Chapter 6 Operational Features

Introduction

The Micro Lynx System Unit (SU) and Keyboard Controller (KBD) are used to remotely control two tape machines, in the standard system configuration; using prestriped SMPTE time code for extremely accurate and repeatable transport control. With the optional M3 card, a third tape machine can be added to the system. All machines can function as either master or slave when used in a group. Also any machine within a group can be selected as the time code reference machine and/or the Master machine.

In addition to controlling basic tape movement (play, rewind, fast forward, stop), the Micro Lynx system can also be used to control editing functions (including automated punch in/out for insert recording), multiple memory position autolocate functions, looping and synchronization functions such as offset timing, chase, and search.

In order to control individual tape transports, the correct interface cable must be used to connect the Micro Lynx to each model tape machine. The Appendix lists the remote controllable audio and video tape transports (by manufacturer and model) that are currently controlled by the Micro Lynx. In many cases, a standard serial cable is all that is required, while in others a custom interface cable is required. In each instance the correct cable can be ordered through your TimeLine dealer.

If your tape machine is remote controllable, yet it does not show up on the list, contact Technical Assistance (see the Preface for the Technical Assistance contact information) with the machine's manufacturer and model number to see if it is compatible with the Micro Lynx system.

Other standard features of the Micro Lynx includes versatile time code reader and generator functions, MIDI/SMPTE interfacing, "built-in" video sync option, and expansion to include M3, ACG and VITC Reader option cards.

SMPTE Time Code Synchronization

Please read through the Appendix section “SMPTE Made Simple” for more information about SMPTE time code.

Selecting Which Time Code Standard is Right for Your Application

The Micro Lynx can be set to follow, or generate, all of the major time code standards currently in use throughout the world. The time code standard that is correct for your application will be determined by whether you are required to have to lock the audio to film or video.

To set the time code type, enter the Time Code Generator Setup mode (press [SETUP], [TCG and [1/PRE]). This will bring up the System code menu.

```
    Setup:  TCG options
Selection:  System Spd/Code: 29.97Hz/30
```

The left hand number refers to the actual speed in frames-per-second, while the right hand number refers to the type of time code being used. Anytime video is used (as either a reference, or if the audio may be laid back to video in the future), the 29.97 Hz/30 setting should be used. This is the default setting and should be used in virtually all cases in the USA, Japan, and Canada. In other countries, where PAL/SECAM is the broadcast standard, then the 25 Hz/25 setting should be used.

If only audio recording and playback is involved, with no possibility that the audio tracks would need to be synced up with a video machine, or when working in a film only environment, then the 30 Hz/30 setting can be used. Only use the 30 Hz/30 setting when absolutely necessary.

Again, if a video transport is involved anywhere in the production, or if one may even possibly be involved at a later date, then either 29.97 Hz/30 (NTSC) or 25 Hz/25 (PAL) should be your standard SMPTE frame rate.

The Micro Lynx also provides a 24 Hz/24 setting that can be used in the unusual circumstances that a tape is required with code running at film frame rate, then the 24 Hz/24 setting would be used to match the frame rate of film projection systems. Note that the Micro Lynx cannot control film playback devices.

SMPTE Time Code in the Audio-only Studio

Up to the last few years, the biggest use for synchronization in the audio-only studio was to lock two multitrack tape machines together to increase track capacity. Today many studios are also using SMPTE time code, or its close cousin MIDI Time Code (MTC) as a method to blend virtual tracking--the use of digital audio workstations and MIDI sequencers/synthesizers to create playback elements that don't require laying down sounds to an audio tape, using traditional multitrack audio tape recording techniques.

The most common function for time code, in the audio-only studio, is as a method of syncing up two audio tape machines. To do this, SMPTE or EBU time code must be prestriped onto an edge track (typically the highest number track is used, i.e., track 8, 16, or 24) of the tape in one continuous pass. It is important that the recording level be set following the tape machine manufacturer's recommendations (typically -10 VU with all noise reduction defeated) in order to reliably read the code off the tape during playback, and not have cross-track bleeding of the time code (a continuous high pitched chirping noise or whine in the background is a sign the time code is bleeding across tracks).

Because SMPTE/EBU time code generates a lot of harmonics (due to the square waves that are recorded), many users leave a guard track between audio production elements and the time code track. If this adjacent track must be used, then it is best to record lower frequency instruments like bass or drums onto the track. Note that there are machine configurations (semi-pro 16-track machines using 1/2" tape for instance) where this may not be acceptable even though high frequency EQ or a noise gate are used to minimize SMPTE time code leakage onto the adjacent track's audio.

Each reel of tape should be prestriped with time code before audio production begins so that there is always a continuous sequence of code on each reel. This will simplify machine control and editing, and minimize having to use Jam sync mode later on during playback. (Jam sync is a method used to recover usable time code from a tape that has time code dropouts, poorly recorded time code, or discontinuous time code numbers.)

Striping the Tape

To stripe a tape with time code, the time code output connector on the back panel of the SU must be connected to the tape machine's time code input for a center track time code machine, or to the edge track dedicated to the time code for a multitrack machine.

When recording time code its important that the capstan be set for WILD rather than RESOLVED mode, meaning that it will run under its own internal speed control. To switch to WILD mode, use the pre-programmed Macro #9 or press [SETUP], then the [TRAN] key twice (to view the Capstan Mode menu). Press the [–] key to change from RESOLVED mode to WILD mode.

Make sure the time code format is properly set. Press [SETUP], [TCG], and the [LAST/NEXT] keys (to select the System Spd/Code menu to verify the setting). Press [SETUP] to go back to normal view mode.

Solo the time code generator to view the current time code value. The time code generator will run from this number. If it is necessary to change it, press [CLR] and then enter the desired start time for the generator (typically 59:45:00). You must then store this new number in the TIME CODE START register by pressing [STO] (store) and [0/TIME].

Set the transport into the record ready mode, press and hold the [RDY] key and then press the transport key (A-C). Now when you press [>] (PLAY) and [REC], the soloed machine will drop into record and the generator will start sending out time code starting at the 0/TIME register setting. Press [>] (PLAY) and [REC] to start recording time code.

Keep in mind that the time code is simply a modulated midband frequency recorded on the tape. This means that it is subject to all the same problems that other audio signals encounter when recorded to magnetic tape including tape dropouts, level shifting, frequency response variances, and distortion caused by dirty, worn, or out of spec heads, transport, or electronics.

These problems will limit the maximum range over which the time code can be read as the transport is shuttled and then stopped. Since the time code changes relative pitch until it is too low (as the tape comes to a stop) or too high (as it is fast shuttled) to be read, ensuring that the heads and electronics are clean and properly aligned will give the maximum performance from the time code track.

Why Start at 59:45:00? Starting at 59:45:00 or before (some people like to start at 59:30:00 or earlier) ensures that there will be at least fifteen seconds of time code recorded on tape before the code hits 1:00:00:00 (one hour), which is the default record start point for most projects (although there are those that like to start at 10:00:00:00, in which case the 0/TIME register would be set to 09:59:45:00).

It's essential that you leave at least fifteen seconds of time code at the head of the tape before where the first recording will occur. This blank time code section will be used as the tape's preroll area. Preroll is the amount of time the tape machines roll before the start of audio playback (or recording). It's needed to ensure that all the slave tape machines are locked in sync with the master before the start of audio (or video). For more information on preroll time see "Adjusting the PreRoll Time" in Playback Features, later in this section.

SMPTE Time Code in the Integrated Video/Audio Production Studio

In most cases the master and/or reference machine will be the video tape machine (VTR) rather than the audio tape machine (ATR). However, as all machines connected to the Micro Lynx are synchronized, any machine can be made the master.

The frame rate selected must match the video standard (29.97 Hz/30 for NTSC, 25 Hz/25 frames for PAL/SECAM). To check and adjust the time code standard press: [SETUP], [TCG], [1]. Use the [+] and [–] keys to step through the frame rate selections.

Another requirement for syncing to video is the connection of a video sync reference to the Micro Lynx's Video Ref jack (a single BNC connector for either input or output). In industry terms this is called the "house sync" connection.

To use house sync as the reference, press [SETUP], [TCG], [0/TIME], and then press the [+] and [–] keys until the external video selection is displayed. Press [SETUP] again to exit this mode.

```
    Setup:  TCG options
Selection:  System Ref:      ExtVid
```

If there is no house sync, and this option is selected, the REF LOCK LED will flash indicating there is no reference coming into the BNC connector. If this occurs, the optional Micro Lynx VSG card should be installed so that the Micro Lynx can generate common house sync for the video equipment in the studio. In this case, select the IntFix (internal reference) option rather than ExtVid, then enable the VSG using [SETUP], [TCG], and [6]. If a common house sync is not used then video edits will not be stable.

If highly accurate video positioning is required in pause or still frame mode, then the optional VITC (pronounced as vitsee, Vertical Interval Time Code) card should be installed in the Micro Lynx. This card reads the VITC, time code placed within the video frame, rather than the Longitudinal Time Code (LTC), which is recorded on the Cue, Aux, or second audio track. The VITC card automatically switches between the two modes depending on the speed of the transport and whether VITC is present.

Video transport positioning is much more accurate when using VITC since the LTC drops out when the tape is shuttled very slowly (without the VITC card the Micro Lynx must monitor the capstan control pulses as the LTC drops out).

Recovering from Bad Time Code and Time Code Dropouts

Before starting a recording session where prestriped tapes are to be used, it's always a good idea to spot check the quality of the time code by locating the machines to several sections of the tape to check that there are no gross problems with the time code. To locate a specific machine to a specific time code point, put it into solo (press [SOLO] and the machine letter, A, B, or C). Press [CLR] and then enter the time code number that the transport should locate to. Press [LOC] (locate). The machine will then fast forward or rewind to the time code position that was entered, minus the time set in the preroll register (1/PRE).

Spot checking the prestriped time code can minimize the chances of encountering locking problems later in the session. Of course, if the tapes were recorded at other facilities and you will be mixing them down, then you may be stuck with substandard quality time code tracks. Such things as an accidental punch-in on the time code track, time code recorded too hot, or too low, or distorted because the Dolby or DBX was not turned off, can all lead to locking problems because the time code cannot be read by the Micro Lynx.

In some instances, the time code may need to be reshaped (cleaned up) or regenerated. The Micro Lynx can do this automatically by using the auxiliary output. The output can be selected from any machine's time code. To select the reshaping function press [SETUP], [TCG], and [5/OFST]. Use the [+] and [–] keys to select the mode (the default is Reshape 1 or machine A). This output can also send out pilot tone or GPI-2 beeps. Remember, the reshape output is an electronically cleaned up "copy" of the input signal. If the input is not present, a drop out for instance, then the reshaped output signal will also have the same drop out. In this case, regeneration is required.

Jam Sync Functions

If the Master time code is discontinuous (suddenly changes time code numbers because the tape has been assembled or dubbed from several original master tapes), or there are dropouts in the time code, it may be necessary to "jam" new time code so that there is only one series of time code numbers coming off the tape. Without this replacement time code, the machines will not be able to reliably locate to specific time code points.

To jam new time code, in Setup TCG set the TCG mode to Play, run. Make the transport that needs new time code the Reference transport, and put the machine and the TCG in a group. Play the machine, the TCG will jam to the machine time code numbers and output new code, record this code on a new track on tape.

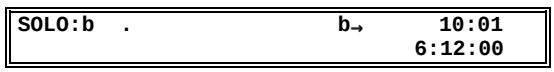
Playback Features

Solo Mode - Single Machine Control Functions

To individually control only one transport, or to check the status of one machine, solo mode is used. When solo mode is selected the upper left display indicates "SOLO:" followed by the machine letter that is currently being soloed (a, b, c, or t). The master machine letter will be in caps, the slave machines will be in lower case letters.

To select only one machine press the [SOLO] key. This turns off the GRP LED and turns on the SOLO LED. Press the individual transport key (a, b, c, or t) to solo that machine. To solo the B transport, for instance, press [SOLO] and then [B]. The resulting display

shows the current time code setting for the transport (b> 10:01). If the machine is in motion, by pressing the machine key again, the machine error register will be displayed. The error register shows resolve error in play and distance to LOC or Cue in wind modes.



Solo mode is also useful for capturing the current time code of the soloed machine to use as a CUE point, edit point or to calculate an OFFSET. All three Micro Lynx machines and the time code generator can be used simultaneously in SOLO. For example, machine A could be in rewind, and b in Play.

Using Cue Points

The CUE register is a nonvolatile memory location that is typically used to store the time code for a machine start point. It is updated as one works through a mix or editing session to set a new start time so that all the machines can be located back to that specific time, in order to play back through the edits or mix changes.

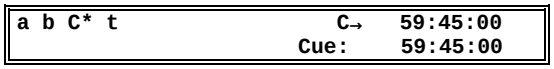
Setting the Cue Register

The Cue register is set with the current number shown in the calculator section of the display (lower right display). This number can be manually entered using the keypad, or it can be captured from any machine or recalled from another memory register. To save the displayed number as the new Cue location press [STO] (store), then [CUE].

Using the Cue Register

The Cue register can be used to locate one machine, if that machine is soloed, or a group (when the GRP LED is on) to the Cue time by simply pressing [CUE]. All machines will then go to the Cue time (minus any preroll time set in the Preroll register).

The Cue register setting can be checked by pressing [RCL] and [CUE]. This displays the current Cue time code setting in the lower right display:



Pressing [CUE] while in play will force the machine(s) to rewind (or fast forward) to the Cue time. The machine(s) will then stop and park at the Cue time (minus any preroll time that is set).

The Cue register can be cleared (to 00:00:00:00) by pressing and holding the [CLR] key and then pressing [CUE].

Group Mode - Multiple Machine Control

In order to synchronize and control multiple transports they must be placed into a group. A group is made up of one or more transports that are controlled together such that one is designated the master machine and the rest are slave machines. All machines in the group are timed from a reference machine, which does not necessarily have to be the master machine.

A group can also contain the Time Code Generator (TCG), which is treated just like another transport or machine in that it can be selected as part of a group, and it can be soloed, just like the other three transports (A, B, and C). The TCG output is typically used to drive an automation system, workstation, sequencer or other time code chase device, so it syncs up to the master. This can be used to control MIDI synthesizers, lighting, special FX, or any other time-based sequential action.

When grouping machines, it is important to remember that the first machine selected in a new group will become the reference and master machine. The reference machine has an asterisk (*) displayed next to it in the display. The reference machine defines the time code type and position that the system will use. All the other machines in the group follow the reference machine position. Thus, unless all the machines have the exact same starting time code (like 01:00:00:00), each machine will need to have an offset added or subtracted to properly track the reference machine. The system also uses and slaves the reference machine's time code numbers when entering any locate, start, stop, or punch in/out times for the group.

The master machine is indicated by a capital letter, while all the other machines in the group will be in lower case. In addition to listing which machines are in a group and which machine is the master and which is the reference, the display also indicates with a "+", any machines that have offsets applied to them.

Create a Group

To create a completely new group, you must first erase the group. Press and hold [GRP] (group select), then press [SETUP]. This will erase any previous group settings and cause the GRP, A, B, C (if the M3 card is installed), and the TCG LEDs to flash. The display will read:

```
Hold the "GRP" key, and add
groups in order of priority
```

The first machine that is selected in this new group will now be the reference machine for the group. It is selected by holding down the [GRP] key while pressing [A], [B], [C], or [TCG]. This first machine is also the master machine for this group. Continue holding the [GRP] key and select the remaining machines for this group. The remaining machines will display as lower case letters indicating their slave machine status.

Changing the Master Machine

If required, the Reference and Master can be different machines. Set the Group option - Ref follow Master - to off and then select a new master machine by holding the [SETUP] key and then pressing the desired new master machine key (A, B, C, or TCG). Since this does not affect the reference machine, the * stays with the original transport. See the Getting Started and Keyboard Controller sections for more information.

Note: By default the Ref follow Master option is set on. If the Master is changed, the Reference machine will also change.

There can only be one master machine in a group. The master machine is the one that is activated by the motion controls. When it starts to move, the slave machines will immediately start up as well in order to lock up to the master.

Resetting the Group

The current group status can be reset by holding the [GRP] key and then pressing the [SETUP] key. This allows the user to designate a new group from the default display. The display will read:

```
Hold the “GRP” key, and add
groups in order of priority
```

Machine Offsets

In almost all but the basic application, the time code at the start of the tape on the reference machine will not match the time code at the start of the other machine's tapes. Because even a small difference will cause locating problems when the machines are put into a group, the reference machine's start point time must be subtracted from each machines start point time code to come up with an amount of time to use as an offset.

Setting the Offsets

Once the reference, master, and slaves are designated in a group, each machine must be soloed and moved to their "starting" point. This can be done fairly roughly right now, to just get them close to their starting points. Once each transport is set at their start time, press [CAPT] to transfer their time code to the calculator display, and then [5/OFST], to automatically calculate the offset from the reference machine. You will still see the original time code numbers in the display for each machine since the Micro Lynx does all the offset calculations internally.

To fine tune the offsets, press the [GRP] key to regroup the machines and play the group. When the machines have locked, press the machine ([A]-[C], [TCG]) key that needs to be fine tuned. This will change the display to STAT. Press [TRIM] to activate the jog wheel. The machine offset register is automatically selected. Rotate the jog wheel clockwise or counter clockwise to adjust the offset in one-frame steps until the sound or picture or event matches the reference machine. If one-frame steps are too big, then press [SUBFR] (sub-frame). This changes the jog wheel to 1/100 frame steps as it is turned. You may also use the [+] and [–] keys to change the offset. Offset trimming can also be done in the stop mode.

To check the offset for any machine, solo or stat that machine, then press [RCL], [5/OFST]. This will display the offset (in plus or minus time code numbers) from the reference machine.

Machine Control

In a group, the master machine is always started first and the slaves follow and lock to the master. As the slave tape machines take a finite amount of time to catch up and lock to the master, a pre-roll time can be set to compensate for this delay (which varies considerably between machines).

Adjusting the PreRoll Time

The preroll time is the amount of time one sets for the tape machines to get up to speed and in sync with the master before the desired audio play/record start point. The default preroll setting is five seconds (5:00). This setting is stored in the preroll register ([1/PRE] key). Its current setting can be checked by pressing the [RCL] (recall register) and the [1/PRE] calculator key. The lower right section of the display will then show the preroll setting (PRE: 5:00 the default).

If instead, four seconds of preroll is all that is required for slave machines, press the [4], [0], and [0] calculator keys to enter 4:00, then press the [STO] (store) and [1/PRE] keys to store the new preroll time.

The preroll setting is subtracted from whatever time code location the tape is being shuttled to. For instance, if the time code 1:00:20:00 was entered, and the tape was located to this time (using the [LOC] key), the actual stop time of the tape would be 1:00:20:00 minus the preroll time, or 1:00:15:00, when using the default preroll setting of five seconds. When play is pressed the tape begins rolling from the preroll time so that all transports are properly locked together by 1:00:20:00.

Adjusting Postroll Time

The postroll default setting is also set to five seconds (5:00). This is the amount of time that the tape will continue to roll at the end of an edit sequence. Its value is held in the postroll register (2/POST). The current setting can be viewed by pressing the [RCL] and [2/POST] keys.

If the value needs to be changed, simply enter the new value using the calculator keypad, then press the [STO] (store) and [2/POST] keys to enter the new value into the register memory.

How To Edit Loop a Group of Machines

If the Micro Lynx is set to group mode, initiating loop play will play all machines in the group.

There are three loop option questions that need to be answered before initiating loop play. What should happen after an edit is performed (redo the edit sequence or simply replay the edited sequence)? What should happen after a replay (does the machine stop or does it continue to repeat the replay)? And, what happens if the machine is set to stop after a replay (should the machine simply stop or rescue itself)?

Press [SETUP], [LOOP] and [0] to bring up the After Edit setting. Press [+] or [–] to select Re-Edit or Replay. Re-Edit repeats the edit once again unless stop is pressed. Replay rewinds the tape and plays back the edit.

Pressing [1] brings up the After Replay setting. Press the [+] or [–] key to select End or Repeat. If end is selected then the machine will stop after the tape is replayed. If repeat is selected then the machine will continue to either go through the replay sequence.

If end is selected in option 1, press [2] to set what happens when the End of the loop sequence is reached. Use the [+] or [–] keys to select between stopping the tape at the edit end point, or recuing the tape to the edit start point.

Recording Functions

Using an Auxiliary Footswitch for Punch-In/Out Control

Normally punch in and out points are set beforehand so that the exact record start and record end times are known before recording is initiated. When performing and recording live music it may be easier to do this “on the fly” by using a footswitch than to take the time to set up punch in and out points. The Installation section outlines what is required to set up a footswitch to perform punch ins and outs.

To use the footswitch you must preset the appropriate tracks to the record ready state (see next section). Simply put the machine(s) into play, and, at the appropriate time, step on the footswitch to switch the record ready machine into record. Step on the switch a second time to turn off recording.

Setting Record Ready Options

Setting a machine to drop into record is a two step process; you must first record enable the machine by pressing and holding the [RDY] key and then the appropriate transport letter key (A, B, or C). This will flash the red record ready LED for that machine. To deselect a single machine, press and hold the [RDY] key and then select the machine a second time. To take all machines out of record ready, press and hold [CLR], then press [RDY].

On machines that accept individual track enables tracks must now be put into track ready mode by pressing [TRKS] and then the appropriate machine letter (A, B, or C) to bring up the track select display. Since ATRs and DTRs may have anywhere from 2 to 48 tracks, and VTRs may have from one to four audio channels in addition to individually being able to record video, time code, or

sync, there will be several variances between displays, depending upon the model of machine selected.

In any machine, individual tracks are selected by simply using the calculator keypad to select the tracks (after selecting the machine using the [TRKS] and machine letter key). In a VTR, pressing [0] by itself will set the video ready to record, pressing [6] will set the time code track ready to record, pressing [5] puts the machine into record ready on the sync or cue track, and pressing [9] puts the machine into the assemble edit mode.

To select additional audio tracks simply press the appropriate number pad key. If more than eight channels of audio are available on a machine, the jog wheel can be used to scan through the tracks and the [+] and [–] keys used to select or disable record ready on each track. Using the [Last] and [Next] keys will also step through the tracks, and [CLR] will change the track ready status back to safe.

Chapter 8 (Keyboard Controller) gives more details on using the record ready function.

To ensure that all tracks on a transport are in the safe mode, select that transport using the [TRKS] and transport letter keys, and then press and hold CLR while pressing the [TRKS] key. This will clear any track enables, putting all tracks back into the record safe mode.

Keyboard Operations

Using the Jog Wheel for Trim Operations

The jog wheel can be used not only to jog and shuttle the tape in the transport mode, but can be used for setting some setup option variables.

Using the Memory Registers

The Micro Lynx has 100 general purpose memory registers used for storing time code numbers. These numbers are placed into the calculator display when they are recalled so they can be used with CUE, LOC, and other functions where a time code number would normally be entered on the calculator keypad.

Most users prefer using the ten memory register option. The advantage is that each register requires only one key press (the ten registers are labeled 0 through 9). Using the one hundred memory register option requires a two-digit entry for every register (the registers are labeled 00 to 99).

Storing Numbers in the Memory Registers

Before storing numbers, check the current memory size setting by pressing the [SETUP], then the [MEM] key. The display will show the current memory size.

```
    Setup:  Memory options
Selection:  Memory Size: 0-9
```

Use the [+] and [–] keys to select between the ten memory option (0-9) and the one hundred memory option (00-99). Press [SETUP] to exit this mode.

To store a time code number in a memory register:

1. Press [CLR] to clear any numbers in the calculator display.
2. Type in the time code number to be saved.
3. Press the [STO] (store) key.
4. Press the [MEM] (memory) key.
5. Press one key from 0-9 if using the ten memory option. Press two keys (00-99) for every register when using the one hundred memory option. Note: the [00] key cannot be used for memory location 0 or 00.

Recalling Memory Register Contents

To transfer the memory contents to the calculator display press [MEM] (the MEM and RCL lights will flash) and the register number. The display will show the memory register number and its contents in the calculator display area.

```
                    Mem00:  1:00:00:00
```

The number can then be used as a locate time code number (LOC) for a transport or group, or it can be stored into another register (CUE, SYNCP, IN, OUT, etc.).

The memory register contents cannot be erased individually, but they can be written over by using [STO]/[MEM]. To clear all the memory registers requires the clear all memory/reset command, ([CLR] + [SETUP], then [ENTR], [CLR]).

Programming Macros

To quickly change or preset several options or modes at once, users can store all the necessary key presses in a Macro register. The Macro function is actually recalling the key presses, in the order that they are stored in the Macro memory register. When a

Macro is recalled, the Micro Lynx responds just as if you were actually pressing the keys.

Note: These are not "smart" Macros. They don't know what mode was selected before the first key was pressed, nor do they know the settings of the menu options or anything else. All they can do is record a series of key presses and then play them back exactly as you pressed them.

Thus, if a Setup option is being changed, you must include enough [+] or [–] key presses to ensure the option is set to the top or bottom of the option list before going back to the option choice you want. You should also try to always enter and recall Macros from a known mode or state (i.e., in the stop mode, with group selected, jog and shuttle off, setup off, etc.). In this way you will get the desired results since the Macro does not know where you're starting from. Be sure to write down your Macro key presses so that if they get erased you can easily reenter them.

There are ten Macro registers. Several are loaded with instructions from the factory (although these can also be written over with your own Macros). The [F1] and [F2] keys recall the Macros stored into Macro registers 1 and 2. These two Macros can be recalled with the touch of only one key ([F1], [F2]), while the other eight Macros require two key presses, the [MACRO] key and the register number (0-9), to be recalled. There is a limit of approximately 40 key presses for each Macro, so choose your Macros carefully to minimize the number of key presses required.

CAUTION:

When recalling Macros be sure to always release the [MACRO] key completely (it will flash) before pressing the register number key, as inadvertent Macro erasure can occur.

Deleting a Macro

To enter new information in a Macro it must be cleared first. To erase the contents in a Macro register, press and hold the [MACRO] key. Then press the register number (0-9) to delete the contents. See the above Caution to prevent accidentally erasing a Macro.

Using the Preprogrammed Macros

Five of the nine Macro registers come preprogrammed with commonly used functions. To use these function simply press [F1], [F2], or [F3] for registers 1 and 2. To recall registers 8 and 9 you must first press [MACRO] then the number.

The registers contain the following instructions from the factory :

Register 0: Blank

Register 1: Capture and store the current transport time code number (upper right part of the display) in the IN register.

Register 2: Capture and store the current transport time code number in the OUT register.

Register 3: Blank

Register 4: Blank

Register 5: Blank

Register 6: Blank

Register 7: Blank

Register 8: Exits the time code striping mode. Resets the transports back to their normal mode (capstan resolved).

Register 9: Time code striping mode. Sets the transports connected to the Micro Lynx ready to be prestripped with time code (their capstans are set to WILD). It stops with the SETUP/TCG/1 menu displayed.

Programming Your Own Macros

Press [SETUP] and then [MACRO] to list the Macros that are available for programming. The numbers that are displayed are those that are free and can be programmed. The dash indicates that Macro has information stored in its register and is not available for programming, unless it is cleared first.

Program Macro: 0 - - - 4 5 6 7 - -

Press one of the number keys that is available. The display will return to normal view and the MACRO light will flash. Perform the function(s) you'd like to store in the Macro. All your key presses will be stored in the selected Macro. Press the [MACRO] key again to complete programming the Macro.

As an example, here's how to program the PRE-roll time for ten seconds and the POST-roll time for two seconds, and then store these changes in the Macro 4 register.

1. Press [SETUP], [MACRO], [4] (this tells the Micro Lynx that you want to store the following key presses in the Macro 4 register).
2. Press [CLR] (to zero out the calculator display).
3. Press [1], [0], [00], [STO], [1/PRE] (this enters 10:00 into the calculator, and then stores it into the Preroll register).
4. Press [CLR] (to zero out the calculator display).
5. Press [2], [00], [STO], [2/POST] (this enters 2:00 into the calculator display, and then stores it into the Postroll register).
6. Press the [MACRO] key (this ends the Macro entry and stores the key presses into the Macro 4 register).

To recall this key sequence again, press [MACRO] then [4] and the new Preroll and Postroll times will be entered into the appropriate registers. The calculator display will show the Postroll time since that was the last action entered in the Macro.

Setting Variable Speed Playback

There are two system reference settings that can be used for variable playback speed; VSO, where the system follows the master machine's time code speed, or the Micro Lynx Internal variable mode, which can be selected as the reference speed source. In the display window these two selections would show up as "V" for VSO mode, or "i" for the Internal variable mode.

To select the system synchronization reference mode press [SETUP], [TCG], and [0]. Use the [+] and [–] keys to step through the selections (IntFix, IntVar, ExtVid, Aux, VSO, ACG). In the IntVar mode, the speed can be varied between 87.5% and 112.5% of nominal speed. To set the Int Var varispeed, press the [2/POST] key to bring up the Varispeed menu. Press the [+] or [–] keys (or use the jog wheel) to change the speed, press [SETUP] again to exit the TCG setup menu.

Code Only Master Operation

Sometimes it becomes necessary to synchronize a machine, or group of machines to a time code source. This type of operation is commonly referred to as code only master - allowing a Master machine's time code source to position slave machines into resolve and lock. This section explains the various methods of operation available with the Micro Lynx that will allow code only master operation.

Selecting the System Reference

Two reference choices are available for code only master operation: VSO (variable speed operation) and External Video. The correct selection will depend on the types of machines being used.

If the time code source will come from an analog, or non-video referenced machine, then the System Reference selection will be VSO Master. This mode will allow the time code source to provide the speed reference for the transports being synchronized. Please be aware that this type of reference selection will only be as reliable as the incoming master time code source. Any irregularities in speed will be applied to the synchronized slave machines.

Note: A video transport CANNOT be slaved to a time code only master with VSO Master as the system reference.

If the time code source is from a video deck, or a video deck will be slaved to the incoming time code source, then the System Reference must be EXTVID. In this mode, the time code source must run at the proper video speed.

Note: A digital audio transport can only be slaved to a code only master source when the time code source AND the digital machine are both referenced to the same external sync. In some cases, the ACG-2 option card can be applied to this type of operation.

Setting the Master Machine Type

In a code only master operation, it is generally assumed that the time code source machine cannot be synchronized by the Micro Lynx. This can occur for several reasons: the time code source generates from a remote location, or the machine is not remotely controllable by the Micro Lynx. In either case, the Master machine transport setup menu selection becomes important.

The transport menu selection for the code only master machine MUST be set to an analog machine type setting. Do not select a video or digital transport type. Any analog setting will do.

Transport Control

In a code only master setup, group machine control will originate from the incoming master machine's time code. As the Micro Lynx Keyboard controls cannot be used, the deck-plate, or machine remote transport keys must be used. Whenever the time code source is played, slave machine chase and lock will be initiated. A slave offset may be necessary to position the slave machine(s) correctly.

Please note that the automated editing capabilities of the Micro Lynx Keyboard will not function, since the Micro Lynx is not remotely controlling the master machine.