SSL Data Interface System

System Installation Requirements

Hardware Requirements

Solid State Logic G Series Console, fitted with:

- SSL Synchronizer Status Panel - (CF82E145)

- Z8 Options Interface PCB - (82E78)

- Standard SSL Synchronizer Control (S88 & 5117) and Master Transport Control (S29) cabling (3 cables)

- SSU-to-SSL Master Time code cable (not supplied)

Alternatively:

- TimeLine Console Control Unit

- 28 Options PCB (87E78)

- SSL Synchronizer control (S88) and Master Transport cable (S29)

- SSU-to-SSL Master Time Code cable (not supplied)

Lynx System Supervisor Unit (SSU) fitted with:

- SSL Data Interface (see the Appendix for information on installing the SSL Data Interface hardware into the Supervisor)

NOTE:

The SSL Master Transport Selector unit is <u>not</u> used with the Lynx SSU system.

Software Requirements

SSL G Series Computer

Software version: 2.12G or higher, or V2.00 or higher

Lynx System Supervisor Unit

Main processor: MAIN-141 or higher

Timing Generator: TGEN-141 or higher

Tributary Port: TRIB-141 or higher

SSL Data Interface: SSL-141 or higher

Lynx Time Code Modules

Software version: V500 or higher, or V700 or higher

Special Requirements

Video Reference Signal Source

If you wish to reference the System to video sync, you will need to connect a suitable external sync generator.

The Lynx Modules can accept composite video sync (house sync), black burst, color bars, or any other stable composite video signal as their reference. The integrity of the sync reference is critical to proper operation.

The same video reference signal should also be connected to the SSU and the External Sync input of any video tape transports and any digital audio tape recorders in the system.

Connections are made with industry standard BNC style cables.

Sync Status Panel Modification

> Note:
>
> It is necessary to perform a minor hardware modification to the SSL Synchronizer Status Panel before connecting it to the Lynx System Supervisor SSL Data Interface. Specifically, two current-limiting resistors must be bypassed with wire jumpers.
>
>
> **Please refer to Service Bulletin No. 91-002B in the Appendix, for complete service information.**

On the printed circuit board of the CF82E145 Synchronizer Status Panel there are two, 22Ω resistors located near one end of the 50-way header. Bypass each of these two resistors by soldering a wire jumper onto the circuit board. Ideally all four solder pads should be joined together with jumper wire to minimize voltage drop.

Modification of Master Transport Remote

When using an SSU with an SSL E Series console frame, it is necessary to change the tally lamps in the Master Transport switch bank from the original 24 volt lamps to an equivalent 5 volt lamp.

These lamps are included with every System Supervisor SSL Data Interface Option.

> NOTE:
>
> This does not apply to G Series consoles, which are fitted with a lamp buffer circuit.

SSL Sync Control Software Patch

The "Synchronizer Controller" and "Master Transport Selector" functions must be enabled in the SSL Console Computer software. This requires an internal software "patch" that is described in the setup procedure in the "SSL Computer Initialization" section.

System Interconnection

Interconnection of Lynx System Supervisor Unit and SSL Studio Computer

The following four connections are required between the Lynx System Supervisor Unit and the SSL console and G Series Computer frame. Please refer to Figure 7-1, the "TimeLine/Solid State Logic Synchronizer System Diagram".

> NOTE:
>
> Cables 1, 2, and 3 comprise the "standard" SSL synchronizer control cable set. There is a limit on the length of the computer data cable as noted below. Cable assembly 4 is not supplied by SSL or TimeLine and generally is fabricated by the customer or system installer.
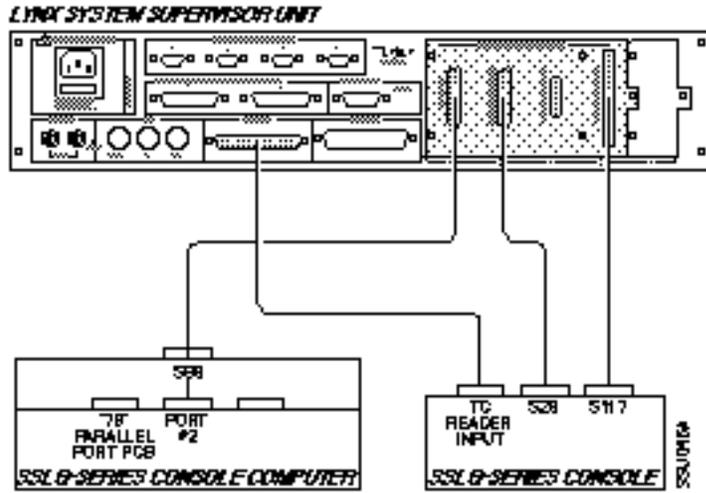
Figure 7-1. System Supervisor SSL Interconnect

Synchronizer Status Panel Cable

A 50-conductor cable with a 50-pin ribbon cable header on each end. Connects between the "S117E" connector on SSL Synchronizer Status Panel and the "S117-SYNC PANEL" connector on the SSU.

Master Transport Control Cable

A 25-conductor cable with 25-pin Male 'D' to 25-pin Male 'D' connectors. Connects between the "S29E" connector on the SSL Console Panel and the "S29-MSTR REMOTE" connector on the SSU.

Computer Data I/O Cable

25-conductor cable with 26-pin ribbon cable header and 25-pin Female 'D' connector. Connects between S88E-2 '78' Card Port #2 in SSL Computer frame (header end of cable) and "S88-DATA" connector on SSU ('D' connector end of cable).

Note:

Maximum length of this cable is 2 meters (6.5 feet). Data transfer reliability and display stability can not be guaranteed if this cable is extended.

Master Time Code Cable Assembly

Connects between "AUDIO I/O" connector on the SSU and the time code patch points on the SSL Console.

Please refer to the pin out assembly drawing in the Appendix for the interconnection diagram.

Time Code Generator Outputs

The Lynx System Supervisor Unit includes three SMPTE/EBU time code generators, each of which is configured for a specific purpose when the SSL Data Interface is installed in the Supervisor.

1. Generator 1 outputs a VITC-style still-frame time code to ensure that the SSL Computer always has completely accurate position information for the reference machine. This signal should be connected to the SSL's Master Time Code input.

   Note that this time code is not the actual time code signal from the tape machine, but rather is synthesized by the Supervisor based on the position information reported by the Lynx-2 Module connected to the machine. This provides the SSL Computer with a fresh time code signal that is not dependent on the quality of the actual recorded time code and will eliminate any possibility of the automation system faltering due to bad time code.

2. Generator 2 provides an alternate reference time code signal that may be used to drive external time code-controlled systems.

   Generator 2 outputs a <u>play speed-only</u> signal that is locked to Generator 1 (the master time code) when the master machine is in Play.

3. Generator 3 is controlled from the SSL Computer for time code striping purposes. It's output is locked to the system reference. By following the SSL prompts provided when using the time code stripe mode, you may enter any starting frame number.

Individual Time Codes From Machines to SSL Console

The SSU supplies the current reference machine time code to the SSL from SSU Time Code Generator 1. The SSU will automatically switch the correct time code whenever a new master machine is selected. When a TimeLine CCU or KCU is installed in the system, then if required, the generator can be set to either follow the master machine or output time code from a selected reference machine. This simplifies connections from the TimeLine system to the SSL as individual time code outputs from each machine need only to connect to its appropriate Lynx time code module.

Optional Supervisor Connections

MIDI Time Code Output

MIDI Time Code (MTC) is available on the MIDI OUT connector on the Supervisor. This MIDI Time Code is play-speed only and is locked to the Supervisor's Time Code Generator 2.

The Supervisor's MIDI Time Code generation conforms to the standards defined in MIDI Detailed Specification (MIDI 1.0, document version 4.1.1).

Jog/Shuttle Wheel

The Jog/Shtl Option connector provides access to several functions not normally provided in an SSL Console system. With the connection of the appropriate hardware (a shaft encoder and two pushbutton switches with tally indicators) the SSU provides Jog and Shuttle control modes for the transports connected to the system. The two keys select either Jog (frame-by-frame tape movement only when the wheel is turned or when the Fast Forward or Rewind keys on the SSL Master Remote panel are pressed) or Shuttle (bi-directional variable search motion) mode for the control wheel.

Emergency Transport Bypass Cable

TimeLine recommends that you fabricate a special cable that connects a Lynx Transport Control Cable directly to the Master Transport control switches in the SSL Console, bypassing the SSU and the Lynx Module on the master machine.

This cable can be used in the unlikely event that the SSU totally fails, and would restore basic transport control functions of the master machine from the SSL's Master Transport panel. The bypass cable is designed to connect the Supervisor end of the S29 cable to the Lynx Module end of the Transport Control Cable for a parallel-controlled tape machine. (Refer to the Appendix for a schematic drawing of the SSL bypass cable, Drawing 73K007.)

Interconnection of Lynx Synchronizer System

Each tape transport must be connected to its Lynx-2 Module with the appropriate Lynx Transport Control Cable and a separate time code cable.

The RS422 and Video Sync connectors for all Lynx-2 Modules in the system are connected together in a "daisy chain" configuration. The two RS422 (9-pin 'D') and two EXT VID (BNC) connectors on each module are internally wired in parallel to facilitate this type of loop-through interconnection. Note that the physical order in which the modules are connected to each other does not matter.

Connect one end of the RS422 daisy chain to the TRIB PORT 1 connector on the SSU.

Video Reference Signal

An external video reference signal should be extended to the Lynx modules and the VID REF connectors on the Supervisor. Properly terminate the last position in the video sync chain with a 75 ohm termination plug.
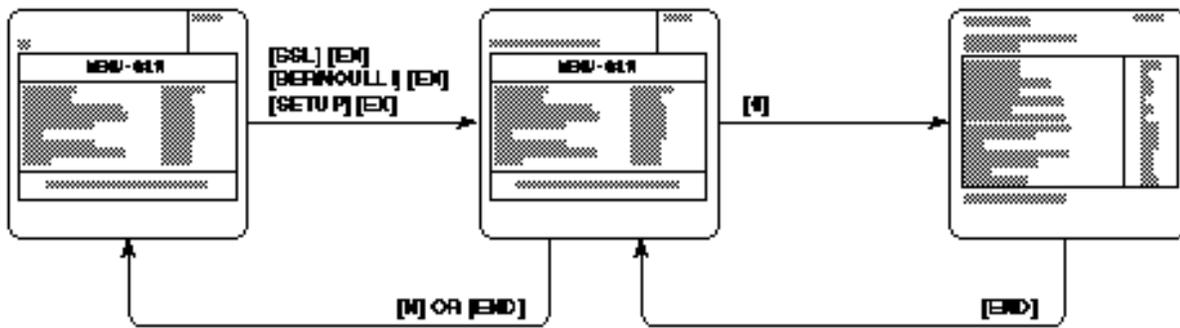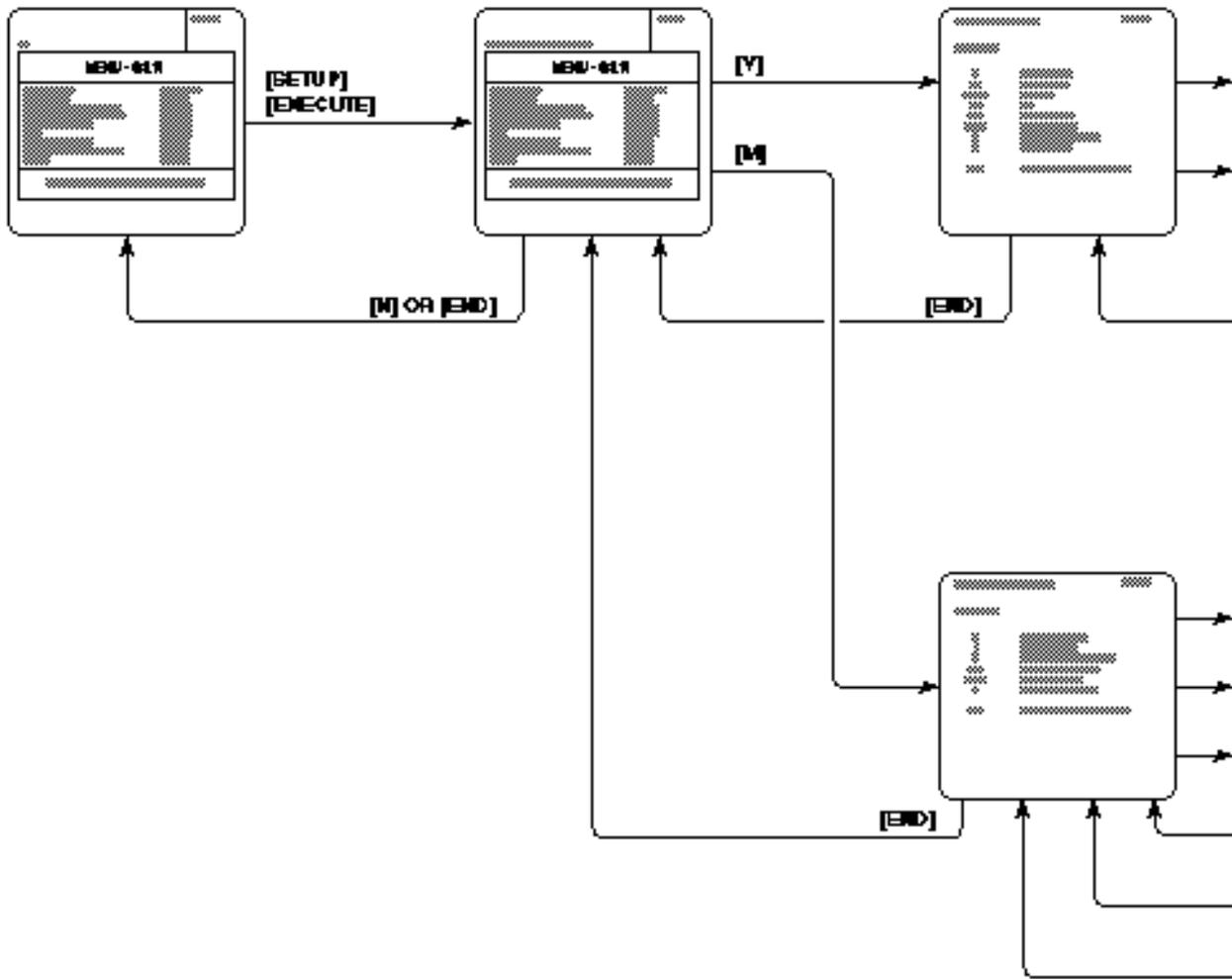
Figure 7-2. SSL Setup Configuration

[S]

[SYNC]

[END]

[END]

[T]

[SYNC]

[EXECUTE]

[END]

[S]

[END]

[ ]

[GETUP]

[SYNC]

[END]

[END]

[END]

[END]

[END]
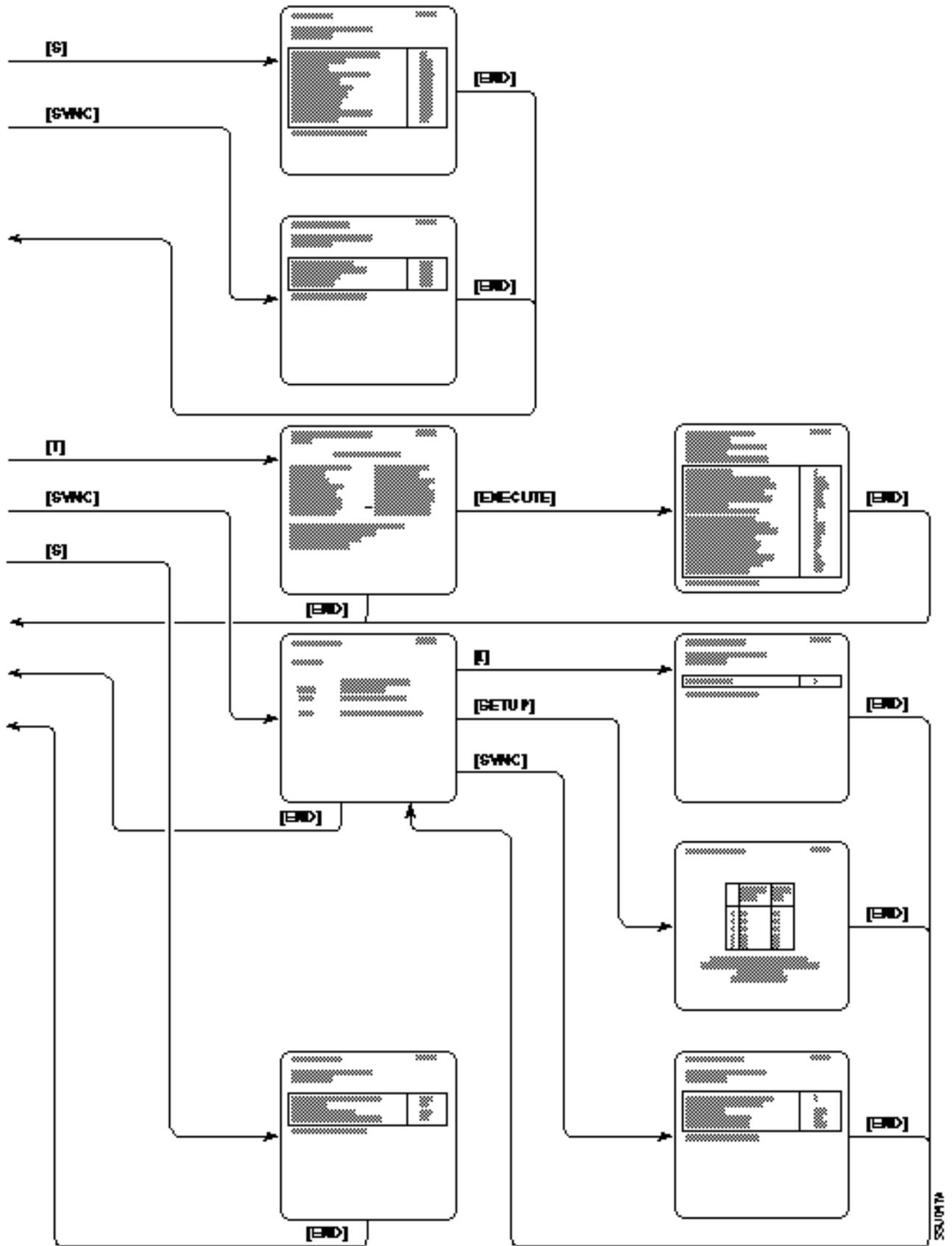
Setting Up the SSL/System Supervisor System

Lynx System Initialization

Lynx module communication to the SSU is simple and straightforward. Initialize each Lynx-2 module for the type of transport connected. Select a different address for each module. The module addresses 1-5 map to SSL transports A-E. Be careful not to assign the same address to two modules.

Turn on the SSU. Initially, all indicators on the Supervisor's front panel, except for the XMT and RCV Data LEDs, will light momentarily and then revert to a normal display

The modules should be placed "On Line" and checked that their 422 lights illuminate. This confirms communication to the SSU.

Synchronizer Enable Patch

The Synchronizer Controller and Master Transport Selector functions must be correctly enabled in the SSL software.

1. Load the SSL program disk.

2. At the first prompt type: **SSL**
    and press the [EXECUTE] key.

The normal keyboard prompt symbol should disappear.

3. Type the access code: **BERNOULLI**
    Note: This access code is not displayed on the screen as you type it.

4. Press the [EXECUTE] key.
    The normal keyboard prompt symbol should return.

5. Press the [SETUP] and [EXECUTE] keys.

    The computer will again display the Main Menu, this time with the prompt, "Do you want to see more?"
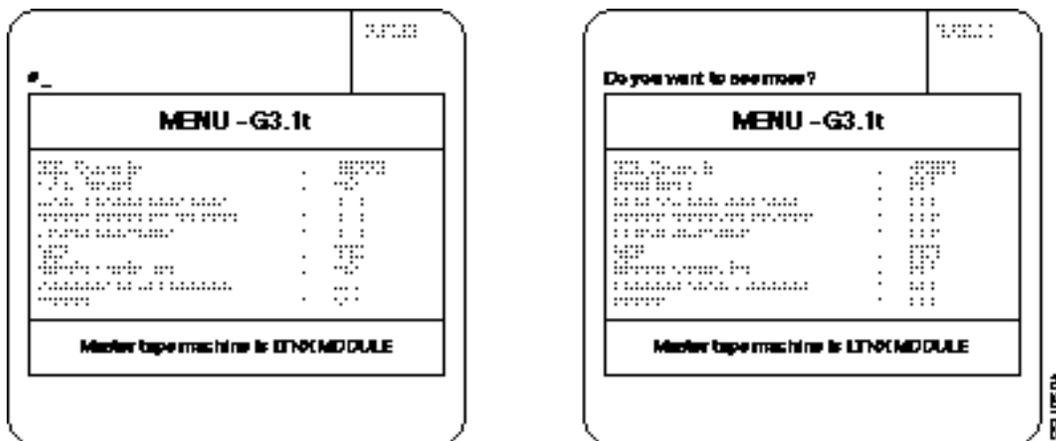
6. Type:
    #   (pound sign, shift/3)

There are two items on the SSL Setup page that must be correctly set for the SSU. Use the [↑] and [↓] keys on the SSL keyboard to scroll to the following items and set them as shown:
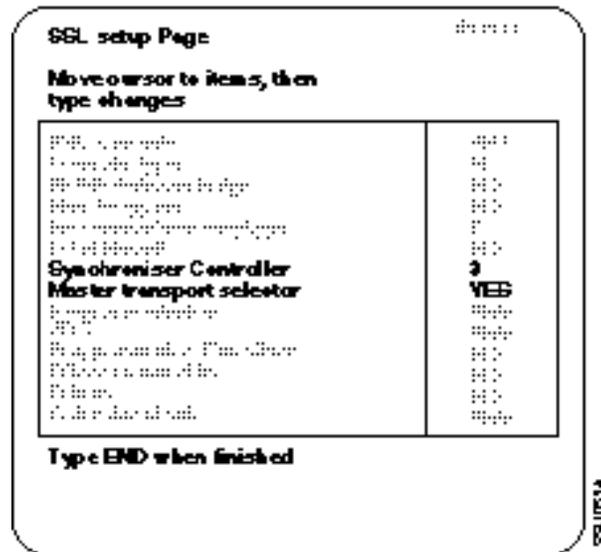
The first of these items selects the SSU, and the second item enables the ability to select the master from among the various machines.

1. Press the [EXECUTE] key to confirm your selections.

2. From the SSL Setup page, press [END] as many times as necessary to return to the Main Menu with the prompt "Do you want to see more?", showing.

3. From the Main Menu and prompt, type:
    [N]
    for No. At this point the computer will record your patched system setup on the SSL Program disk.

4. You should now reboot the SSL computer to load the newly enabled program modules.

Setting the Menu Selections

Synchronizer and Session Setup

Engineer Menu Page

If the Main Menu and the prompt, "Do you want to see more?", are not on the computer's screen, press [SETUP] and [EXECUTE] to get to this page and prompt.

From the Main Menu and prompt, type:
   [Y]
   for Yes, to access the Engineer Menu Page.

```
Engineer Menu Page                    Setup

Type a key

        S           This session
       lier         Exception
      down          Name
       on           IP
       sync         Sync options
      scale         Password
        I           Dev compare
        ::          All options

       END          To complete setup process
```

Session Page

From the Engineer Menu Page, type:
   [S]
   to select the Session Page.

There is only one item on the Session Page whose setting is critical
to the SSU. Use the [↑] and [↓] keys to scroll to the following item
and set it as shown:

```
Session Page                          Setup

Move cursor to items, then
type changes

 ┌──────────────────────────────┬───────┐
 │                              │       │
 │                              │       │
 │ Using VTK?                   │ YES   │
 │                              │       │
 │                              │       │
 │                              │       │
 │                              │       │
 │                              │       │
 │                              │       │
 │                              │       │
 └──────────────────────────────┴───────┘

Type END when finished
```

Using VITC, type:
    [Y]
    for Yes, and press the [EXECUTE] key.

When finished on the Session Page, press:
    [END]
    to return to the Engineer Menu Page.

Synchronizer Page

From the Engineer Menu Page, press:
    [SYNC]
    to select the Synchronizer Page item.

There are four options on the Synchronizer Page, three of which must be set correctly for proper operation of the SSU.

Use the [↑] and [↓] keys as necessary to access and set the following items:

The SSU always operates in "slow lock" mode, so the setting of this item is actually irrelevant.

When finished on the Synchronizer Page, press:
    [EXECUTE] and [END]
    to confirm your selections and return to the Engineer Menu Page.

From the Engineer Menu Page, press:
    [END]
    to return to the Main Menu and the "Do you want to see more?" prompt.

Tape Machine Setup and Selection

Maintenance Menu Page

Note:

For proper operation of the system you must tell the SSL that all of the machines connected to it are Lynx Modules, regardless of the actual types of machines being used.

From the Main Menu, type:
   [M]
   to access the Maintenance Menu Page.
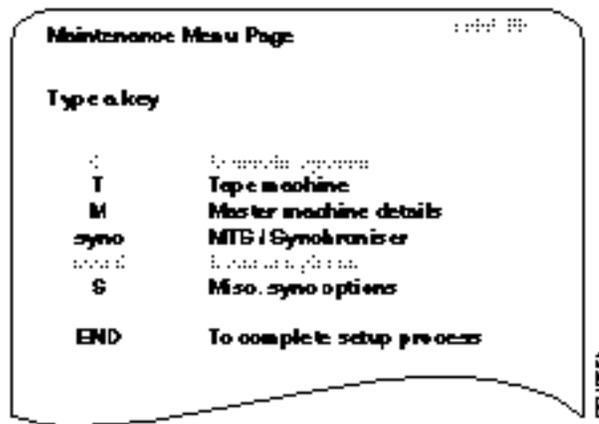
Tape Machine Page

From the Maintenance Menu Page, type:
   [T]
   to select the "Tape machine" menu item. The List of Tape Machines page will appear. Identify the Menu Number that corresponds to "LYNX MODULE".

If "LYNX MODULE" is already selected as the master machine, press:
   [END]
   to return to the Maintenance Menu Page.

The Master machine selection is indicated by the cursor bar next to the selection.

Use the [↑] and [↓] keys to scroll to the list entry for "LYNX MODULE" and then press:
   [EXECUTE]
   to select "LYNX MODULE" as the master machine.

This will automatically bring you to the Master Machine Details Page.

Note:

If you are using an early version of the SSL G Series Software, you might not find "LYNX MODULE" in the List of Tape machines. If this is the case, you will have to use a spare list position and manually enter proper parameters for the Lynx system. The following procedure details this change.

Scroll to a spare machine position and press [DELETE]. Then
   press:
   [Y]
   to erase the details of the spare machine.

Now type in:
   LYNX MODULE
   and press [EXECUTE]

The computer will now move automatically to the Master Machine Details page.

Master Machine Details Page

From the Maintenance Menu page, type:
   [M]
   to access the page for Master Machine Details.

Only six items on the Master Machine Details page are critical for the Lynx system. Use the [↑] and [↓] keys to scroll to each of the following items and set them to the listed values:
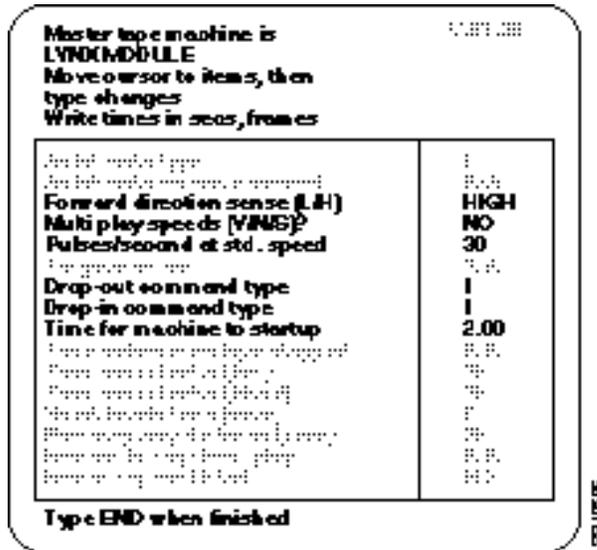
- "Pulses/second at std. speed" is set for system frame rate PAL-25, NTSC-30

- "Time for machine to startup" is shown at a minimum value and may be higher.

When finished on the Master Machine Details page, press:
    [EXECUTE] and [END]
    to confirm your selections and return to the Maintenance Menu Page.

Sync Menu Page

From the Maintenance Menu Page, press:
    [SYNC]
    The Sync Menu Page will appear.
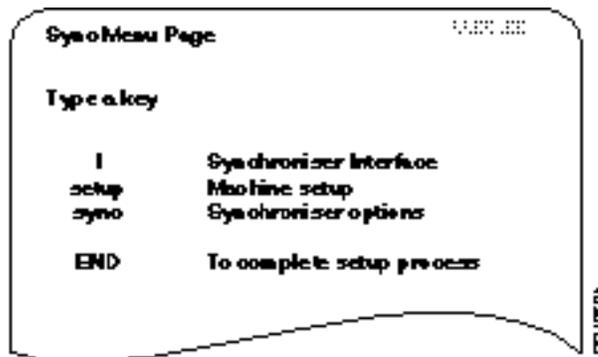
Synchronizer Interface Page

From the Sync Menu Page, type:
    [I]
    to select the "Synchronizer Interface" menu item.

The Synchronizer Interface Page has a single item, which should be set as follows:

When finished on the Synchronizer Interface Page, press:
    [EXECUTE] and [END]
    to confirm your selection and return to the Sync Menu Page.

Machine Setup Page

From the Sync Menu page, type:
    [SETUP]
    to select the "Machine setup" menu item.

A screen will now appear that allows you to enter names and machine numbers for each of up to five machines. You may enter any name for any machine, but you <u>must</u> assign each machine the proper menu number for LYNX MODULE as listed on the Tape Machines Page. Failure to do so will cause bizarre and abnormal behavior during auto-locates.

When finished on the Machine Setup Page, press:
[EXECUTE] and [END]
to confirm your selections and return to the Sync Menu Page.

Synchronizer Options Page

From the Sync Menu Page, press:
[SYNC]
to select the Synchronizer Page. A page labeled "Synchronizer: Lynx" will appear. If the page displayed has any other heading, the SSL Computer is set for the wrong type of synchronizer controller. The synchronizer controller must be set to type '3' on the SSL Setup Page, return to this page and correct the mistake.

Use the [↑] and [↓] keys to select each of the four individual items on the Synchronizer: Lynx page and set them as follows:
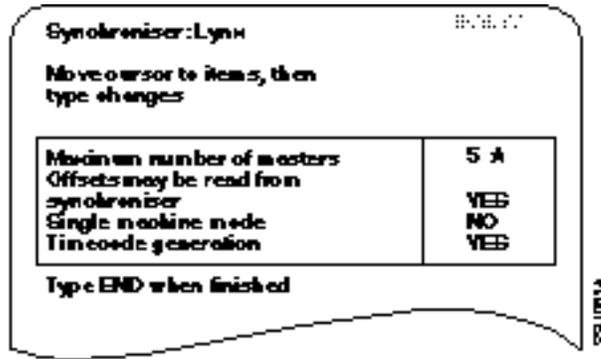
* = Maximum, may be less

When finished on the Synchronizer: Lynx Page, press:
[EXECUTE] and [END]
to confirm your selections and return to the Sync Menu Page.

Press
[END]
again to return to the Maintenance Menu Page.

Other Sync Page

From the Maintenance Menu Page, type:
  [S]
  to select the Other Sync Page.

On the Other Sync Page, only the first two items need to be set for the Lynx system. Set these two items as follows:

  * = Minimum value, may be larger

When finished on the Other Sync Page, press:
  [EXECUTE] and [END]
  to confirm your selections and return to the Maintenance Menu Page.

From the Maintenance Menu Page, press:
  [END]
  to return to the Main Menu and "Do you want to see more?", prompt.

From the Main Menu and prompt, type:
  [N]
  for No. The SSL Computer will now record the setup selections you have just completed on the Program disk.

Operating the SSL/Lynx Synchronizer System

Basic Operation

The SSL's basic Autolocation Command functions operate exactly as described in Section 4 (Basic Computer Operation) of the SSL G Series Computer Operator's Manual.

The operation of the SSL with the Lynx System Supervisor Unit and Time Code Modules is much the same as that described in Section 7 (The Synchronization System) of the SSL G Series Computer Operator's Manual. There are some differences, however, which we will list according to the manual section headings:

Lynx System Differences from Documented SSL Operation

System Components

The SSL Master Transport Selector unit is not required (and in fact cannot be used) with the SSU.

Principles of Operation

Strictly speaking, the SSU is not a true 'chase lock' synchronization system. The SSL Console Computer indirectly controls all machines, including the master, through the SSU and Lynx Modules. Rather than operating as slaves that independently chase the master time code, all Lynx Modules in the system operate under the explicit control of the SSU. Because of this control architecture, any of five machines (A, B, C, D, or E) can be designated as the system master rather than just A, B, or C.

All machines must be set to the correct SSL Machine Number for a Lynx Module on the Machine Setup Page rather than being set to the machine number of any particular model of tape machine. This is because the SSL Computer communicates directly with the SSU rather than the tape machine.

Sync Off Mode

SYNC OFF mode is not available when the Lynx synchronization system is online.

Sync On Mode

With the Lynx system, slave machines do not automatically enter the chase mode and attempt to locate to the master's position as soon as they are selected with the machine enable buttons. Cueing is implemented using one of two methods:

Initiating ALLSTOP and STOP
or
Initiating PLAY and STOP to Master

Any of up to five machines connected to the system may be designated as the system master rather than just machines A, B, or C. The SSL automatically designates as master the enabled machine that is alphabetically highest. This automatic selection will extend to the maximum number of masters set on the Lynx Synchronizer: Lynx Page under the Sync Menu in the Maintenance Menu structure.

The Setup Menu

On the Machine Setup page, all machines <u>must</u> be set to the correct menu number for a Lynx Module rather than the menu number corresponding to the actual transport type. Failure to do so will cause bizarre and abnormal behavior during autolocates.

The Synchronizer Option Page

Synchronizer in use, functions as described and should be set to YES.

Resolve master machine will normally be set to YES because the Lynx system resolves all machines, including the master, to the system reference. If Resolve Master machine is set to NO, the SSU reference will switch to VSO and the Master machine will not be resolved.

Slow lock mode is not applicable to the Lynx system. Since the Lynx system always functions in a mode that is roughly equivalent to the "slow lock mode" in other synchronization systems, you should leave this item set to YES.

Group Locates should normally be set to YES if you usually use Locate commands from the SSL rather than operating the machines manually with Rewind and Fast Forward. When operating under manual control, setting Grouped Locates to NO will make the Lynx system operate in a chase-style mode where all slaves stay as close as possible to the master.

The Synchronizer Status Panel

In addition to its normal indication of a lock error of greater than two subframes, the PHASE indicator will flash to indicate that a Lynx Module is in the Wild Speed mode as described below in the section "Generating Time Code and Striping Tape".

The CODE light illuminates to indicate when the tape machine is playing but the Lynx Module is not reading time code.

In addition to its normal indication, the PARKED light flashes to indicate when that Lynx Module is Offline or that there is a serial communications problem between the SSU and the Lynx Module.

In addition to their normal functions, the ENABLE and RECORD keys are used by the Lynx system to select edit modes and insert edit tracks on most video tape recorders. See the section "Special Operating Features" below for details.

Enabling the Synchronizer

When the SSL Computer is set up as described in the preceding chapter, the system will automatically select SYNC ON.

The Synchronizer Status Page

With the Lynx system, slave machines do not automatically try to chase to the master's location as soon as they are selected. Rather, the slaves only chase to the master's position when the master is put into motion at least momentarily. Otherwise, the procedure given for setting up the machines in the synchronization system is correct.

Designating the Master

Any of up to five machines connected to the system may be designated the master, rather than just machines A, B, or C.

The master time code received by the Studio Computer is not the actual time code signal from the master tape machine, but rather is a freshly generated time code signal that the SSU synthesizes to match the master machine's time code. Among other benefits, this eliminates any possibility of the Studio Computer faltering due to marginal or bad time code off the tape.

Setting the Marks

SSL's "mark points" are called "Sync Points" in Lynx terminology, but otherwise function identically.

Selecting Machines

With the Lynx system, slave machines will not chase to and park at the master's position immediately upon being selected. Rather, the slave machines will only chase when the master machine moves. In other words, if you select a slave machine and want it to position itself relative to the master, you must play the master for a moment.

De-selecting a machine, on the other hand, causes the Lynx system to issue an immediate stop command to the machine.

With Lynx-2 Time Code Modules, all slave machines will typically park approximately one second later than the master transport. This "parkahead" interval is automatically determined by each Lynx-2 Module based on the initial Lynx Transport Menu selection.

Autolocation

The discussion of tach pulse signal routing does not apply to the Lynx system architecture. The Lynx-2 Modules do not directly chase the master position but rather are explicitly controlled by the SSU, which handles all the position information internally. The end result, however, is the same.

Group Locates

The description of Group Locates holds true for the Lynx system. (The last two sentences, however, are specific to the Adams Smith system and are thus not relevant to the Lynx system.)

When Grouped Locates is toggled Off, the Lynx system simulates the action of a true chase system. This is useful when the engineer prefers to operate the system manually with Rewind and Fast Forward rather than using computer generated Locate commands.

Offline Locates

Offline Locates function as described.

The 'Time-to-Sync' Page

SSL's "time to sync" is called "Offset Error" in Lynx terminology.

With current Lynx system software the master normally runs in resolved mode, so that the solid bar display described in the SSL manual will appear when the master is locked to the video reference. If Resolve Master machine is set to OFF, the solid bar is not displayed for the Master machine.

The lock error tolerance for the bar in the display is an offset error of 2 subframes (2/100 frame) for 10 or more consecutive frames. If such a lock error occurs, the bar for that machine will disappear from the display.

Sub-frame Offsets

The Lynx system supports subframe offsets with 1/100 frame resolution.

Modifying Marks and Offsets

Mark points and offsets may be trimmed as described.

Sync Presets

Sync presets function as described.

Recording

With current Lynx system software, the system normally runs in resolved-speed mode, and the machines must be locked to video before they will enter the Record state.

Using a Master Group

Master groups function as described.

Specifying the Reference Time Code Machine

Specifying the reference time code machine functions as described.

Selecting the Time Code Standard

Code type (EBU vs. SMPTE) is determined automatically by the type of video reference signal connected to the Lynx system. The only manual selection possible is Drop Frame vs. Non-Drop Frame in 29.97 frame per second SMPTE systems.

Striping Time Code

With SYNC ON, time code for striping is generated by Time Code Generator 3 in the SSU. To stripe time code as described in the SSL manual, type:
    SMPTE or EBU or STRIPE EX
and follow the on-screen instructions.

During the time code striping, the SSU automatically puts all Lynx Modules into "Wild Speed" mode, in which the modules are capable of sending mode commands to the machine but do not resolve the speed of their transports. Wild Speed mode is indicated on the Lynx Module by the module's ONLINE light flashing and on the Sync Status panel by the PHASE indicator flashing.

You may stop the generator and clear the "Wild Speed" mode by typing:
    END

If the Lynx Module is not receiving time code back from the machine during time code striping, the CODE indicator on the Sync Status panel will flash as a warning.

> Note:
>
> On most tape machines, Wild Speed mode on the Lynx Module returns the transport to internal, fixed-speed mode. On certain machines, however, this is <u>not</u> the case and it is necessary to manually switch the machine from External to Internal speed mode. Notable machine models that require such manual switching to fixed speed mode include:
>
> 3M M79, Otari MTR-10, Otari MTR-12, Otari MX5050-Mk III series

Resolving the Master Machine

The Lynx synchronizer system resolves all machines to the selected System Reference.

Constants

The discussion of constants is specific to other synchronization systems and does not apply to Lynx Modules, which set all operating parameters for each machine model based on a single menu selection.

The Synchronizer in Mix

The synchronizer functions in Mix exactly as described.

Special Operating Features

The following additional features are available with the Lynx/SSL Synchronizer System. These features are specific to the SSU and are not presently documented in the SSL G Series Computer Operator's Manual.

ALL STOP Function

Rapidly pressing the [STOP] key on the SSL Master Transport panel three times within approximately one second, initiates an "All Stop" function and immediately stops all machines connected to the system regardless of whether they are selected online on the SSL Sync Status Panel. (Individual Lynx-2 Modules must be On-line as selected with the [TRAN MODE] key on the module for this function to work.)

The [EMERGENCY ALL STOP] key on the front of the SSU performs an identical function with a single keystroke.

Following an All Stop, the [STOP] key on the Master Transport panel will flash as an indication that the slave machines were immediately stopped rather than parked in locations that correspond to the master's position. To clear this All Stop indication and park to the master's position, press any motion key (including [STOP]) on the Master Transport panel.

No Time Code Mode

The SSL system can be set to control machines with no time code.

To operate a tape machine with no time code or at a fixed speed, for example to stripe time code, use the following procedure to switch the system to no time code mode.

At the SSL Console hold the [STOP] key and press a Sync Panel machine enable key [A-E].

All the Sync Panel machine code LEDs will turn on to indicate that no time code mode is active. The ONLINE LED on the Lynx-2 module's front panel will flash to indicate that the module is in wild mode and will not resolve the machine.

To cancel no time code mode, hold the [STOP] key and press a Sync Panel machine enable key [A-E]. The system will return to normal operation.

VSO Mode

The SSU system reference can be set to VSO for those situations where it is necessary to run the machine control system in varispeed. Use the following procedure to switch to VSO mode.

Press
    [SETUP] and [EXECUTE]
    on the SSL computer.

The SSL screen will display, "Do you want to see more?" Press
    [SYNC]
    the Synchronizer Page will appear.

Use the [↑] and [↓] keys to select "Resolve master machine", press
    [N] and [EXECUTE]
    to change it to NO.

Press
    [END]
    to exit the Synchronizer Page.

Press
    [END] or [EXECUTE]
    to exit setup mode.

The VSO LED on the SSU front panel will turn on to indicate VSO mode is active and that the system reference has switched to Master transport time code reader input.

The SSL Synchronizer transport display "Time to sync" column for the master machine will remain blank instead of showing "resolving" or the lock bar, to indicate that the master machine is not being resolved.

VTR Track/Edit Mode Selection

The Lynx system can control the insert edit track selection on many models of VCR and VTR. Track selections can be made from the SSL Console using the following procedure:

Hold down the spare switch key. (These contacts are available on the Jog/Shuttle Wheel Connector). A user provided switch may be mounted anywhere that is convenient.

Press the appropriate [ENABLE] key on the Sync Status Panel to select the desired transport. At this point the RECORD LEDs in the Sync Status Panel will indicate the current edit status of the designated machine.

While still holding down the spare key, you may toggle any of the edit mode selections On or Off by pressing the appropriate [RECORD] key on the Sync Status Panel.

The [RECORD] keys and indicators correspond to the various edit modes as follows:

RECORD key A   Video Insert Edit mode

RECORD key B   Audio 1 Insert Edit mode

RECORD key C   Audio 2 Insert Edit mode

RECORD key D   Audio 3 Insert Edit mode

RECORD key E   Audio 4 Insert Edit mode

Note:

This edit track selection is fully implemented for all VTRs and VCRs that are controlled serially by the Lynx Module. In general, parallel-control VCRs only support Video Insert/Audio 1/Audio 2 Edit selection due to hardware limitations. There may be other hardware limitations for certain specific VCR machines and interfaces.

Note:

Each Lynx Module includes three active-low, open-collector logic outputs that are driven by the selection logic for Video/Audio 1/Audio 2 insert editing. These outputs are active for all transport menu selections including audio tape recorders and may be adapted to do track selection on these machines with appropriate customer supplied wiring.

Jog/Shuttle Operation with Optional Control Wheel

The Lynx system supports Jog and Shuttle transport modes when an optional Jog/Shuttle accessory connection is made to the SSU. This Jog/ Shuttle accessory comprises a shaft encoder control wheel and two associated switches. (A third, spare switch is for record enable functions.)

The Jog and Shuttle modes are primarily intended for use with a single machine selected on the Sync Status panel. If more than one machine is selected, the Jog/Shuttle wheel directly controls only the master machine. The selected slave machines will chase the movement of the master machine but cannot be expected to maintain true lock while the master is in motion in this mode.

The user should note that the Shuttle and Jog modes are precisely controllable only on video transports and can generally only be simulated on audio tape machines.

Since most audio tape transports do not have an externally-controllable variable speed shuttle mode, the Lynx system's shuttle function is generally implemented by rapidly toggling between Rewind and Fast Forward, and the jog function is implemented by momentarily "bumping" the Rewind or Fast Forward command line. The actual velocity in Shuttle mode and the amount of the "bump" or the speed of the "scrub" movement in Jog mode are strongly influenced by the ballistics of the particular transport and the relative tape pack on the reels.

The user should also note that the tape lifters of audio tape machines are generally defeated in Jog and Shuttle modes both to allow the Lynx Module to read time code for accurate positioning and to allow audio monitoring. In Shuttle mode the lifters assume normal operation only as the machine approaches full fast-wind speed.

Shuttle Mode

Pressing the [SHUTTLE] key selects the Shuttle mode for the wheel and lights up the key itself and both the [←] and [→] keys on the SSL Master Transport panel. Shuttle mode is canceled by the [STOP] key or any command from the Master Transport panel.

In the Shuttle mode, turning the wheel clockwise causes the selected machine(s) to move forward with a velocity proportional to the amount you rotate the wheel from its starting position; likewise, turning the wheel counter-clockwise initiates variable-speed backwards motion. The Shuttle speed may be varied from a slow crawl to several times normal play speed.

A quick rotation of the wheel in the opposite direction from the initial movement automatically returns the machine to still mode since there is no mechanical center detect. Reversing directions in Shuttle mode thus requires a two-stage action on the wheel: first a short counter-rotation to stop the machine and then a second, further rotation to initiate movement in the new, reversed direction.

Jog Mode

Touching the key designated JOG selects the Jog mode for the wheel and lights up the key itself and both the [←] and [→] keys on the Master Transport panel. The Jog mode may also be initiated by simultaneously pressing both the [←] and [→] keys. Jog mode is canceled only by the [STOP] key or [PLAY] key on the Master Transport panel.

The Jog mode allows the operator to "bump" a transport forward or backward a small amount each time the wheel is turned clockwise (forward motion) or counter-clockwise (backward motion). If you turn the wheel continuously, the tape will "scrub" past the heads continuously with a velocity proportional to how fast you turn the knob. In addition, when the Lynx system is in the Jog mode the [←] and [→] keys on the Master Transport panel produce a continuous slow jog motion as long as either key is pressed.

Lynx System Operation Without the CA Computer

The SSU has the ability to synchronize all the machines in the system in a straight chase-style mode, (i.e., no offsets) when the SSL computer is not connected (i.e., S-88 connector must be removed).

If the SSU is turned on when the CA computer is not connected, after a 15 second time-out the SSU will light up the Sync Status Panel and the Master Transport Panel for approximately 10 seconds and then begin to function in a straight chase-style mode.

If the CA computer is subsequently reconnected to the SSU, it will recognize the reset condition and automatically re-initialize itself for normal operation.

When operating in this chase-style only mode without the CA computer, the SSU will treat the first machine selected at the Sync Status Panel as the master, rather than following SSL's normal alphabetical priority scheme.

Troubleshooting the SSL/Lynx System Synchronizer

Several display and indication modes have been included in the SSU software as an aid in basic system troubleshooting.

SSU Power-up Indication

When the SSU is initially turned on, it will illuminate all the indicators on its own front panel <u>except for</u> the XMT DATA and RCV DATA indicators. The SSU also lights up all the indicators on the Sync Status Panel and all five of the Master Transport keys for approximately one second. Following this initial display, all of the SSL indicators should extinguish and the system will be ready for normal operation.

If all Sync Status and Master Transport indicators stay lit for two seconds or more:

This generally indicates a communications problem between the SSU and the Parallel Port PCB in the CA computer.
   Check the "S88 – DATA" cable connections.

If ONLY the Sync Status Panel indicators illuminate:
       Check that the lamps in the Master Transport keys are a
       5 volt variety rather than a higher voltage type.
       Check the "S29 – MASTER REMOTE" cable connections.

If ONLY the Master Transport keys illuminate:
       Check the "S117 – SYNC PANEL" cable connections,
       paying particular attention to the orientation of Pin 1.

Note:

Immediately following power-up, there will be no Master Transport keys lit up because there are no machines selected on the Sync Status panel. This convention provides a warning indication that the Master Transport keys are inactive simply because there are no machines Online.

Module Offline/Communications Error Indication

If a machine is selected at the Sync Status Panel and the PARKED light flashes, this indicates that the corresponding Lynx-2 Module is "Offline" or that the Lynx-2 Module is not communicating with the SSU, (i.e., There is an RS422 communication problem).

First, check the front panel of the Lynx-2 Module to make sure the ONLINE lamp is lit. If it is not lit, press the [TRAN MODE] key to put the module online.

If the ONLINE light is lit on the Lynx Module but the PARKED light on the SSL Synchronizer Status Panel is still flashing, check the 422 indicator on the Lynx Module front panel (to the right of the display window). The 422 indicator should be lit on each module. If the 422 light is not lit, possible causes of the problem include:

- Faulty RS422 connection at a Lynx Module.

- RS422 cable not connected to TRIB PORT 1 on the SSU.

- More than one module set to the same serial address.

Power Up Sequence

The SSU should always be powered up prior to the CA computer to allow the SSU to properly initialize.

In the event that the SSU is powered down while the SSL console is running you must type:
    [SETUP] and [END]
    to reinitialize the proper setup data in the SSU. Failure to do so will cause the SSU to revert to default settings.

NEVE Interface Option

Introduction

The System Supervisor Unit (SSU) interface to the Neve Flying Faders Automation Computer requires no special software and a minimum of hardware. Connections are made via a 9-pin RS232 cable and a customer supplied time code interface cable.

The interface requires at least one of the TimeLine Controllers; either the Console Control Unit (CCU) or the Keyboard Control Unit (KCU), as the Neve computer has no direct method of addressing individual machines. However, group machine control can be initiated from the computer, the console motion control switches, or the TimeLine Controller.

This provides on optimum range of installation possibilities as one or more TimeLine controllers may be connected at the same time, allowing for large, film-style console installations. In addition, the TimeLine Remote Motion Controller (RMC) may be used in addition to any TimeLine Controllers already in use. Used in conjunction with the CCU, the RMC provides editing and loop transport controls, as well as a Jog/Shuttle interface option.
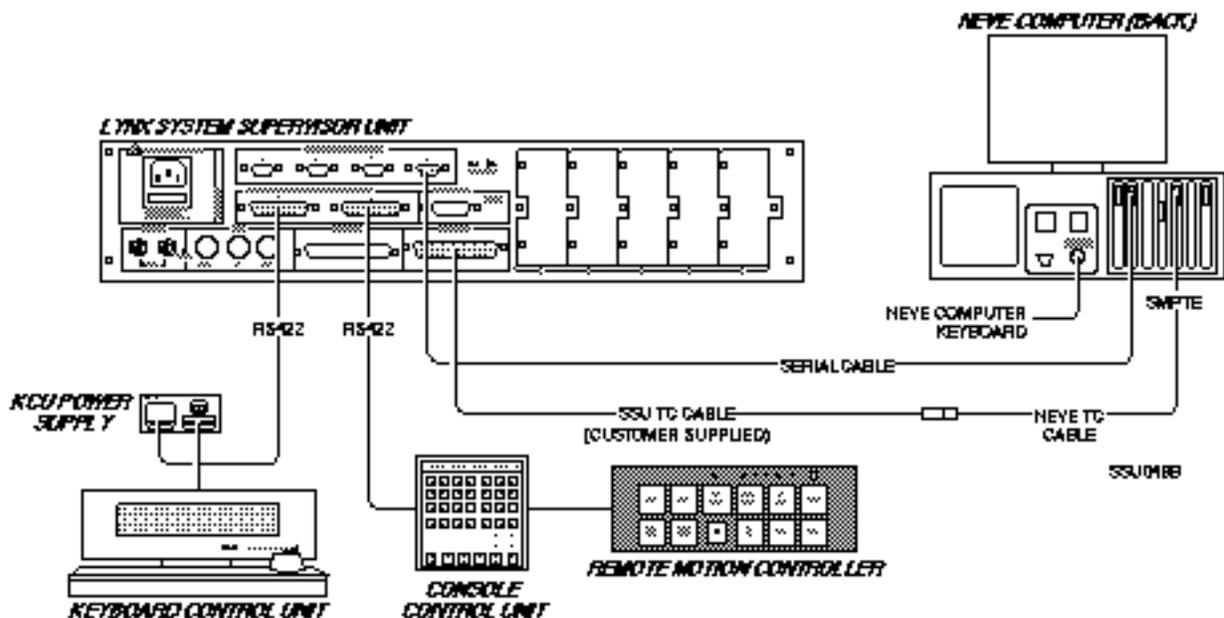
Figure 7-3. Neve Configuration

System Installation Requirements

Hardware Requirements

- Neve V or VR series console fitted with Flying Faders Automation computer

- SSU to Neve time code cable (not supplied)

- Lynx System Supervisor Unit (SSU)

- Lynx Keyboard Control Unit (KCU) OR

- Lynx Console Control Unit (CCU) with Neve install kit

Software Requirements

Neve Console Computer
    Version 2.0 or higher

Lynx System Supervisor Unit
    Main Processor   Main 141 or higher
    Tributary Port   Trib 141 or higher
    Time Code Generator Tgen 141 or higher

Lynx Time Code Modules
    V Series (V500, V600, V700)

Lynx Controllers
    CCU software CCU 2.30 or higher
    KCU software KCU 3.30 or higher

System Interconnection

Lynx System Supervisor Unit and Neve Flying Faders Computer

The Neve Console is computer controlled and requires two connections between the SSU and Neve Computer for communication.

Neve Serial Data Cable

9-pin to 9-pin RS422 to RS232 cable. Connects between the TCCA Port on the back of the Neve Computer and Trip Port #4 on the back of the SSU.

Neve and SSU Time Code Cable

9-pin to DB37-pin connection. Connects between the SMPTE Port of the back of the Neve Computer and Time Code Generator #2 or the Audio I/O connector on the back of the SSU.

Time Code Generator Outputs

The SSU includes three SMPTE/EBU time code generators, each of which has a specific purpose.

1. Generator 1 outputs a VITC-style still-frame time code. It is not used for Neve applications.

2. Generator 2 provides the master time code signal for the Neve computer.

    Note that this time code is not the actual time code signal from the tape machine, but rather is synthesized by the Supervisor based on the position information reported by the Lynx module connected by the machine. This provides the Neve Computer with a fresh time code signal that is not dependent on the quality of the actual recorded time code and will eliminate any possibility of the automation system faltering due to bad time code.

3. Generator 3 is controlled from a SSL computer and is not used for Neve applications.

Lynx Time Code Module Connection

Each tape transport must be connected to its Lynx-2 Module with the appropriate Lynx Transport Control Cable and a separate time code cable.

The RS422 and Video Sync connections for all Lynx-2 Modules in the system are connected together in a "daisy chain" configuration. The two RS422 (9-pin 'D') and two EXT VID (BNC) connectors on each module are internally wired in parallel to facilitate this type of loop-through interconnection. Note that the physical order in which the modules are connected to each other does not matter.

Connect one end of the RS422 daisy chain to the TRIB PORT 1 connector on the SSU.

Video Reference Signal

An external video reference signal should be extended to the Lynx Modules and to the VID REF connectors on the SSU. Properly terminate the last position in the Video Sync chain with a 75 ohm termination plug.

Setting Up the Neve /Lynx Synchronizer System

Lynx System Initialization

If the Lynx-2 Modules have been initialized for transport type and address, turn on the modules power and confirm the Transport type, Address setting, and correct Sync Detect.

Turn on the SSU. Initially, all indicators on the SSU's front panel, except for the XMT and RCV Data LEDs, will illuminate for a moment and will then revert to a normal display.

Put each Lynx-2 Module "On Line" and confirm that the 422 light on each module lights up. This confirms communication between the Lynx-2 modules and the SSU.

Neve Computer Initialization

Communication between the Neve Flying Faders Computer and the System Supervisor Unit automatically occurs when the SSU and Neve computer are serially connected.

This form of serial initialization greatly simplifies the Neve computer set up and precludes the need for complicated set up menu selections. Only two options in the Neve Flying Faders Computer setup need consideration.

Time Code Options

In the Options pop-up menu display, the time code type needs to be set to the code type of the reference machine. It does not automatically set itself to the incoming time code from the SSU.

Transport

In the Transport pop-up menu display, the Reset Transport Controller selection may need selecting if the Neve Computer fails to recognize the SSU.

Generally speaking, all communications between the SSU and Neve computer are automatic and will only need resetting if the SSU, or Neve Computer is reset or powered off.