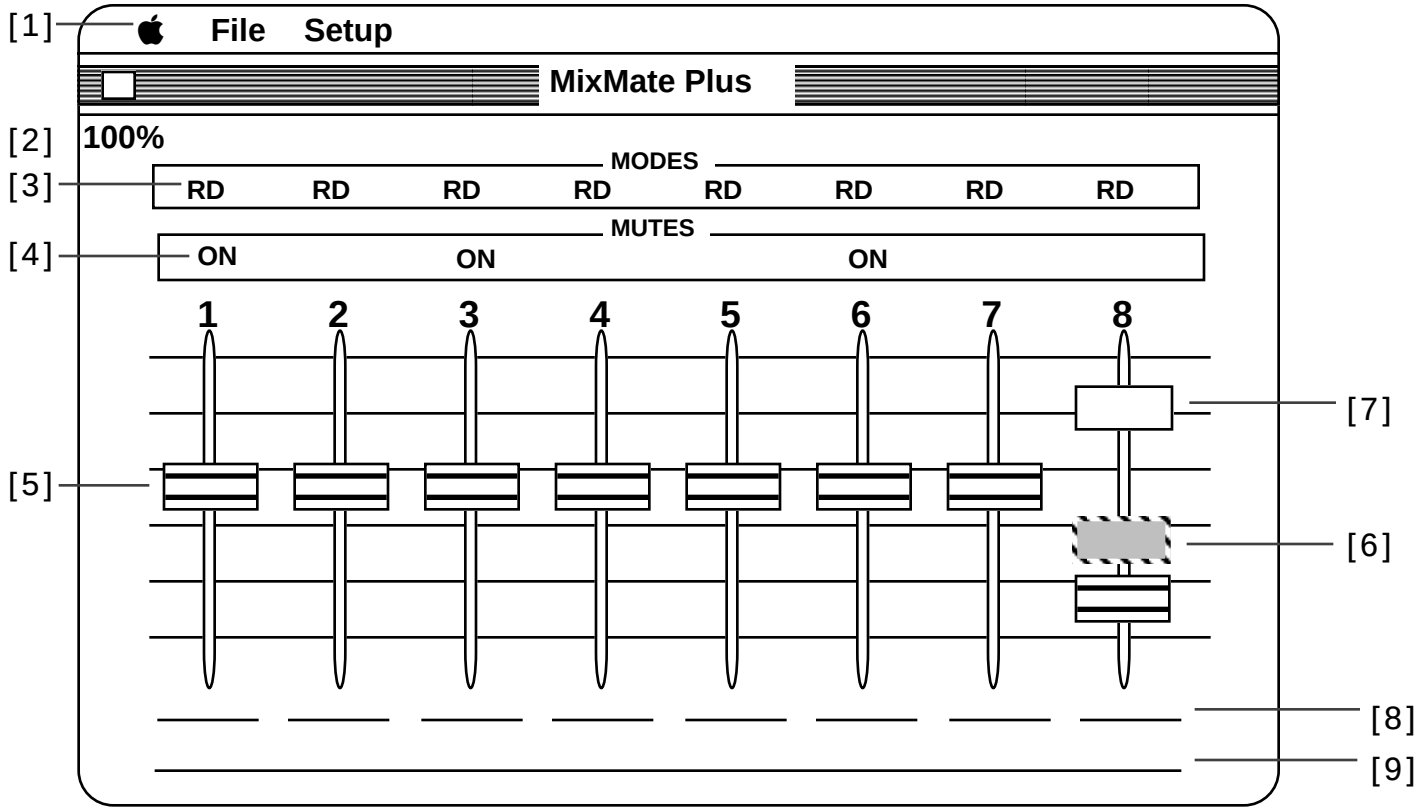
MixMate PLUS consists of a normal **MixMate** with (1) a special field- installable interface card and (2) a software disk for either an ATARI ST or Apple Macintosh computer. Contact your dealer if you want to get this option.

section 1, introduction

MixMate PLUS, used with either an ATARI ST or Apple Macintosh computer, provides a complete personal computer-based automation system. In addition to providing transparent read/write/update fader automation, **MixMate PLUS** taps into the power of your computer to provide these significant features.

* Graphic Display.
* Expanded Memory.
* Disk Backup.
* Auto-Archive Option.
* Midi Program Change storage.
* Enhanced Fader Resolution.
* Variable SMPTE Start-Time.
* Bar-Beat Display Option (in FSK and MIDI Sync).
* Memory Remaining Indicator

Boot up your computer with the disk in place and the cables connected to the PLUS PORTS (as previously directed in Hook Up, Chapter 3). The disk is not copy protected and we strongly encourage you to make multiple back-up copies right away. Follow the instructions for your computer to make a back-up.
The screens of the Macintosh and Atari ST programs are very similar. Unless specifically mentioned, all descriptions refer to both systems.


[1]
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[9]

section 2, the screen

From top to bottom, we have:

[1] MENU BAR: This contains the File and Set Up Menus. See the next page for specifics.

[2] MEMORY REMAINING: This shows the percentage of memory remaining. This number is shown at the bottom left of the Atari ST screen.

[3] MODE BAR: This shows the mode of each channel.

[4] MUTE BAR: This shows the mute status of each channel.

There may be one, two or three elements on each channel.

[5] VCA LEVEL FADER: This shows exactly where the VCA is set at any moment. When in WRITE or MANUAL modes, this will be the only fader shown, since it "lies on top" of the PHANTOM FADER.

faders

[6] PHANTOM FADER: When different than the VCA level, this shaded fader shows the position of the real, physical fader.

[7] UPDATE REFERENCE: When in UPDATE mode, this will show the position of the fader when first enabled. When the PHANTOM FADER lies on top of this, there is no modification of original level.

[8] FADER LABELS: To label a fader, use the mouse to position the arrow on the dashed line below the fader. Click once to highlight the region. You may then use the keyboard to type in a name for the track. Then press RETURN to lock it in. On the ATARI ST, you may also use the F1 and F2 keys to select and highlight a label.

[9] SCREEN LABEL: To label the screen, use the mouse to position the arrow on the dashed line at the bottom of the screen. Click once to highlight the region. You may then use the keyboard to type in a name for the song or scene.

FILE is used for erasing memory and all disk operations.

LOAD will allow you to load selected files of previously saved mix data (and screen preferences) into **MixMate**.

SAVE is used to manually save mix data (and screen preferences) from **MixMate** onto disk if you have not been using Auto Archive.

file

SET DRIVE (Atari ST only) selects targeted disk drive for load and save operations (if you have more than one drive).

ERASE MEMORY is self-explanatory and should be used before each session. Alternately, you can erase memory from the front panel of **MixMate** by holding down SHIFT: ERASE for three seconds.

AUTO-ARCHIVE when selected, **MixMate** automatically backs up your mix data to disk every time **MixMate** stops detecting incoming sync. This archiving is made to (appropriately) a file named ARCHIVE unless you specifically re-name it when first selecting this option. Each time a save is made, it is written to *******.NEW, and the previous save re-named *******.OLD

SET UP is used to to select the "dialogue boxes" for various options of **MixMate**.

METER will be selected to enter a time signature if you want **MixMate PLUS** to display bar and beat while locked to MIDI SYNC or "SMART FSK".

STRIPE will be used to select a SMPTE format and start time for striping.

set up

COLOR (Atari ST only) is used to change the appearance of the screen. If you are using a monochrome monitor, this box will allow you to reverse the black and white fields. With a color monitor, the dialogue box allows you to precisely tailor the appearance of the screen to suit your personal preference.
When you select COLOR, first move the mouse and click on one of the four field selection boxes.Then use the mouse to move the R G B "faders" to adjust the hue of the selected field.

INVERSE (Macintosh only) is used to alternately make the Macintosh screen show white on black, or black on white.

FADERS is another personal preference setting. You may select alternate fader styles to suit your taste.

CONFIGURE (Macintosh only) allows you to set the Mac port desired, and the clock rate of the MIDI interface box.

UPDATE (Macintosh only) requests the initial condition of faders and mutes from **MixMate.** This is used if the **MixMate** unit is turned on after the computer has started the **MixMate PLUS** program.

Now take some time to familiarize yourself with the screen. Label the

tracks and the screen. If you desire to change the appearance of the screen, select COLOR (or Inverse) and FADERS (if you have not already done so). If locking to "smart" FSK, you may wish to enter a time-signature and turn on the Bar/Beat indicator, using SET-UP: METER.
MixMate has four fader edit modes. Tapping the MODE key cycles through the various edit modes you will use for mixing.

MANUAL MODE is the simplest mode of operation. In MANUAL MODE, fader and mute moves are not memorized and incoming sync of any kind is completely ignored, except that it is translated to MTC or MIDI Clocks as appropriate, and sent out of the MIDI OUT connector. MANUAL MODE is used to verify audio and also to experiment with a mix while tape is rolling without committing moves to memory.

To put **MixMate** into MANUAL MODE, tap the MODE key until both WRITE and UPDATE LED's are lit.

orient yourself

WRITE MODE is the mode in which fader and mute moves are "recorded" by **MixMate**'s memory while locked to any type of sync. When an audio channel is put into WRITE MODE, fader and mute moves will replace (or "overwrite") all previously recorded moves on that audio channel.This overwriting can take place on any number of selected (ENABLED) channels. (Unlike some gain controllers, **MixMate** lets you move as many fad-

ers as you wish in a single pass.) Channels that are not ENABLED will be in playback or "READ" mode.

To put **MixMate** into WRITE MODE, tap the MODE key until just the WRITE LED is lit.Then use the individual channel ENABLE keys to toggle specific channels from "READ" to WRITE.

manual

READ ALL MODE is used for "playing back" moves stored in **MixMate**'s memory while locked to any form of sync. READ ALL MODE is a "safety" mode in that no new moves will be recorded while in this mode. **MixMate** automatically returns to this mode whenever it stops receiving sync. This mode will also likely be used on your final mixdown to two-track.

To put **MixMate** into READ ALL MODE, tap the MODE key until both WRITE and UPDATE LED's are off.

write

UPDATE MODE is a special editing mode. Fader moves that you have previously recorded will not be overwritten or replaced. The relative moves will be left intact but the overall gain will be "re-scaled" or "off-set".

Since this mode isn't as "obvious" as the others,here is an example: Say you made some very complicated fader moves while riding a vocal track, with a channel enabled in WRITE MODE. You roll back tape to audit what you've done, and you like the results, but you just wish that the whole track were a bit softer. UPDATE MODE would allow you to shift up or down the level by adding or subtracting from the moves already entered, without having to re-enter all the moves. (But the **MixMate** will not under any circumstances exceed unity gain.)

read all

UPDATE MODE is also used for editing Mute moves. When a mute key is pressed in UPDATE MODE, no change is made to the LED status, nor is the event written into memory. Rather, this tells **MixMate** to ignore any previously stored mute events until tape is stopped, or until you go to the READ ALL MODE.

To put **MixMate** into UPDATE MODE, tap the MODE key until just the UPDATE LED is lit. Then use the channel ENABLE keys to toggle specific channels from "READ" to UPDATE.

MUTE MODE is used to observe and change mute status. The MUTE key toggles **MixMate** in and out of MUTE MODE.

update

To mute a channel, put **MixMate** into MUTE MODE by pressing MUTE key. (MUTE LED on.) Now the individual channel ENABLE keys above each fader act as channel mute keys. When in MUTE MODE, the individual ENABLE LEDs indicate the mute status. ENABLE LED ON indicates that the channel is muted.

update example

If you were to mute some channels, and then go out of MUTE MODE (MUTE LED off), the channels would stay muted until you go back into MUTE MODE and then turn each channel back on with the ENABLE keys. In other words, any channel muted in MUTE MODE will stay muted, even if the MUTE MODE LED is off.

Also, any faders that have been enabled in some Fader Edit Mode will stay enabled when **MixMate** is put into MUTE MODE.
You can see now that the ENABLE keys and associated LEDs above each fader have a dual function, relating to either fader or mute status. Try to stay conscious of the fact that the MUTE key will determine just what all of the ENABLE keys and LEDs mean.

It is always best to begin a session with a "clean slate". To empty **MixMate's** memory, select FILE on the menu bar. Select ERASE MEMORY. The screen will prompt you. You may also erase memory on the **MixMate** unit by pressing and holding SHIFT: ERASE. Continue holding for three seconds until all NULL and ENABLE LEDs turn on to indicate that memory has been erased.

mute mode

You may want to set up some initial fader levels and mute conditions before actually storing moves. Put **MixMate** into MANUAL MODE, and start the tape transport (or other source of sync). Move the faders to get some general idea of what you plan on doing. Enter MUTE MODE by pressing MUTE key (MUTE LED on). Then use the ENABLE keys above each fader to mute channels (ENABLE LEDs on). Observe the MUTE BAR above the faders. Above each fader on the screen the word ON will indicate that the mute is on, that is, the channel is muted . Tap MUTE key again to return to ENABLE MODE. Leave the faders and mutes in the initial condition that you want for the beginning of the mix. For example, if the song starts with 12 bars of percussion on tracks 1 through 3, you may want to start the mix with tracks 4-8 muted.

You may enter fader moves or mute moves in any order,and in as many "passes" as you wish ,but for this example we suggest starting with MUTE MODE off (MUTE LED off). As stated in the last paragraph, any channels that you muted will stay muted even if you are not in MUTE MODE.

enable keys

For the first pass, select WRITE MODE and ENABLE all eight faders by pressing the ENABLE keys above each channel.

Start the tape transport (or other source of sync). The green LOCK LED will turn on to show when **MixMate** is receiving sync. The LOCK LED should stay on steady without flickering. (Flicker may be indicative of faulty stripping. If you experience difficulty in achieving a good lock-up, see TROUBLESHOOTING, Chapter 9).

section 4, clearing memory

If you are locking to SMPTE, you should see the hours: minutes: seconds: frames display on the monitor screen. If you have selected FSK, you will see the Bar/Beat display, unless you have turned it off during your set-up.

section 5, mixing

Make your fader moves for a rough mix. Note the Memory Remaining Indicator on the lower left-hand corner or the screen. The percentage of memory remaining will gradually decrease as you enter moves. At the end of the song, stop the tape (or other source of sync). When the LOCK LED goes out, The faders will "disable" and return to the READ (playback only) mode. Now go back to the top of the song, enter MUTE MODE, and do a pass of mutes. Go back to the top again, play the song and audit the results of your rough mix.

SMPTE USERS PLEASE NOTE: On your first pass after starting with a cleared memory, **MixMate** scans the faders and mutes as soon as sync comes in. **MixMate** stores the initial levels and mutes so that it will "know" how set up the VCAs when you roll back to the very beginning of the song. In SMPTE mode, this set of starting conditions is associated in memory with a unique value of SMPTE, representing the beginning of the song. For this reason, DO NOT ATTEMPT TO DO A SECOND PASS OR MIX EDIT OCCURRING BEFORE YOUR INITIAL STARTING SMPTE TIME.

first pass

Now that a rough mix has been committed to memory, you can take advantage of **MixMate's** powerful editing utilities for "fine tuning" your mix.

Before editing, here is a detailed explanation of the PHANTOM FADERS and the NULL LEDs that you can skim if you already understand what they are used for.

When **MixMate** is locked to tape and automating the VCAs, every fader move that you made in WRITE MODE is being "played back". The faders on the screen are moving, the audio levels are changing, but the real faders themselves are not moving. The real faders are simply resting in the last position that you left them at. So most of the time during playback, the physical position of a fader will have no relationship to the actual level of the VCA, which will continually vary just as you have programmed.

For example, **MixMate** may turn the audio level to full attenuation (i.e. all the way down), but the fader has been left "full on" from a previous pass. Suppose that you were to ENABLE the fader now to do a re-write of the channel. As soon as you moved the fader the gain of the VCA would jump up to meet the fader. PHANTOM FADERS and NULL LEDs have been provided to avoid this situation.

The phantom fader on the screen always indicates the position of the real fader.

The NULL LED is lit when the physical position of the fader corresponds to the actual level of the VCA. Slide the fader down or up just until the NULL LED comes on. This is the position where the phantom fader is superimposed with the actual fader on the screen. You can now ENABLE the fader to re-write the channel moves without any jump in level.

smpte users please note

In WRITE MODE you may selectively rewrite (that is, replace) any fader moves in any part of the song. Simply fast wind the tape to a point a few seconds before the offending fader moves.Start the tape,then use the phantom fader on the screen(and/or the NULL LEDs on **MixMate**) to help you find what the actual VCA level is at that point in the song. Slide the fader down or up just until the NULL LED comes on. Now the position of the fader accurately reflects the level of the VCA. Then ENABLE the fader (s) that you wish to rewrite, and enter the new moves. The faders may be ENABLED before the tape is rolling if you prefer.

If the mix is particularly "busy", it may be difficult to lock on to a null point since it keeps moving around. You may try watching the graphics carefully and chasing the fader on the screen with the phantom before enabling the channel.

section 6, editing

As mentioned earlier, UPDATE MODE is useful for rescaling (or "off-setting") fader moves without actually replacing them. Any moves made in UPDATE MODE will be "added to" or "subtracted from" previous moves. To UPDATE a track, once again shuttle tape to some place in the song before the intended edit. Put **MixMate** into UPDATE MODE by tapping the MODE key until only the UPDATE LED is lit. Don't null the faders just yet. Decide what the nature of the update will be, whether you intend to scale the track up or down. If you plan on boosting the level, you'll want to start with the fader below center position. This will assure that you have enough "throw" to move the fader upward. Likewise, if you plan on scaling the track down, you'll want to start with the fader above center. If you are not really sure, then just move the faders to approximately center position . For the channels that you wish to update, use the ENABLE keys to toggle from READ into UPDATE MODE. (Be sure that you are not in MUTE MODE for now.)

phantom faders null leds

Start tape (or other source of sync). An UPDATE REFERENCE box will appear on the screen for each channel enabled in update mode. This will help you to keep track of the starting position of the real fader. The phantom fader will not go away as it did in write mode, rather it will still indicate the position of the physical fader. The "solid" fader will continue to move in response to the previously recorded moves.

When the phantom fader is above the UPDATE REFERENCE, you are adding gain to the previously recorded moves. When the phantom fader is below the UPDATE REFERENCE, you are subtracting gain from the previously recorded moves.

When the update has been completed, be sure to return the phantom to the UPDATE REFERENCE box. This will assure that there is no jump in level after the update. In UPDATE MODE, the NULL LEDs are lit when the physical fader is in agreement with the UPDATE reference. Then exit UPDATE MODE (Either by stopping the tape or disabling the fader or tapping the MODE key).

editing in write mode

Keep in mind that you cannot exceed unity gain. That is, if a track is already full-on, you cannot go back and update it any higher.

Updates are generally used sparingly and are less "busy" than moves made in WRITE MODE. Please note: Even if you now go into MUTE MODE, selected channels will still be in UPDATE MODE. They will stay in UPDATE MODE until you exit MUTE MODE and toggle the faders into READ MODE. (ENABLE LEDs off).
Mute editing requires a bit of planning. Once a region has been muted, there are really only five ways you might want to alter the mute.

(1) Completely remove it. (2) Make it last longer. (3) Make it terminate earlier. (4) Make it start later. (5) Make it start earlier.

All mute edits will be done in MUTE MODE (MUTE LED on).

editing in update mode

(1) To completely remove a mute, first cue up the song to a point several seconds before the mute happens. Put the **MixMate** in UPDATE MODE and start the tape. Then, do the following in this order: Tap the desired mute button. You will not see a change of the LED, but you have informed **MixMate** that you want to erase any mute events encountered from then until tape is stopped. Let the song run until you are past the previously muted region and stop the tape. Then roll back and audit the results.

(2) To make a mute last longer, first cue up the song to a place just past the beginning of the mute event. Start the song in UPDATE MODE and press the mute button. Again, notice that there is no change of the the LED. Go into WRITE MODE. Leave the channel muted until you arrive at the new desired "mute off" point, then unmute the channel by pressing the

mute button. Roll back to the top and audit the results.

(3) Making a mute terminate earlier is perhaps the simplest edit. With the song playing back put **MixMate** into WRITE MODE. When you see the ENABLE LED turn on, (signifying that the channel is muted), simply turn it off. The new "mute off" point will be remembered. Let the song continue to run until it is past the previous "mute off" point for that track, then stop the tape.

(4) To make a mute start later,first cue up the song to a point several seconds before the mute happens. Put **MixMate** into UPDATE MODE and start the tape. Then, do the following in this order: Press the mute button. Again, notice that the LED has not changed. Put **MixMate** into WRITE MODE. At the new desired start point, turn the mute on. Stop the tape. Roll back and audit the results.

(5) To make a mute begin earlier, cue up the song to a point before the place where you want the mute to begin. Put **MixMate** into WRITE MODE and roll tape. Mute the channel at the desired place, and then quickly put **MixMate** into READ ALL MODE. This should be done during the time the channel is muted.
There may be times during the mix where you suddenly find that you need to do an overdub track on your sequencer. But you will notice that you only have one MIDI input on your sequencer, and that input is presently occupied by the MIDI cable carrying sync from **MixMate**.

In ECHO ON MODE, data coming into **MixMate's** MIDI IN is "echoed" to the MIDI OUT, while being merged with the FSK-generated MIDI SYNC (Or SMPTE- generated MTC). That means that the one MIDI cable going into your sequencer can carry both keyboard data and sync.The MIDI OUT of your MIDI keyboard would go to the MIDI IN of **MixMate**. Please note that not every sequencer is capable of taking advantage of this.(That is, some sequencers are not designed to receive sync and song pointer while in record.) IF YOU WANT TO DO AN OVERDUB ON YOUR MIDI SEQUENCER WHILE IT IS LOCKED TO FSK VIA **MixMate**, YOU WILL NEED TO ENABLE ECHO ON. TO ENABLE ECHO ON, PRESS AND HOLD SHIFT KEY AND WHILE HOLDING PRESS ECHO (Labeled F2 on some units.)

MixMate defaults to ECHO OFF on power up.

editing mutes

You may continue to "fine tune" your mix in as many passes as you wish. (That's what automation is for, after all). When **MixMate's** memory is full, **MixMate** will drop out of WRITE (or UPDATE MODE), and return to READ ALL MODE.

When you are ready to commit to two-track, simply start the multitrack and let **MixMate** do all the work.

You may wish to save the mix data to disk by selecting FILE on the MENU BAR and clicking on SAVE. If you have selected AUTO-ARCHIVE, then your mix has already been backed-up to disk.

To use **MixMate** live on stage, hook it up to your present MIDI distribution system (via a thru box or switchbox) so that **MixMate** can receive MIDI Sync from a sequencer or drum machine into the normal (not PLUS) MIDI input. **MixMate** will ignore channel information (notes, pitch bend or whatever) and only recognize MIDI Sync.

echo on
feature for
fsk and mtc
users

section 7,
end of session

saving

live on stage

Chapter 7 MixMate (LOBO)

introduction

In the two LOBO MODES, MixMate becomes a simple box of MIDI-controllable, high quality VCA's. The SMPTE/MTC or the FSK synchronizer features still operate, but no fader or mute button moves are committed to internal memory. Nor do they effect the VCAs. Rather, fader and mute moves are output as MIDI commands.

This means that whenever you move any fader or mute a channel, some corresponding MIDI data will be sent out of MixMate's MIDI OUT. That data can be captured and recorded with respect to time by a sequencer or a cue-list event controller. When the sequencer is played back, data coming back into MixMate's MIDI IN is decoded and used to control the eight individual VCA channels.

In the LOBO moves, moving a fader <u>will not</u> control the corresponding VCA <u>unless</u> there is an echo back from your external sequencer or equivalent.

MixMate may send/receive either MIDI controller commands (LOBO 1) or MIDI note commands (LOBO 2). When set to respond to controller commands, each fader channel will send and receive a unique MIDI controller number. When set to respond to MIDI note commands, each fader channel will send and receive a unique MIDI note number, the velocity of the note specifies the level of attenuation. In either case, the mute moves are sent/received on a different set of controller or note numbers.

TO SET **MIXMATE** TO RESPOND TO MIDI CONTROLLER COMMANDS, SELECT LOBO 1 MODE BY PRESSING SHIFT KEY AND WHILE HOLDING, PRESS LOBO 1 KEY.

controller commands

TO SET **MIXMATE** TO RESPOND TO MIDI NOTE COMMANDS, SELECT LOBO 2 MODE BY PRESSING SHIFT KEY AND WHILE HOLDING, PRESS LOBO 2 KEY.

note commands

Since we are dealing with MIDI commands, you will need to select the MIDI channel **MixMate** will respond to.SETTING MIDI SEND AND RECEIVE CHANNEL To display MIDI channel, hold SHIFT key and while holding, press CHAN key. The LEDs above each fader will indicate the channel presently selected. NULL LEDs 1 through 8 indicate MIDI channels 1 through 8, respectively. ENABLE LEDs 1 through 8 indicate MIDI channels 9 through 16, respectively.

set channel

THIS INDICATES THE <u>ONE MIDI</u> CHANNEL THAT **MIXMATE** WILL SEND AND RECEIVE ON. INDIVIDUAL FADERS CANNOT BE SET TO RECEIVE ON INDIVIDUAL MIDI CHANNELS!!

To set MIDI channel, while holding SHIFT key, tap CHAN key repeatedly until the desired channel is indicated.

MixMate assigns sequential note or controller numbers to each VCA/ Fader. The actual range of MIDI note numbers or controller numbers may be user-selected. This allows multiple MixMates to run off the same MIDI channel! Before explaining how to do this, here is an application example for sake of clarity.

range of numbers used

EXAMPLE: Suppose that you have two MixMates set for LOBO 2, MIDI note commands. Each VCA has a unique note number assigned to it. It is possible to set one **MixMate** so that its VCA's respond to MIDI note numbers 0 through 8, and the other **MixMate** to respond to note numbers 9 through 16.

In fact, any one of eight possible ranges may be selected for note or controller numbers.

example of range

TO SELECT ONE OF EIGHT CONTROLLER NUMBER RANGES, PRESS SHIFT AND WHILE HOLDING TAP LOBO 1 KEY. THE EIGHT NULL LEDS WILL BE LIT IN SEQUENCE, ONE THROUGH EIGHT. THIS INDICATES THE RANGE SELECTED.
TO SELECT ONE OF EIGHT NOTE NUMBER RANGES, PRESS SHIFT AND WHILE HOLDING TAP LOBO 2 KEY. THE EIGHT NULL LEDS WILL BE LIT IN SEQUENCE, ONE THROUGH EIGHT. THIS INDICATES THE RANGE SELECTED

set range

Since either note or controller numbers may be selected, and each since any one of eight ranges may be selected, it is actually possible to drive up to sixteen MixMates on ONE MIDI CHANNEL. Since any one of sixteen MIDI channels may be selected, it is theoretically possible to have a single MIDI sequencer controlling up to sixty four MixMates!
There are three ways that you might want to sync up your system.

(1) The "host system" (that is, your sequencer or event controller) provides its own timing reference.

(2) The "host system" is locked to tape using **MixMate** as the synchronizer.

(3) The "host system" is locked to some other source of MIDI sync, and this sync data must be ECHOed through **MixMate**.

(1) In this case, set the sequencer to internal sync. Set up to record a track

synchronization possibilities

on the MIDI channel selected. Be sure to chose a MIDI channel for **MixMate** that does not conflict with a track with keyboard data on it.

(2) If you are using **MixMate** as a synchronizer, set the "host system" to external sync. When **MixMate** is set to receive SMPTE it will output MTC if selected. When **MixMate** is set to receive FSK it will output MIDI Sync and Song Position Pointer. Set up to record as above.

There may be times during the mix where you suddenly find that you need to do an overdub track on your sequencer. But you will notice that you only have one MIDI input on your sequencer, and that input is presently occupied by the MIDI cable carrying sync and fader data from **MixMate**.

In ECHO ON MODE, data coming into MixMate's MIDI IN is "echoed" to the MIDI OUT, while being merged with the fader data and the FSK-generated MIDI SYNC (Or SMPTE-generated MTC). That means that the one MIDI cable going into your sequencer can carry both keyboard data and sync.The MIDI OUT of your MIDI keyboard would go to the MIDI IN of **MixMate**. Please note that not every sequencer is capable of taking advantage of this. (That is, some sequencers are not designed to receive sync and song pointer while in record.)IF YOU WANT TO DO AN OVERDUB ON YOUR MIDI SEQUENCER WHILE IT IS LOCKED TO FSK VIA **MixMate**, YOU WILL NEED TO ENABLE ECHO ON. TO ENABLE ECHO ON, PRESS AND HOLD SHIFT KEY AND WHILE HOLDING PRESS ECHO (Labeled F2 on some units).

echo on feature for fsk or mtc users

MixMate defaults to ECHO OFF on power up.

(3) If the "host system" needs to receive MIDI sync from some other source entirely, the sync will need to be passed through (or ECHOed through) **MixMate**. For example, you may intend to record fader movements on a sequencer that is externally locked to a drum machine.But you will notice that you only have one MIDI input on your sequencer, and that input is presently occupied by the MIDI cable carrying fader data from **MixMate**.

In ECHO ON MODE, data coming into MixMate's MIDI IN is "echoed" to the MIDI OUT, while being merged with the fader data. That means that the one MIDI cable going into your sequencer can carry both external sync and fader data.The MIDI OUT of your MIDI drum machine would go to the MIDI IN of **MixMate**. Please note that not every sequencer is capable of taking advantage of this. (That is, some sequencers are not designed to receive sync and song pointer while in record.)

IF YOU WANT ENTER FADER AND EXTERNAL SYNC DATA AT THE SAME ON YOUR SEQUENCER, YOU WILL NEED TO ENABLE ECHO ON. TO ENABLE ECHO ON, PRESS AND HOLD SHIFT KEY AND WHILE HOLDING PRESS ECHO (Labeled F2 on some units).

MixMate defaults to ECHO OFF on power up.

Use the faders to control the attenuation. Use the ENABLE keys above each fader to mute the channel. When the ENABLE LED is on, the channel is muted.

Start the tape transport (or other source of sync). The green LOCK LED will turn on to show when **MixMate** is receiving SMPTE or FSK. The LOCK LED should stay on steady without flickering. (Flicker may be indicative of faulty stripping. If you experience difficulty in achieving a good lock-up, see TROUBLESHOOTING, Chapter 9). Now every fader and mute move made is sent out as MIDI data and recorded by the host system.

echo on

The specific procedure for editing with depend entirely on the host system. If you are using a conventional music sequencer, editing will be very difficult due to the nature of music sequencers. Some editing can be accomplished by simply using a series of overdubs. If you attempt to try "punching in", you will need some way avoid level jumps as new fader moves are grafted in to previously recorded moves. NULL LEDs have been provided for this purpose.

mixing

While the host system is automating the VCAs, every fader move that you made in record is being "played back". The faders themselves are not moving, but the audio levels are changing nonetheless. The faders are simply resting in the last position that you left them at. So most of the time during playback, the physical position of a fader will have no relationship to the actual level of the VCA, which will continually vary just as you have programmed.

For example, a sequencer might turn the audio level to full attenuation (i.e. all the way down), but the fader has been left "full on" from a previous pass. Suppose that now you were to do a "punch in", and record the fader to re-write the moves. As soon as you moved the fader the gain of the VCA would jump up to meet the fader.

NULL LEDs have been provided to avoid this situation. The NULL LED is lit when the physical position of the fader corresponds to the actual level of the VCA.Slide the fader down or up just until the NULL LED comes

editing

on. Now you can punch into record on the sequencer and enter the new fader moves without any level jump.

nulls

Chapter 8 MIDI IMPLEMENTATION

overview

The Midi behavior of MixMate depends on which mode you are in. Here is an outline:

NORMAL MODE

MixMate generates no Midi data upon moving a fader or pressing a mute button. It does generate Midi Sync data (Start, Stop, Continue, Song Position Pointer) when operating in FSK mode, or Midi Time Code (MTC) when operating in SMPTE if MTC has been enabled. Nor will any Midi data received effect the VCAs.

MixMate will also ECHO any Midi data that comes into its Midi Input, if ECHO has been enabled.

PLUS MODE

MixMate's main Midi port behaves exactly the same as in Normal Mode. The PLUS port, however send/receives various Midi Controller and SYSEX information. Since this is intended for the Mac or ST program supplied by J.L.Cooper, we won't go into the details here. If you wish to develop a program for a computer and would like to get the details, contact the factory for a implementation sheet.

LOBO 1 MODE

MixMate will send and receive Midi Controller data in this mode.
The Midi Channel may be set from the front panel by holding down SHIFT and pressing the CHAN button repeatedly until the correct LED shows. NULL LEDs 1 through 8 indicate MIDI Channels 1 through 8. ENABLE LEDs 1 through 8 indicate MIDI Channels 9 through 16.

The Controller numbers are determined by:

For Faders, Controller # = A + 8(B) - 9
For Mutes, Controller # = 37h + A + 8(B)
Where A = Fader Number, B = Bank Number

That is, if we are in Bank 1, Fader 1 sends and receives on Controller 0, and Mute 1 is sent and received on Controller 40h.
[1 + 8(1) -9 = 0 and 37h + 1+8(1) = 40h]
Bank number 1 thru 8 is set on the front panel by holding down the SHIFT button, then pressing LOBO 1 button repeatedly until the correct LED shows. Bank 1, will be shown by ENABLE 1 LED, and so forth.
The synchronization data, whether Midi Sync or MTC operates exactly as in Normal mode, and the ECHO function is the same as well.

LOBO 2 MODE-

MixMate will send and receive Midi Note On data in this mode.
The Midi Channel may be set from the front panel by holding down SHIFT and pressing the CHAN button repeatedly until the correct LED shows. NULL 1 LED indicates Midi Channel #1, and ENABLE 8 LED indicates Midi Channel #16.

The Note numbers are determined by:

For Faders, Note # = A + 8(B) - 9
For Mutes, Note # = 37h + A + 8(B)
Where A = Fader Number and B = Bank Number.

That is, if we are in Bank 1, Fader 1 sends/receives on Note 0, and Mute 1 is sent and received on Note 40h.
[1 + 8(1) -9 = 0 and 37h +1 +8(1) = 40h]

Bank number 1 thru 8 is set on the front panel by holding down the SHIFT button, then pressing LOBO 2 button repeatedly until the correct LED shows. Bank 1, will be shown by ENABLE 1 LED, and so forth.

The positional data is sent as the note velocity. In addtion, a paired Note Off command is sent so that sequencers don't get upset by too many unpaired Note On commands.

The synchronization data, whether MIDI Sync or MTC, operates exactly as in Normal mode, and the ECHO function is the same as well.
There are two Sysex commands recognized by MixMate: Incoming Dump and Dump Request.

Incoming Dump: An incoming dump has the form:

F0h 15h 0Dh 40h data F7h

with the data having as few as about 32 bytes and as many as about 16,000 depending on the amount of moves in memory.

Dump Request: A dump request may be made by sending:

sysex format **F0h 15h 0Dh 41h F7h**

This will result in the immediate sending of the dump, which uses the same form as the incoming dump shown above.

Alternately, a dump may be sent by holding down SHIFT: SYNC: MODE on the front panel.

Chapter 9 TROUBLESHOOTING AND SERVICE

introduction

As you may have experienced, one studio problem can often be in reality two or three problems, each concealing the other. For example, there may be times when you can't get any sound out of a particular audio channel of your console. Let's say that the problem is caused by an intermittent cable. You suspect the cable so you swap it out with a new one, but when you swapped it you accidentally left the fader down. (Or the trim control, or hit a mute button, or a PFL button or...) Even with the new cable, you still are not getting any output. Since the "problem" (or symptom) did not go away, you put back the original (defective) cable. You have now firmly convinced yourself that the problem is NOT the cable. And you will probably end up wasting the next 45 minutes pulling out hair and wondering why you ever got into this business,anyway.

Just that fact that you are a MixMate owner demonstrates that you have a very sophisticated studio set up with lots of variables. So the initial burden of trouble- shooting will be on you, because you understand your own system better than anyone else.

The key to frustration- free troubleshooting is threefold.

(1) Check the obvious first.
(2) Be painstakingly systematic, change only one variable at a time.
(3) Stay calm, it is only your livelihood at stake.

But if you can't track down the problem in twenty minutes, then call the factory.

no audio

The first thing to do is to focus your attention on only one audio channel. Don't get mad, but we have to ask! Is the channel muted? (Remember that you can only observe mute status in MUTE MODE). Is the fader ENABLED and up? Does "channel send" go to a VCA input?

Unplug the cables for that one channel. If you are using a mixer's insert points, you might try an experiment to localize the problem. For the one audio channel under investigation, make a jumper cable and patch the channel send directly to the channel return, bypassing MixMate altogether. If you still have no audio, then the problem has nothing to do with MixMate.
Check that the tone is really on tape by monitoring (listening to) the sync track AT A LOW LEVEL. It should not be a steady tone, rather it should sound sort of garbled or warbling. Check that you are set to slave to the same type of sync that the tape is striped with. If the lock led always goes out at the same place in the song, suspect either tape drop-out or adjacent track cross-talk. On smaller tape decks, channel separation can be

no lock or unsteady lock led

poor. A tape track with a lot of hi- hat or sparkling funk bass along side a sync track can cause problems if the audio signal bleeds into the sync. Also, anything that can degrade audio can degrade sync as well. Be sure that the transport is well maintained with clean and demagnitized heads.

lock led on, but sequencer does not follow tape

First verify that the sequencer or drum machine is indeed set to MIDI SYNC. (If you have inadvertently left the sequencer or drum machine set to internal sync, it may still give the illusion of locking to MIDI sync. But it will not chase or lock properly.) Also if the sequencer has an echo function it should be turned off.

If the sequencer will start from the beginning and lock, but will not chase, it may be that SLOW CHASE must be enabled.

If the sequence plays back at about half tempo, check that the tempo of the sequence during the stripe operation did not exceed 240 B.P.M. If the sequence plays back at double tempo,be sure that you have not inadvertently enabled ECHO ON. If the MIDI OUT of your sequencer or drum machine is hooked up to the MIDI IN of MixMate, a MIDI sync "feed- back loop" will occur if ECHO ON is enabled.

hum

Hum is usually caused by a faulty cable, or by a ground loop. Defective cables can be located by a systematic removal of each cable. A comprehensive discussion of studio grounding techniques is beyond the scope of this manual. There are numerous books on the subject should you care to tackle it yourself. Otherwise, have a professional studio electrician track down the problem (At your expense, please!) Since each studio is unique, we can offer no specific advice on this matter.

no response

If none of the switches do anything,and none of the LEDs are on, check power hook up first. If some or all of the LEDs just stay on, this would indicate that the internal microprocessor is not running. Perhaps the unit has received an AC surge. Turn the power off and on once to see if the unit returns to life. If you still have no luck, see next page.
If you experience any operational difficulties, let us first reassure you that <u>every</u> unit is 100% factory tested. It worked when it left the factory, otherwise it wouldn't have been shipped.

The second most common cause of problems is a "noisy" AC outlet. We recommend the use of an AC line filter with all computer related equipment. These can be purchased at any computer or hardware store, and many music stores also now carry them.} As usual, there are no "user- servicable" parts inside MixMate. For warranty service in the U.S. in the event of a malfunction, call the factory to obtain a Return Authorization before sending the unit back.

The first most common reason that products get returned to the factory

service is, regrettably, failure of the customer to read his owner's manual. We don't mean to get cocky because occasionally there will be failures, but please, read the manual and debug your system before calling. We can't find your bad cable 1,500 miles away.

Chapter 10 THE SPECS

VCA

TYPE: dbx 2155A

INPUT IMPEDENCE: 10K Ohms.

OUTPUT IMPEDENCE: 10 Ohms.

OPERATING LEVEL: -10dBm.

TYPICAL VCA: S/N -86dB.
THD+N 0.022%.

CHANNEL CROSSTALK: -90dB.

ATTENUATION: -81dB.

MEMORY

4000 EVENTS (NORMAL MODE)
INTERNAL

40,000 EVENTS (PLUS OPTION)

FADER RESOLUTION

64 STEPS (NORMAL MODE)
126 STEPS (PLUS OPTION)

TIMING RESOLUTION

SMPTE: +/-1/2 frame.
FSK: to nearest clock.

MUTE RESPONSE TIME

20ms.

TAPE SYNC SPEED VARIATION

will lock to +/- 10%.

POWER SUPPLY

CONDOR HKA-0060 40W
+5VDC 1300 ma
+12VDC 330 ma
-12VDC 330 ma.

Chapter 11 QUICK OPERATION REFERENCE MixMate (NORMAL)

1.Hookup Audio. Patch MixMate into channel insert points, patch bay, or between instruments and mixer.

2.Select Sync.
Choose one of MixMate's four sync options: "smart" FSK, MIDI SYNC, SMPTE, or SMPTE with MTC.
Do sync hook-up and stripe if necessary using SHIFT:STRIPE

3. Clear memory using SHIFT: ERASE.

4. If using "smart" FSK, set sequencer or drum machine to MIDI sync. Select SLOW or FAST CHASE mode (if required) by holding SYNC key. ENABLE key #1 selects FAST. ENABLE KEY #2 SELECTS SLOW. The LEDs indicate selection.

5. Determine initial levels by doing a "trial run" in MANUAL MODE.
(a) Tap MODE key until both WRITE and UPDATE LEDs are on.
(b) Start tape transport or other source of sync.
(c) Move faders to get a general idea of where you want them to start.
(d) Enter MUTE MODE by pressing MUTE button (MUTE LED on), and select initial mutes. Exit MUTE MODE.

6. Roll back to top of song (or scene),prepare to do a first pass of either mute moves or fader moves . To enter fader moves, enter WRITE MODE by pressing MODE key until WRITE LED is on. Enable all faders using ENABLE keys. To enter mute moves, select MUTE MODE.Start tape (or other source of sync) and enter moves.

7. Edit mix using WRITE MODE to replace moves. NULL LEDs indicate when the real fader represents the actual level of the VCA.Use UPDATE MODE to rescale moves. NULL LEDs indicate the update reference point.

8. Do mixdown in READ ALL MODE.

9. Save session via SYSEX by pressing SHIFT key and while holding, press SYNC and MODE.

Chapter 12 QUICK OPERATION REFERENCE MixMate (PLUS)

1. Hookup Audio. Patch MixMate into channel insert points, patch bay, or between instruments and mixer. Hook up PLUS PORTS to computer. Start up MixMate Plus program on computer.

2. Select Screen Preferences. Use mouse, select from MENU BAR: Set up.

3. Select Sync.
Choose one of MixMate's four sync options: "smart" FSK, MIDI SYNC, SMPTE,or SMPTE with MTC. Select SMPTE start time if using smpte. Do sync hook-up and stripe if necessary using SHIFT: STRIPE.

4. Clear memory using MENU BAR: File , erase memory. Or use SHIFT: ERASE held for 3 seconds.

5. Select Auto-Archive if desired.

6. If using "smart" FSK, set sequencer or drum machine to MIDI sync. Select SLOW or FAST CHASE mode (if required) by holding SYNC key. ENABLE key #1 selects FAST. ENABLE KEY #2 SELECTS SLOW. The LEDs indicate selection.

7. Determine initial levels by doing a "trial run" in MANUAL MODE.

   (a) Tap MODE key until both WRITE and UPDATE LEDs are on.
   (b) Start tape transport or other source of sync.
   (c) Move faders to get a general idea of where you want them to start.
   (d) Enter MUTE MODE by pressing MUTE button (MUTE LED on), and select initial mutes. Exit MUTE MODE.

8. Roll back to top of song (or scene),prepare to do a first pass of either mute moves or fader moves . To enter fader moves, enter WRITE MODE by pressing MODE key until WRITE LED is on. Enable all faders using ENABLE keys. To enter mute moves, select MUTE MODE. Start tape (or other source of sync) and enter moves.

9. Edit mix using WRITE MODE to replace moves. NULL LEDs indicate when the real fader represents the actual level of the VCA. The lightly shaded PHANTOM FADER indicates the position of the real fader. Use UPDATE MODE to rescale moves. NULL LEDs indicate the update reference point. The reference point is indicated by an empty fader box on the screen.

10. Do mixdown in READ ALL MODE.

11. If Auto-Archive has not been selected, save session to disk by

selecting MENU BAR:FILE, Save.