Appendix

Introduction

The Appendix has four sections: Connector Pin Assignments, Glossary, Cable Schematics and Engineering Changes.

Connector Pin Assignments

Descriptions of the back panel connectors and their pin assignments.

Glossary

An alphabetic list of common terms used throughout the manual and in the industry in general.

Cable Information

A short list of cables required to an SSU installation.

Engineering Changes

A compilation of TimeLine Service Bulletins and Installation Guides.

Connector Pin Assignments

RS422 Tributary Ports (1 through 4)

9-Pin D-Subminiature, Female

Pin	Signal	Pin	Signal
1	Ground	6	Ground (RXD Common/Shield)
2	Serial Data Receive, (RXD -)	7	Serial Data Receive, (RXD +)
3	Serial Data Transmit, (TXD +)	8	Serial Data Transmit, (TXD -)
4	Ground (TXD Common/Shield)	9	Ground
5	Frame Clock		

The RS422 Tributary Ports are full-duplex, balanced communications channels operating asynchonously at a standard transmission rate of 38.4 kilobits per second.

NOTE

All four RS422 Tributary Ports use the same pin-out scheme.

Information on appropriate cable types and wiring schematics for RS422 cabling is covered later in this Appendix.

Keyboard/Computer Control Ports (1 and 2)

25-Pin, D-Subminiature, Female

Pin	Signal	Pin	Signal
1	Serial Data Receive, (RXD +)	14	Serial Data Receive, (RXD -)
2	Serial Data Transmit, (TXD +)	15	Serial Data Transmit, (TXD -)
3	Spare	16	Spare
4	Spare	17	Spare
5	Spare	18	Ground
6	Frame Clock Synthesized (TTL)	19	Control Wheel Direction In (inverted)
7	Control Wheel Direction In	20	Control Wheel Clock In (inverted)
8	Control Wheel Clock In	21	Frame Clock (TTL)
9	Frame Clock Synthesized (Bipolar)	22	Ground
10	Ground	23	Ground
11	Ground	24	+5 volts
12	+5 volts	25	+5 volts
13	+5 volts		

The serial data on the Keyboard/Computer Control Ports is full-duplex, balanced communications operating asynchronously at a standard transmission rate of 38.4 kilobits per second.

Power Out

15-Pin D-Subminiature, Female

Pin	Signal	Pin	Signal
1	+12 volts	9	+12 volts
2	Ground	10	Ground
3	-12 volts	11	-12 volts
4	Ground	12	Ground
5	+5 volts	13	+5 volts
6	Spare	14	Spare
7	Spare	15	Spare
8	Spare		

NOTE

External power usage should be limited to 2 amperes maximum from the +5 volt supply, and to 100 milliamperes each from the +12 and -12 volt supply.

MIDI THRU and MIDI OUT

5-Pin DIN (180 degree), Female

Pin	Signal
1	No connection
2	Shield (Ground)
3	No connection
4	MIDI data output, + (+5 volts)
5	MIDI data output, -

MIDI IN

5-Pin DIN (180 degree), Female

Pin	Signal
1	No connection
2	No connection
3	No connection
4	MIDI data input, +
5	MIDI data input, -

The MIDI IN, MIDI THRU and MIDI OUT connectors conform mechanically and electrically to the standards specified in the *MIDI 1.0 Detailed Specification*.

NOTE

The pin numbering of the 5-pin DIN connector as specified in the MIDI standard is not physically sequential.

Audio I/O

37-Pin D-Subminiature, Female

Pin	Signal	Pin	Signal
1	Time code Generator 1 Out, +	20	Time code Generator 2 Out, +
2	Time code Generator 1 Out, -	21	Time code Generator 2 Out, -
3	Ground	22	Ground
4	Time code Generator 3 Out, +	23	Generator Pilot Out, +
5	Time code Generator 3 Out, -	24	Generator Pilot Out, -
6	Ground	25	Ground
7	ADR Beep Out, +	26	Spare
8	ADR Beep Out, -	27	Spare
9	Ground	28	Spare
10	Audio Trigger In, +	29	Pilot In, +
11	Audio Trigger In, -	30	Pilot In, -
12	Ground	31	Ground
13	Spare	32	Ext. Reference Pilot Out, + [1]
14	Reshaped Ref. Time Code Out, + [1]	33	Ext. Reference Pilot Out, - [1]
15	Reshaped Ref. Time Code Out, - [1]	34	Ground
16	Ground	35	Spare
17	Ext. Reference Time Code In, + [1]	36	Spare
18	Ext. Reference Time Code In, - [1]	37	Spare
19	Ground		

[1] These functions are active only if the optional time code reader circuit board is installed in the SSU.

All standard output signals are electronically balanced, low impedance outputs. When connecting any of these outputs to an unbalanced load, leave the "low" side ("-" connection) of the signal unconnected rather than tying it to ground. Output impedance of each side of each standard balanced output is 330Ω.

Rear Panel Connector Pin Assignments

LOGIC I/O (50-Pin D-Subminiature, Female)

Pin	Signal	Pin	Signal
1	GPI 1 Out, Common	26	ADR Beep Out, +
2	GPI 1 Out, N. O.	27	ADR Beep Out, -
3	GPI 4 Out, Common	28	Ground
4	GPI 4 Out, N. O.	29	Control Wheel Clock Out
5	GPI 7 Out, Common	30	Control Wheel Direction Out
6	GPI 7 Out, N. O.	31	Annunciator Diode
7	RWD SW	32	Ground
8	FFD SW	33	+5 Volts
9	PLAY SW	34	GPI 3 Out, Common
10	STOP SW	35	GPI 3 Out, N. O.
11	REC SW	36	GPI 6 Out, Common
12	LOOP/Shift SW	37	GPI 6 Out, N. O.
13	SHTL/REH SW	38	Rehearse Command Out, +
14	JOG/REP SW	39	Rehearse Command Out, -
15	Frame Clock Out (Resynthesized)	40	Record Command Out, +
16	Ground	41	Record Command Out, -
17	+5 Volts	42	Annunciator 2 Out (Countdown "2")
18	GPI 2 Out, Common	43	Annunciator 3 Out (Countdown "3")_
19	GPI 2 Out, N. O.	44	Annunciator 4 Out (Countdown "4")
20	GPI 5 Out, Common	45	Annunciator 5 Out Lock Tally
21	GPI 5 Out, N. O.	46	Data (Tally Output)
22	GPI 8 Out, Common	47	CLK (Tally Output)
23	GPI 8 Out, N. O.	48	Strobe (Tally Output)
24	Annunciator 1 Out (Countdown "1")	49	Ground
25	Spare	50	+5 Volts

- All GPI Outputs are normally open, single-pole relay closures rated at 600 mA, at 110 volts (AC or DC) or up to 2 Amps at 30 volts DC.

- The five Annunciator outputs are open-collector, Darlington transistor outputs. Each is rated for up to 150 mA of collector current at a maximum of 50 volts. The "Annunciator Diode" terminal is connected to the cathodes of diodes connected to each output in the array; this diode may be used for integral suppression of inductive load transients when driving relays.

- Annunciator outputs '1' through '4' are used for the GPI Countdown sequence. Annunciator '5' is used as a System Lock tally. Data, CLK and Strobe are used to provide external transport motion tallies on the TimeLine RMC panel.

- The Record and Rehearse command outputs are driven from Darlington optoisolators, which are rated for up to 125 mA of collector current at 55 volts maximum. The "+" terminal is connected to the collector of the Darlington pair, and the "–" terminal to the emitter.

Diagnostic Terminal (front panel)

9-Pin D-Subminiature, Female

Pin	Signal	Pin	Signal
1	Spare	6	Spare
2	Serial Data Receive	7	Spare
3	Serial Data Transmit	8	Spare
4	Spare	9	Spare
5	Ground		

SSL Data Interface Connector

S88 - Data (25-Pin D-Subminiature, Male)

Pin	Signal	Pin	Signal
1	CA Data 0	14	CA Data 1
2	CA Data 2	15	CA Data 3
3	CA Data 4	16	CA Data 5
4	CA Data 6	17	CA Data 7
5	CA ACK (Acknowledge)	18	N/C
6	N/C	19	N/C
7	CA IRQ (Interrupt Request)	20	N/C
8	N/C	21	N/C
9	N/C	22	N/C
10	N/C	23	N/C
11	Ground	24	Ground
12	N/C	25	N/C
13	CA Reset		

S29 - MSTR Remote (25-Pin D-Subminiature, Female)

Pin	Signal	Pin	Signal
1	N/C	14	N/C
2	Lamp +5V (Lamp Common)	15	Ground (Switch Common)
3	Rewind Switch	16	Rewind Lamp
4	FF Switch	17	FF Lamp
5	Stop Switch	18	Stop Lamp
6	Play Switch	19	Play Lamp
7	N/C	20	N/C
8	Record Switch	21	Record Lamp
9	Tachometer	22	Tachometer +5V
10	Direction	23	Direction +5V
11	N/C	24	N/C
12	N/C	25	N/C
13	N/C		

Jog/Shuttle Option (15-Pin D-Subminiature, Female)

Pin	Signal	Pin	Signal
1	Encoder B (Signal Input)	9	Encoder A (Signal Input
2	Encoder Common (Ground)	10	Jog Switch
3	Shuttle Switch	11	Spare Switch
4	Jog Tally	12	Shuttle Tally
5	Spare Tally (VTR TRK. REC. Enable)	13	N/C
6	Ground	14	Ground
7	Ground	15	+5V
8	+5V		

S117 - Sync Panel (50-Pin Ribbon Cable Header - Male)
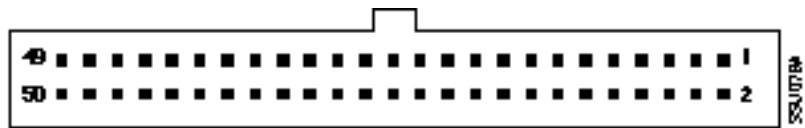
Pin	Signal	Pin	Signal
1	Parked Lamp Mach. A	26	Locate Lamp Mach. D
2	Locate Lamp Mach. A	27	Code Lamp Mach. D
3	Code Lamp Mach. A	28	Phase Lamp Mach. D
4	Phase Lamp Mach. A	29	Record Lamp Mach. D
5	Record Lamp Mach. A	30	Enable Lamp Mach. D
6	Enable Lamp Mach. A	31	Record Switch Mach. D
7	Record Switch Mach. A	32	Enable Switch Mach. D
8	Enable Switch Mach. A	33	Parked Lamp Mach. E
9	Parked Lamp Mach. B	34	Locate Lamp Mach. E
10	Locate Lamp Mach. B	35	Code Lamp Mach. E
11	Code Lamp Mach. B	36	Phase Lamp Mach. E
12	Phase Lamp Mach. B	37	Record Lamp Mach. E
13	Record Lamp Mach. B	38	Enable Lamp Mach. E
14	Enable Lamp Mach. B	39	Record Switch Mach. E
15	Record Switch Mach. B	40	Enable Switch Mach. E
16	Enable Switch Mach. B	41	Aux. Switch 1
17	Parked Lamp Mach. C	42	Aux. Switch 2
18	Locate Lamp Mach. C	43	Switch Ground
19	Code Lamp Mach. C	44	Switch Ground
20	Phase Lamp Mach. C	45	Switch Ground
21	Record Lamp Mach. C	46	Switch Ground
22	Enable Lamp Mach. C	47	Lamp Ground
23	Record Switch Mach. C	48	Lamp Ground
24	Enable Switch Mach. C	49	Lamp Ground
25	Parked Lamp Mach. D	50	Lamp Ground

Glossary

24	'24' refers to both the film-standard speed and code type.
25	'25' refers to both the EBU/PAL speed and code type.
29.97	'29.97' refers to a SMPTE frame rate only, in frames-per-second.
30	'30' refers to a SMPTE frame rate only, in frames-per-second.
Address	SMPTE/EBU time code address. Also referred to as time code value. A specific and unique address in the time code data stream.

A set of SMPTE or EBU time code numbers indicating a specific position on tape. A complete SMPTE address includes hours, minutes, seconds, and frames. |
ADR	Automated Dialog Replacement. A technique for replacing production dialog in the studio.
AES/EBU	A professional standard for the high speed transfer of two channels of digital audio data. Developed jointly by the Audio Engineering Society (AES) and the European Broadcast Union (EBU).
Amplitude	Signal displacement from a zero point. The amplitude of an analog signal is the measurement of voltage increase or decrease.
Analog Audio	The "traditional" means of recording and reproducing sound, using fluctuating electronic voltages to replicate audio waveforms.
ATR	Audio Tape Recorder.
Autolocator	A device that can hold multiple tape locations in memory and chase to those locations on command, using SMPTE addresses, tach pulses, or control track pulses to find a desired point on tape.
Bandwidth	The frequency range of a signal.
Binary Numerical System	A system for expressing numerical values using two digits, 0 and 1. The binary system is used in digital audio, SMPTE, MIDI, and other microprocessor-related data formats.

Biphase Encoding	The way in which SMPTE time code gets encoded onto tape. It expresses binary '1' and binary '0'.
	Biphase encoding reverses the signal polarity halfway through a bit to represent a '1' and leaves the bit polarity unchanged to represent a '0'.
BIT	Short for BInary digiT; a number which is either one or zero.
Blanking Interval	The blanking interval occurs at the end of a frame. Video information is absent during the blanking interval. The interval occurs when the CRT electron gun scanner goes from the bottom right corner of the screen to the beginning of the next field in the top left corner.
BNC	Bayonet-Nut Coupler. Used for the connection of video and high frequency clock signals.
Byte	A group of related binary data or a word, which can be read, interpreted, and acted on by a microprocessor. A byte is made up of bits, which can be either a 0 or 1.
Capstan	On a tape recorder the motor driven spindle that drives the tape across the heads. A synchronizer controls the capstan motor to keep the tape in sync.
Code Type	See Time Code Type.
Configuration	See Setup Mode. The process of defining the user-selected operational parameters, such as defining a specific transport or lifter-defeat mode.
Control Track	A synchronizing signal on the edge of a tape, which provides a reference for tracking control and tape speed.
CPU	Central Processing Unit. A computers central microprocessor, responsible for all system logic and memory organization.
DAW	Digital Audio Workstation. Usually refers to a computer-based, hard disk recording and editing environment.
Decibel (dB)	The unit of measurement used to describe a sounds amplitude. The measurement is relative and logarithmic.
DF	Drop frame. See drop frame.
Differential Input	Input amplifier that is designed to amplify the difference between two signals and reject common signals.

Differential Output   Output amplifier designed to provide two signals that are completely identical but with opposite phase.

Digital   Literally "using digits". A Computer is a typical digital device.

Digital Audio   Audio signal that has been converted (digitized) into a stream of binary numbers for storing or transmitting, that are equivalent to the original analog audio signal.

Display   Numeric display. Time Code/Message Display.

Drop Frame   Drop frame is one of the two SMPTE code types, and is the NTSC color television standard. When using this code type, 108 specific frame numbers are "dropped" for each hour of time code. See Appendix A for more detailed time code information.

EBU   EBU time code is a 25 frame code running at 25 fps.

Edit Decision List   A list, either on paper or in computer memory, of time code addresses indicating successive scenes of source video footage that make up a complete program.

EDL   See Edit Decision List.

ERR   Error or offset error. Indicates that the display shows the difference between the actual position of the machine in relation to where the system expects it to be.

EXT VID   A source of external video sync used by the synchronizer as a timing reference. Can be color black, black burst, color bars or composite sync.

Filter   A digital or analog process which has the effect of removing unwanted frequencies from an audio signal.

Foley   The process of adding incidental sounds, such a footsteps, door slams, etc., to a video program or motion picture.

Format   See Time Code Format.

Frame   A single image on a motion picture film or a television picture formed from two interlaced fields. One complete video scanning cycle, one complete SMPTE time code word.

Frame Lock   Frame lock maintains synchronization between the Master and Slave transports, using the position information available in the time code address.

| **Frame Rate** | The number of frames that go by in one second of audio, film or video tape. Film and different types of video all have different frame rates. |

30	30 fr/s	Monochrome TV, & audio
NTSC	29.97 fr/s	Color videotape, TV operations
PAL	25 fr/s	European TV, European Broadcast, & audio
Film	24 fr/s	Film cameras & projectors

Frequency   The number of wave cycles that occur in a given period of time (one second). The unit of measurement is the Hertz (Hz).

Generate   Running the system time code generator so that time code is available at the rear panel GEN OUT jack.

Generator   A time code generator. Each synchronizer has a time code generator. This generator receives its speed reference from one of the internal or external sources.

GEN REF   Generator reference. May also be referred to as reference source.

Groups   A group of machines that have a defined positional relationship. Machines are placed in group mode for synchronization. Machines in a group will operate together as if they were a single transport.

GRP   See Groups.

Guard Band   A track of multitrack tape adjacent to the sync track (such as SMPTE or Control Track), which is left unrecorded in order to prevent the time code from bleeding onto the audio program material.

HH:MM:SS:FF   Hours:Minutes:Seconds:Frames. A SMPTE time code address or value.

Initialize   Completely clears the synchronizers RAM. Press and hold the [CLR] key while you power-up the module.

INT XTAL   A system speed reference that is derived from the unit's internal crystal. This reference should be selected when an external reference (video or word clock) is not required.

Jam Sync   A technique used to start a time code generator from another running time code. It can be used to recreate missing time code or to regenerate an existing time code on tape.

Jam Time Code   The Jam Time Code or Jam Sync function. See Jam Sync.

KCU Keyboard Control Unit. TimeLine's external machine control unit. The KCU provides centrally-controlled access to all synchronizers in a system.

LCD Liquid Crystal display. The KBD display is of this type.

LED Light emitting diode.

Lifter A tape transport's head lifter mechanism. Tape machines normally lift the tape off the heads when in wind (FFW/RWD). The synchronizer intelligently controls the machines lifter operation, to read time code when required.

Local Transport The machine or transport that the synchronizer is connected to and controlling.

Lock The transport has synchronized with the system reference GEN REF.

LTC Longitudinal Time Code. Time code information encoded in binary coded decimal (BCD) form which is recorded as an audio signal on a designated track of a VTR or an ATR.

Machine Machine refers to the generic concept of tape record/playback hardware.

Machine Control The wide ranging field of transport control. This covers basic transport operation, synchronization and more complex functions such as electronic editing.

MACROS Preprogrammed or user programmed keys permitting complex key sequences to be stored and executed by pressing a single key. Sometimes known as smart keys.

MIDI Musical Instrument Digital Interface. This serial data language is used by microprocessors in synthesizers, sequencers, drum machines, signal processors, and computers. It provides musical pitch and rhythm information, synthesizer performance parameters, song position markers, stop/start/continue commands for sequencers and computers, and synchronizing data called MIDI Clock, which is based on 24 pulses per quarter-note. MIDI is frequently used with SMPTE for sync-to-tape functions.

MIDI is transmitted between microprocessors at 32.125 kBits per second. It can also be used by lighting systems and mixing consoles.

MIDI Time Code A MIDI system real time message that assigns a unique address for a specific moment in time. MIDI Time Code takes two frames to transmit a complete address in bursts of data that are transmitted every 1/4 frame.

Motion Controls   The basic set of six transport control keys (Play, Stop, Rec, Reh, Rwd & Ffd) and the six additional transport control functions (Loc, Cue, Allstop, Rlb, Replay & Edit).

MTC   See MIDI Time Code.

Multitrack   A tape machine, analog or digital which has more than two audio tracks.

N/A   Not available. Not active. Not applicable.

Non-Drop Frame   NDF or ND is one of the two SMPTE code types and is the black & white television standard. When using this code type, every frame of time code is counted in real time. See the Appendix for more time code information.

Non-contiguous   Not a continuous, predictable sequence. i.e., 1, 2, 4, 5, 6, 8, 9 is a non-contiguous number sequence.

NTSC   A system of coding color information for television transmission used primarily in the USA and Japan. Named after the National Television System Committee.

Offset   Offset is the difference between two time codes at the point they are to be synchronized. Offsets are subframe-accurate and are displayed using the HH:MM:SS:FF format. Offsets are always applied to the slave machines.

Oversampling   A process by which a computer interpolates between adjacent digital audio numbers to provide in-between values and reduce quantization error.

PAL   Phase Alternate Line. PAL is another name for the 25 time code format, which is the standard for European color and B&W television.

Phase Lock   A mode of synchronizer operation that uses phase information derived from SMPTE time code and, after initial synchronization, ignores specific frame addresses. It is also called Sync Lock.

On the synchronizer, the Phase 1 option sets the module in the Phase or Sync lock mode. This mode precisely synchronizes the Slave(s) to the Master using the phase information contained in the time code's 16-bit Sync Word. The synchronizer ignores the master's absolute TCA values.

Pilot Tone   The Pilot output signal is a sinusoidally-shaped output, which is always two times the frame rate of the time code that is being referenced or generated.

Post-production   Activities that take place after the raw footage has been shot for a video program or motion picture. Includes video editing and a number of audio processes, such as ADR, Foley, and mixing.

Production   The initial stages in the making of a film or television program, which includes the shooting of raw footage and recording of production audio.

RAM   Random Access Memory. The module's configuration parameters are stored in battery-backed RAM. And recalled each time the unit is turned on.

Rate   Frame rate or speed. See Frame Rate or Speed.

REF SRC   Reference source. The signal that is used to determine the rate that the generator and synchronizer will run at. The reference source can be thought of as the system time base. The reference source can be internal crystal, external video, MAINS, or external pilot tone or the time code reader (VSO).

Register   The generator register is the module's memory buffer that holds numeric time code values that are entered or captured. Each synchronizer also has reader, sync point, offset, user bit and error registers.

Reshape   The output signal is the same as the input signal, but it has been reshaped with correct rise time values and a fixed voltage output. This type of output does not correct for bit or timing errors.

Resolving   A technique for regulating the play speed of a tape machine by matching the rate of pulses recorded on tape with a pulse rate from another stable source or a master tape machine.

RLB   See Rollback.

Rollback   The rollback function is used to rewind machines by a predetermined amount from the current position. The default rollback time is 15 seconds.

S-PDIF   A consumer standard similar to AES/EBU for the high speed transmission of digital audio data. Jointly developed by Sony and Philips.

Sequencer   A device that can record performance data for synthesizers and other electronic instruments and then, on playback, pass that data on to the instruments so that they'll play what has been recorded. Modern sequencers use MIDI as their communications protocol.

Serial   A type of computer interface where all data is sent down a single wire or pair of wires one bit at a time. Examples of serial interfaces are RS422 & RS232.

Serial Port	The physical computer connection through which serial data is transmitted and received.
Setup Mode	The process of defining the user-selected operational parameters, such as defining a specific transport or lifter-defeat mode.
Shuttle	Fast-wind. Fast-forward or Rewind.
SMPTE	Society of Motion Picture and Television Engineers. An industry standards committee. The group responsible for developing SMPTE time code.
SOLO	Literally "using alone". A tape transport in solo will be controlled by itself, without affecting other transports in the system.
Speed	Speed, Frame Rate and Rate are synonymous. Time code speed is counted in frames per second (fps). SMPTE time code has two speeds: 30 fps and 29.97 fps.
SU	See System Unit.
SUBF UBITS	Subframe user bits.
Sync Lock	See Phase Lock.
Sync Word	Included at the end of every 80-bit time code word is a 16-bit Sync Word. The sync word provides direction and Phase-lock speed information, and marks the end of each time code word.
Synchronizer	A device that reads time codes recorded on two or more tape machines, compares the codes, and adjusts the machine's tape positions and speeds based on the results of that comparison.
System BUS	When two or more synchronizers are used to form a system, a communications link must be established between the modules. This is done by looping from one module to the next, via the RS422 ports on the rear panel of the system unit.
System Unit	The rack mounting part of the Micro Lynx machine control system. The unit contains the control (CP) and machine control (MC) microprocessors.
TCA	Time Code Address. The HH:MM:SS:FF bits of the TC word.
TCG	See Time Code Generator.
Time Code Format	Time code format defines both the frame rate and code type being used. Example: To describe a time code format as 30 NDF is to say that the frame rate is 30 fps and the code type is non-drop frame. Simply saying either 30 or drop frame defines only part of the SMPTE time code.

Time Code Generator   A special signal generator designed to generate and transmit SMPTE time code at one of the international formats and rates.

Time Code Reader   A counter designed to read and display SMPTE time code.

Time Code Type   The word "type" is the key to understanding this phrase. *Type* defines the counting method that is employed by the time code module. There are two SMPTE types: 30 (also called non-drop "ND" or non-drop frame "NDF") and drop frame (DF). EBU and film types are the same as their respective speeds, 25 and 24.

Toggle   To toggle is to consecutively press a key several times in order to step through a series of choices.

Track   A place for the storage of audio information. Analog tape recorders have one or more physical tape tracks. MIDI sequencers and digital audio workstations provide areas of memory to store control or audio data.

Track Select   The process of enabling (arming) specific tape machine tracks for recording.

Transport   Transport refers to a part or subassembly of a machine, i.e., a transport connector or a transport cable.

TRS   Tip - Ring - Sleeve. A 1/4", balanced termination plug or jack. Typically wired T = +, R = -, S = shield.

Type   See Time Code Type.

UB   See User Bit.

User Bit   Each time code frame or word consists of 80 bits that convey SMPTE/EBU time code information. Thirty-two of those bits are user bits, and are available for storing information such as IDs, reel numbers, session dates or another time code number.

Value   Values are generally time code addresses. They may also be a custom user bit IDs.

Video Sync   A reference video signal generated by an extremely stable source. This signal is used to control the speed of video machines, digital audio machines and is used as a timing reference to ensure accurate synchronization.

Virtual Tracks   Used to describe any circumstance whereby the method for reproducing audio tracks is not directly analogous to the linear tape track format. Hard disk systems (DAW's) and MIDI sequencers are typical examples.

                           MIDI performance commands can be stored in a sequencer. Because the sequencer can "play" these parts in real time, synchronized to tape, they can be regarded as extra or "virtual" tracks, not on the tape, but present nonetheless.

VITC   Vertical Interval Time Code. An alternative to the LTC format of SMPTE time code. It is recorded in the blanking interval of the video signal, which is not used for the picture.

VSO   Variable Speed Override. Variable Speed Oscillator.

VTR   Video Tape Recorder.

Wideband   A signal that is distributed over most or all of the frequency spectrum. A wide band input amplifier is capable of processing signals that are well outside the audio bandwidth.

Word Clock   An extremely stable synchronization signal that is used to control the rate at which digital audio data is converted or transmitted.

Workstation   See DAW.

Cable Information

Required Cables to Install CCU System (SSU, Lynx, Transports)

General Installation

Between Equipment	Connectors	From / To
Lynx to Transport	50-pin, 'D'	Lynx TRANSPORT jack to Transport
Lynx to Transport	1/4" to 1/4" stereo	Lynx TIME CODE OUT to Transport Time Code In
Lynx to SSU	9 to 9 pin, 'D'	RS422 to SSU Trib Port #1
Sync to all equipment	BNC	Lynx EXT VID to SSU EXT VID to Transport
CCU to RMC	40-pin, 'D'	J6 (Processor Board) to Motion Control Key Switches
CCU to Jog/Shuttle Wheel	15-pin header	J2 (Processor Board) to Jog/Shuttle Wheel
CCU to Power Supply	5-pin DIN	J3 (Processor Board) to Power Supply
CCU to SSU	9 to 25 pin, 'D'	P1 (Processor Board) to Control Port 1 (SSU)

Neve Console Installation

Between Equipment	Connectors	From / To
Lynx to Transport	50-pin, 'D'	Lynx TRANSPORT jack to Transport
Lynx to Transport	1/4" to 1/4" stereo	Lynx TIME CODE OUT to Transport Time Code In
Lynx to SSU	9 to 9 pin, 'D'	RS422 to SSU Trib Port #1
Sync to all equipment	BNC	Lynx EXT VID to SSU EXT VID to Transport
CCU	40-pin, 'D'	J6 (Processor Board) to Motion Control Key Switches
CCU to Jog/Shuttle Wheel	15-pin header	J2 (Processor Board) to Jog/Shuttle Wheel
CCU to Power Supply	5-pin DIN	J3 (Processor Board) to Power Supply
CCU to SSU	9 to 25 pin, 'D'	P1 (Processor Board) to Control Port 1 (SSU)
SSU to computer	37 to 9 pin, 'D'	Audio I/O port (SSU) to SMPTE port on computer
SSU to computer	9 to 9 pin, 'D'	SSU Trib Port #4 to TCCA on computer
Control panel to computer	various	System dependent

SSL Console Installation

Between Equipment	Connectors	From / To
Lynx to Transport	50-pin, 'D'	Lynx TRANSPORT jack to Transport
Lynx to Transport	1/4" to 1/4" stereo	Lynx TIME CODE OUT to Transport Time Code In
Lynx to SSU	9 to 9 pin, 'D'	RS422 to SSU Trib Port #1
Sync to all equipment	BNC	Lynx EXT VID to SSU EXT VID to Transport
CCU	40-pin, 'D'	J6 (Processor Board) to Motion Control Key Switches
CCU to Jog/Shuttle Wheel	15-pin header	J2 (Processor Board) to Jog/Shuttle Wheel
CCU to Power Supply	5-pin DIN	J3 (Processor Board) to Power Supply
CCU to SSU	9 to 25 pin, 'D'	P1 (Processor Board) to Control Port 1 (SSU)
SSL to Transport	25-pin, 'D'	SSL to Master Transport Control
SSL to Computer	25-pin	Computer Data I/O: SSL to Transport
SSL Data Interface	37-pin, 'D'	Master Time Code

Euphonix Console Installation

Between Equipment	Connectors	From / To
Lynx to Transport	50-pin, 'D'	Lynx TRANSPORT jack to Transport
Lynx to Transport	1/4" to 1/4" stereo	Lynx TIME CODE OUT to Transport Time Code In
Lynx to SSU	9 to 9 pin, 'D'	RS422 to SSU Trib Port #1
Sync to all equipment	BNC	Lynx EXT VID to SSU EXT VID to Transport
CCU	40-pin, 'D'	J6 (Processor Board) to Motion Control Key Switches
CCU to Jog/Shuttle Wheel	15-pin header	J2 (Processor Board) to Jog/Shuttle Wheel
CCU to Power Supply	5-pin DIN	J3 (Processor Board) to Power Supply
CCU to SSU	9 to 25 pin, 'D'	P1 (Processor Board) to Control Port 1 (SSU)