

**JSK ENGINEERING
TC1128B USER'S GUIDE
PROGRAM VERSION 3.XX**



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<u>TABLE OF CONTENTS</u>	<u>Page #</u>
Revision Notes _____	<u>2</u>
Product Specifications _____ TC1128B Front Panel TC1128B Rear Panel	<u>3</u>
Reading the Front Panel _____ Two Line LCD Display LED's:	<u>7</u>
Reference Guide to Using Front Panel Switches _____ Double Switch Settings Menu Setting Switch Guide	<u>9</u>
*An Introduction to Operating the TC1128B: <i>Getting Started</i> _____	<u>10</u>
*The Normal Menu Set-Up Sequence: <i>Setting Menu Items</i> _____	<u>11</u>
<i>* Exercises to familiarize the user with operating the TC1128B!</i>	
Menu Items:	
Reference List _____	<u>12</u>
Menu Settings and Selector Key Functions _____	<u>13</u>
Com Ports _____	<u>22</u>
Connector pinouts _____	<u>24</u>
Options _____	<u>25</u>
Schematics _____	<u>Insert</u>
Applications _____	<u>26</u>

Application:	Development Date	Comments:	Page:
BVU/film tightly coupled system	11/17/96	Eliminated V3P56 and higher	26
BVU-950 synchronizer	3/20/96		27
DTS to SMPTE	6/17/96	Included in V3P56 and higher	28
Fairlight/flatbed	1/15/98		30
JAMSYNC Application	10/8/98	V3.52	31
Lockbox (exact park of Sony slaved to tach)	9/22/95	AKA: BVU Lockbox	32
Motion master	3/10/97		33
Optical camera rate generator	4/16/95	- forward only, limited top speed	35
Otari MTR90 synchronizer	10/19/95		36
Sony serial protocol slave	8/12/95	AKA: P2 to film motion control	38
SSL Parallel to Sony Controller	03/02/02	V3n54 AKA: Slot P2	39
Streamer Application	6/20/01	Requires jumper modification	41
Studer A827 synchronizer	7/20/95	Eliminated V3P56 and higher	42
Tach to timecode converter	7/20/95	AKA: Biphase to timecode	44
RS232 Serial Commands	3/2/03		45
LTC generation from P2 serial timecode	3/2/03		47

REVISION NOTES FOR TC1128B VERSION 3.XX AS OF 03/05/02

- 1) The tach/ltc generator has been revised to do all combinations of timecode and tach rates. This revision was done for a European application that required 25hz timecode and 240hz tach.
- 2) Versions 3.06 is Lynx KCU compatible. There is a flag to set for use with the KCU, or cleared for use in Lynx VSI SAL (stand-alone) mode.
- 3) V3.08 reads tach quadrature and direction. BVU and film may be run together as a tightly coupled system (see the application note). RETURN TO ZERO and other locating functions have been changed to locate quicker.
- 4) V3.09 does not have the DA-88 slave function. Use the DA-88 internal synchronizer.
- 5) V3.10 detects continuously repeating LTC frames as stopped.
- 6) V3.11 changed ltc type detection.
- 7) V3.12 slaves bvus without the generator card, i.e., from tach. LTC is still required for lock.
- 8) V3.13 adds a BVU RELEASE menu, which selects where the BVU is released to video. In rate generator mode, a XMOD closure is made on the LIFTER DEFEAT closure from 10 to 11 feet. The new LOCATE TO SYNCPOINT function can be accessed by pressing STOP and FAST FORWARD. The RETURN TO ZERO function can be accessed by pressing STOP and FAST REVERSE.
- 9) V3P56 no longer supports A827 synchronizing. RS232 remote commands have been added. Please see the RS232 app note for details. The tightly coupled BVU/tach generator mode has been removed. LTC generation from BVU serial timecode has been added. A DTS timecode reader has been added.

Board version D95F and later does not require the double clocking rework noted on the illustration accompanying the stringer modification.

Product Specifications:

The TC1128B is a flexible reader/generator that can reference one of its generators to one of its several readers or to other common sync sources. It can serve as a film motion controller, a tach to timecode converter, a timecode to tach converter, a timecode to timecode converter at different frame rates, a varispeed converter, or as a Lynx compatible synchronizer or tach chase synchronizer for several types of tape machines.

A) The TC1128B as Reader:

1) Tach reader

The tach reader is a programmable divider that divides tach to a selected frame rate.

2) VITC reader

The VITC reader reads NTSC or EBU VITC. The **AUTO LINE** flag enables the reader to scan for readable VITC lines. There is a switch selectable 75 ohm termination on the rear panel.

3) LTC reader

The LTC reader reads DTS, 24, 25, drop, or 30 frame SMPTE timecode. The reader tracking range is 1/8 speed to 30x speed.

B) The TXC1128B as a Generator:

7) Tach/LTC/VITC generator

The TACH/LTC/VITC generator generates tach and LTC from a common clock, so that they are locked.

The VITC generator generates VITC on the selected line pair. Either NTSC or EBU VITC may be generated. VITC is generated whenever there is a video reference and VITC is not the reference. VITC outputs the current value of the TACH/LTC generator. Numbers will repeat until the TACH/LTC generator is resolved to video. If video is input but the TACH/LTC generator is not referenced to video, the VITC will drift, occasionally dropping or repeating numbers. Some combinations, for instance referencing 25 frame TACH/LTC to NTSC video, will generate VITC that cannot be used. This case would generate VITC that repeated numbers to give 25 frame counts per second in 30 frames of VITC.

C) TC1128B Serial ports

7) COM1- RS232 Studer port

COM1 is a Studer port for Studer A820 or A827 synchronization.

2) COM2- RS422 option port

COM2 has the following menu-selectable functions:

7) Sony protocol

The Sony protocol is used for serial control in synchronizer applications. If the TC1128B is set to **TAPE SLAVE** and the slave is a Sony serial type, the COM2 menu selection will default to Sony.

b) Magnatech 9F counter protocol

The 9F protocol is used with Magnatech 9F counter displays in rate generator applications. The display can be set to timecode or footage, with or without frames, by flags in the flags menu.

c) JSK Engineering MC211 counter protocol

The MC211 protocol is used with JSK Engineering MC211 counter displays in rate generator applications. The display can be set to timecode or footage, with or without frames, by flags in the flags menu.

3) COM3- RS422 VSI- compatible port

COM3 is a V0700 Timeline-Vista Lynx compatible synchronizer port. V0700_10 SAL operation is supported in V2.24 and greater.

D) TC1128B References

- 7) Video
- 2) VITC
- 3) Tach
- 4) Mains
- 5) Pin 5 (RS422 Lynx type sync)
- 6) LTC
- 7) Crystal
- 8) DTS timecode

E) TC1128B Slaves

- 1) Generator
- 2) Tape
- 3) Pilot

F) TC1128B Closure outputs

G) TC1128B Sense inputs



TC1128B Front Panel Features:

7) Two Line LCD Display:

1) Top Line / Line 1 / LCD display:

01: 01: 19: 12 30 .

- ✓ Slave position- top line, characters 1-12
- ✓ Slave timecode type- top line, characters 14-15
- ✓ Slave motion status- top line, characters 19-20

2) Bottom Line / Line 2 / LCD display:

- ✓ Menu Items: Characters 1-20

vi deo ref gen slv

B) Five Status LED's:

- LOCK
- RESOLVE
- READER
- COM1
- COM2
- COM3

C) Ten Switches:

- ONLINE
- MSTR
- SET
- STORE
- DISP
- << (FAST REVERSE or OFFSET MINUS 1 FRAME)
- >> (FAST FORWARD or OFFSET PLUS 1 FRAME)
- h) < (REVERSE or OFFSET MINUS 25 SUBFRAMES)
- i) ? (STOP)
- j) > (FORWARD or OFFSET PLUS 25 SUBFRAMES)

Three Double switch functions

- ? (STOP) and STORE- clear tach reader and generator
- ? (STOP) and ONLINE- set the sync point to the current position

STORE and DISP- select the error menu

D) POWER ON switch:

Holding ? (STOP)- while turning on will reinitialize the stored settings to factory defaults

TC1128B Rear Panel Features:



VAC

Can be set to: 120/240 VAC:

Open the unit and set the VAC selector switch near the VAC connector.

One **Switch** is on rear panel located between VITC OUT and Input Output connector

- - **Video termination switch**

↑UP = 75 OHM VIDEO TERMINATION

↓DOWN = NO TERMINATION

Connectors:

COM1 An RS232 Studer port for Studer A820 Or A827 synchronization.

COM2 An RS422 option port with these *MENU* selectable functions:

- a) Sony protocol
- b) Magnatech 9F counter protocol
- c) JSK Engineering MC211 counter protocol

COM3 A bidirectional RS422 VSI - compatible port. (V0700_10 SAL operation is supported in V2.24 and greater.)

LTC IN: 1/4 Inch phone jack

VITC IN: BNC.

VITC OUT: BNC.

LTC OUT: 1/4 Inch phone jack

INPUT/ OUTPUT: 50 Pin D Connector

Interpreting the LCD display:

Top line: 01: 01: 19: 12 30 .

a) Slave position- top line, characters 1-12

The top line characters 1-12 ls show the slave position in timecode.

b) Slave timecode type- top line, characters 14-15

The top line characters 14-15 ls show the slave timecode type, 24,25, df, or 30.

c) Slave motion status- top line, characters 19-20

The slave motion status modes are from the Ampex ACE/SMPTE serial protocol.

```
const char *motionmsg[ ] =
```

```
{
    ". ", /* STOPPED */
    "v ", /* STOPPING */
    "> ", /* PLAYING */
    "~ ", /* TAPE SPEED OVERRIDE */
    "<> ", /* SHUTTLE */
    ">> ", /* FASTWIND */
    "<< ", /* REWIND */
    "// ", /* SYNCING */
    "LL ", /* SOURCE SYNC ROLL */
    "MM ", /* MASTER SYNC ROLL */
    "ME ", /* MASTER EDIT PERIOD */
    "RE ", /* BIAS */
    "-> ", /* CUEING */
    ".. ", /* CUED */
    "SE ", /* SEARCH */
    ". ", /* SEARCH COMPLETE */
    "EX ", /* EXECUTING EVENT */
    "CH ", /* CHASING */
    "CH ", /* CHASING ACCURATELY */
    "~ ", /* SLOWPLAY */
    ". ", /* POWER OFF */
    "- ", /* LOCAL */
    "UT " /* UNTHREAD */
};
```

Bottom Line:

ref sl v

Menu Items: Characters 1-20

Shown with selection:

Vi deo ref gen sl v

Interpreting the LED's:

a) LOCK

The **LOCK** LED lights when the slave is within 5 subframes of the reference, or if the slave is a Sony type, when the slave servo is locked.

b) RESOLVE

The **RESOLVE** LED lights when the slave is within 1/2 frame of the reference.

c) READER

The **READER** LED lights when the slave timecode is read. For multitrack synchronizer applications, it blinks when reading tape tach.

d) COM1- RS232 Port or/ e) COM2-RS422 Port or/ f) COM3- RS-422 Compatible Port

...The **COM** LEDs light when serial data is being received on that **COM** port.

Reference Guide to Using Front Panel Switches:

a) ONLINE

The **ONLINE** key enables the slave to chase and lock to the reference. (backlight)

b) MSTR

If **ONLINE** and **MSTR**, the TC1128B will act as a RS422 Lynx V0700_10 master. (backlight)

c) SET

The **SET** key toggles the **MENU SET** mode. If in **MENU SET** mode, the bottom line of the LCD display will blink.

d) STORE

If in **MENU SET** mode, pressing **STORE** saves the changes made. If not in **MENU SET** mode, pressing **STORE** goes back one item in the menu.

e) DISP

Pressing **DISP** goes forward one item in the menu.

f) << (FAST REVERSE or OFFSET -1 FRAME)

If **ONLINE** and not **MASTER**, this key subtracts 1 frame from the offset and changes the bottom line of the LCD to the **OFFSET** display. Otherwise, it is a motion control key.

g) >> (FAST FORWARD or OFFSET +1 FRAME)

If **ONLINE** and not **MASTER**, this key adds 1 frame to the offset and changes the bottom line of the LCD to the **OFFSET** display. Otherwise, it is a motion control key.

h) < (REVERSE or OFFSET -25 SUBFRAMES)

If **ONLINE** and not **MASTER**, this key subtracts 25 subframes from the offset and changes the bottom line of the LCD to the **OFFSET** display. Otherwise, it is a motion control key.

i) □ (STOP)

□ (**STOP**) is a motion control key, and is used in some double switch functions.

j) > (FORWARD or OFFSET +25 SUBFRAMES)

If **ONLINE** and not **MASTER**, this key adds 25 subframes to the offset and changes the bottom line of the LCD to the **OFFSET** display. Otherwise, it is a motion control key.

Reference Guide: Double Switch Functions:

For double switch functions, press the first switch and hold, press the second switch.

1) □ (STOP) and STORE- clear tach reader and generator

□ (STOP) and STORE clears the tach reader and resets the tach/lrc generator to TIMECODE START.

This sets the system to the start mark for tach to timecode conversion or for use as a rate generator. Reference: Setting the Menus: tach reader timecode type and tach rate menu for settings.

2) □ (STOP) and ONLINE- set the sync point to the current position

□ (STOP) and ONLINE captures the current position to the sync point register.

In Lynx V0700_10 applications, this is used when the MASTER LYNX is put online to calculate a relative offset.

3) STORE and DISPLAY- select the error menu

STORE and DISPLAY sets the menu display to the first menu item, the error menu.

4) POWER ON and Stop □

Hold □ (STOP) while turning on power **reinitializes the stored settings to factory defaults**

Reference Guide to Switch Functions when setting Menu Items:

The bottom line of the LCD display is a menu item:

To scroll UP ↑ through the menu items, press DISPLAY "DISP"

Press "STORE" to scroll down ↓

Once on the selected line, press SET to enable menu changes.

The □, <, >, <<, and >> keys are used to select fields or change the blinking menu item.

The changed menu item may be stored by pressing STORE, or returned to its prior state by pressing SET.

⇒ The next two pages provide exercises to familiarize the user with set-up and operations. ↓

□An Introduction to the TC1128B:

Here is a simple example to familiarize a new user with TC1128B operations:

Popular Applications are:

- P2 to Film Motion Control (set-up is illustrated below) (Sony Slave)
- Biphase (tach) to timecode converter
- LTC to LTC Conversions
- SSL to P2 Controller

Caution!

DO NOT initialize the unit if it is already in use and has been set to run at your facility!

To initialize the unit to factory settings do the following:

Hold the **STOP** "□" key while turning on "**power**". The 1128 is now a motion generator referenced to video. This is the factory default setting and COM 2 is set to be a slave.

Press Play ">"

The 1128 will ramp to 1x speed. The upper line is the rate generator and will count forward. The bottom line is a resolver error indicator, which is the first menu item in the menu list.

If you have NTSC or EBU sync connected to "VITC IN" the error indicator will count down to zero subframes as the generator resolves. If you do not have video sync connected, you will see the message " ** no reference ** "

The 1128 is now a generator and is generating tach, LTC and VITC, as seen in the top line of the LCD Display.

Press STOP "□": The 1128 will ramp to a stop.

The generator function has several menu selectable parameters including acceleration, return to zero and P2 master / slave functions.

To scroll through the menu, press display: "**DISP**". You will see a number of menu selectable items used in the various applications.

Please refer to the application notes for specific menu settings. If you do not see an application note for your application, please contact JSK.

□The normal Menu set- up sequence, setting Menu Items:

1) Pick the reference and slave (___ref ___sl v) for your application.

Press Display "**DISP**" until you get to the " ___ref ___sl v" line of the of the menu items.

Example:

01: 01: 19: 12 30 . video ref gen sl v
--

Press "**SET**"

Pressing the fast forward key ">>" will index through all ___ref selections

Pressing the ">" "<" keys will index ___sl v settings.

Note: at end of ___sl v selections ___ref will advance to the next selection

Press "**STORE**" to keep the new (___ref ___sl v) settings or, press "**SET**" to return to the original settings.

7) Set Serial port menus if applicable.

7) Set generator tach rate and LTC type if applicable.

4) Set tach reader rate if applicable.

Note: Tach or rate / direction is menu selectable in the "flags" Menu Item.

5) Set other "flags" for instance, " return to zero" can be set to "on" or "off"

6) Set "time code start" if applicable

7) Set other menu items per your application. Please reference the application notes in your manual.

Reference List for Menu Items:

- 1) err- error menu (not programmable)
- 2) ofs- offset menu
- 3) start- timecode start mark menu
- 4) ref- reference timecode menu
- 5) slv- slave timecode menu
- 6) feet- slave position in feet and frames menu
- 7) user- slave user bits menu
- 8) slv- reference/ slave selection matrix menu
- 9) tach- generator timecode type and tach rate menu
- 10) accel- generator acceleration menu
- 11) Speed- generator top speed menu
- 12) rdr- tach reader timecode type and tach rate menu
- 13) vitc line- vitc line selector and auto vitc reader menu
- 14) sync pt- sync point menu
- 15) varispeed- varispeed rate menu

16) timecode mute- flags menu

- 1) Timecode mute
- 2) Generate forward only
- 3) Return to zero
- 4) Counter in feet (timecode or feet for optional serial counter output)
- 5) Counter frames (frames blanking for optional serial counter output)
- 6) gen direction (quadrature or direction on tach out phase B)
- 7) A827 record enable
- 8) Serial timecode type enable (Lynx sends tc type in hours top 2 bits)
- 9) Advance retard enable
- 10) rdr direction (quadrature or direction on tach in phase B)
- 11) Lynx KCU enable (Lynx VSI SAL mode if not set)

- 17) park ahead- synchronizer park ahead menu
- 18) machine- synchronizer machine selector menu
- 19) tape speed- tape speed menu
- 20) address- VSI address menu
- 21) editor- VSI editor type menu
- 22) COM2- serial options menu
- 23) COM1- serial options menu
- 24) DEVICE TYPE- select BVU device type
- 25) RELEASE- select point at which BVU is released to video

Menu Settings and Selector Key Functions:

1) err- error menu (not programmable)

The **err** display shows distance from lock. Once within 1 frame, the display reads in subframes. If resolving rather than synchronizing, the display will read “**not at speed...**” until resolving, which then displays in subframes.

Pressing **STORE** and **DISPLAY** at the same time sets the menu selection to **err**.

2) ofs- offset menu

The **ofs** display is the synchronizer offset. Negative numbers retard the synchronizer, while positive numbers advance the synchronizer.

The offset is in HH:MM:SS:FF.subframes.

Menu selector key functions:

>>	incr current selection
<<	decr current selection
>	right column
<	left column
?	clear selection

3) start- timecode start mark menu

The **start** display is the timecode at zero feet and frames. This is used as the starting timecode for the tach reader and generator.

To load the **start** value into the **ref** and **slv**, hold **□ (STOP)** and press **STORE**.

This would typically be done in a tach to timecode converter at the start of a new reel.

Menu selector key functions:

>>	incr current selection
<<	decr current selection
>	right column
<	left column
?	clear selection

4) ref- reference timecode menu

The **ref** display shows the current position of the reference. It can be changed, but for an LTC or VITC reader, the change will be overwritten by the next timecode received.

Menu selector key functions:

>>	incr current selection
<<	decr current selection
>	right column
<	left column
?	clear selection

5) slv- slave timecode menu

The **slv** display shows the current position of the slave. Changes in the **slv** display are reflected in the **feet** display.

Menu selector key functions:

>>	incr current selection
<<	decr current selection
>	right column
<	left column
?	clear selection

6) feet- slave position in feet and frames menu

The **feet** display shows the tach generator position in feet and frames. Changes in the **feet** display are reflected in the **slv** display.

Menu selector key functions:

>>	incr current selection
<<	decr current selection
>	right column
<	left column
?	clear selection

7) user- slave user bits menu

The **user** display shows the generator user bits.

Menu selector key functions:

>>	incr current selection
<<	decr current selection
>	right column
<	left column
?	clear selection

8) ref/slv- reference/ slave selection matrix menu

The table below shows the allowed combinations of reference and slave.

	SLAVE			
REF	gen	tape	pilot	lockbox
video	X	X	X	
vitc	X	X	X	
tach	X	X	X	X
mains	X	X	X	
pin 5	X	X	X	
ltc	X			
xtal	X	X	X	
dts	X			

Menu selector key functions:

>>	down row
<<	up row
>	right column
<	left column
?	home

9) ltc/tach- generator timecode type and tach rate menu

Table of allowed combinations:

	TACH RATE						
TC TYPE	240	250	300	600	1200	2400	3000
24	X	X	X	X	X	X	X
25	X	X	X	X	X	X	X
30 drop	X	X	X	X	X	X	X
30	X	X	X	X	X	X	X

Menu selector key functions:

>>	down row
<<	up row
>	right column
<	left column
?	home

10) accel- generator acceleration menu

The generator acceleration range is 12 in/sec/sec to 99 in/sec/sec. In tach to LTC conversion, the LTC generator will chase highspeed tach 2 seconds behind unless the acceleration is set to 99. In the 99 accel case, the generator chases as closely as possible at all speeds.

Menu selector key functions:

>>	max accel
<<	min accel
>	incr accel
<	decr accel

11) speed- generator top speed menu

The generator top speed limit range is 2x speed to 12x speed.

Menu selector key functions:

>>	max top speed
<<	min top speed
>	incr top speed
<	decr top speed

12) rdr- tach reader timecode type and tach rate menu

Table of allowed combinations:

TC TYPE	TACH RATE												
	48	50	60	96	100	120	240	250	300	600	1200	2400	2500
24	X			X		X	X			X	X	X	
25		X			X			X	X	X	X	X	X
30 drop			X			X	X		X	X	X	X	
30			X			X	X		X	X	X	X	

Menu selector key functions:

>>	down row
<<	up row
>	right column
<	left column
?	home

13) vitc line- vitc line selector and auto vitc reader menu

The VITC line selector is for both the VITC reader and the VITC generator. Either the VITC reader or the VITC generator may be active, but not both. When reading VITC, if the AUTO flag is set, the reader accepts the first readable VITC line. There is no display of the AUTO line number. Paused VTR's may lose the first few lines after vertical sync. *Even if the line numbers of the VITC are known, it is best to use AUTO mode so that paused VITC may be read reliably.* If you wish to determine the line numbers of the VITC, toggle AUTO mode off, play the VTR, and step through the line selections until VITC is read. *Note that VITC is written on two lines, the line number and the line number plus 2.*

Menu selector key functions:

>>	max VITC line
<<	min VITC line
>	incr VITC line
<	decr VITC line
?	toggle AUTO flag

14) sync pt- sync point menu

The sync point has two uses. The first is the varispeed pivot point, i.e., the timecode at which the offset due to varispeed is zero. The second is as the point for automatic offset calculation when used with Lynx V0700 synchronizers in STAND ALONE mode. The sync point can be set to the current position by holding (**STOP**) and pressing **ONLINE**.

Menu selector key functions:

>>	incr current selection
<<	decr current selection
>	right column
<	left column
?	clear selection

15) varispeed- varispeed rate menu

The varispeed function allows the slave to be locked to the reference with a repeatable varispeed. The varispeed rate is the speed deviation percentage. The maximum positive speed deviation is 24.999 percent, while the maximum negative speed deviation is -25.000 percent.

Slave speed equation: slave speed = ref speed / (1 - varispeed percent)

example: -25% varispeed, ref speed = 1 slave speed = $1/(1 - (-.25)) = 1/1.25 = .8x$ speed

example: +25% varispeed, ref speed = 1 slave speed = $1/(1-.25) = 1.333x$ speed
--

Menu selector key functions:

>>	incr current selection
<<	decr current selection
>	right column
<	left column
?	clear selection

16) timecode mute- flags menu *** **NOTE: there are 11 options in this section!**

Index to flag lines by pressing set. The play and reverse keys index the flags, and the stop button toggles the current flag.
Press store to keep changes, press set to exit without changes.

Menu selector key functions:

>>	max flag selector
<<	min flag selector
>	incr flag selector
<	decr flag selector
?	toggle flag

16.1) Timecode mute

The timecode mute function is for workstations that cannot process offspeed timecode.

OFF	Output timecode in all generator motion modes
ON	Output timecode in highspeed or when locked

16.2) Generate forward only

The generate forward only function is for optical cameras.

OFF	Generate forward and reverse motion
ON	Generate forward motion only, limited to 1.25x top speed

16.3) Return to zero The return to zero function is for use as a motion generator in dubbing stages or transfer rooms.

It should be **OFF** for synchronizer applications.

OFF	Motion is not affected by distance to the timecode base
ON	Park at the timecode base when coming from the positive direction

16.4) Counter in feet

OFF	counter output is in timecode
ON	counter output is in footage

16.5) Counter frames

OFF	counter output frames are blanked
ON	counter output frames are enabled

16.6) gen direction (quadrature or direction on tach out phase B)

OFF	tach out phase B is quadrature
ON	tach out phase B is direction

16.7) A827 rec en

The A827 can be put in to PLAY+RECORD so that external READIES can be used to put tracks in and out of RECORD.

OFF	A827 goes in to PLAY on forward synchronization
ON	A827 goes in to PLAY+RECORD on forward synchronization

16.8) Serial timecode type enable (Lynx sends tc type in hours top 2 bits)

Lynx synchronizers can use the top 2 bits of the timecode in VSI messages to identify the timecode type. SSL does send or receive the timecode type bits, and needs the serial timecode type disabled.

OFF	the timecode type is not included in the hours top 2 bits in VSI communication
ON	the timecode type is included in the hours top 2 bits in VSI communication

16.9) Advance / retard enable

When used as a chase synchronizer, the motion control keys can be used to advance or retard the TC1128B when it is ONLINE. □ (**STOP**) continues to be a **STOP** command.

<u>KEY</u>	<u>FUNCTION</u>
>>	advance 1 frame
<<	retard 1 frame
>	advance 25 subframes
<	retard 25 subframes

OFF	the motion control keys always do motion control
ON	when ONLINE, the motion keys do the advance/retard function

16.10) rdr direction (quadrature or direction on tach in phase B)

OFF	tach in phase B is quadrature
ON	tach in phase B is direction

16.11) Lynx KCU enable (Lynx VSI SAL mode if not set)

OFF	Lynx VSI SAL mode (odd parity)
ON	KCU mode (even parity)

17) Park ahead- synchronizer park ahead menu

For fastest synchronizer lock in forward motion, a park ahead can be programmed. A typical value would be 20 frames. The park ahead range is limited to 00:00 to 02:00. For lock in reverse applications, a park ahead of 00:00 gives the best average performance for forward and reverse lock.

Menu selector key functions:

>>	incr current selection
<<	decr current selection
>	right column
<	left column
?	clear selection

18) Machine- synchronizer machine selector menu

MTR-90	Otari MTR90 synchronizer
A-827	Studer A827 or A820 synchronizer
BVU-950	Sony BVU synchronizer

Refer to the Application Note for each type of machine, cable details, connection and setup information.

Menu selector key functions:

>>	max machine selector
<<	min machine selector
>	incr machine selector
<	decr machine selector
?	home

19) tape speed- tape speed menu

Menu selector key functions:

<	7.5 ips
?	15 ips
>	30 ips

20) address- VSI address menu

The VSI address is for V0700 Lynx synchronizer-compatible applications. The range is 1-7. Every synchronizer in a Lynx application must have a unique address.

Menu selector key functions:

>>	incr current selection
<<	decr current selection
>	incr current selection
<	decr current selection

21) editor- VSI editor type menu

The VSI editor type is for Lynx synchronizer-compatible applications. The range is 0-3..

If any editor type but 0 is selected and video is present, a resolving pulse will be output on pin 5. The resolving pulse is low for the 1/4 frame prior to FIELD 1.

DEFERRED ROLL frame compensation table:

Editor	Compensation
2	add 2 frames to master number
3	add 3 frames to master number

Menu selector key functions:

>>	incr current selection
<<	decr current selection
>	incr current selection
<	decr current selection

22) COM2- serial options menu

OPTION DESCRIPTION

Sony master	TC1128B controls a Sony 9 pin machine
9F	Magnatech 9F counter protocol
MC211	JSK Engineering MC211 counter protocol
Sony slave	TC1128B emulates a Sony 9 pin machine

Menu selector key functions:

>>	max option selector
<<	min option selector
>	incr option selector
<	decr option selector
?	home

23) COM1- serial options menu

OPTION DESCRIPTION

Studer	Studer A827 synchronizer format
9F	Magnatech 9F counter protocol
GLW	GLW timecode for GLW film consoles

Menu selector key functions:

>>	max option selector
<<	min option selector
>	incr option selector
<	decr option selector
?	home

24) DEVICE TYPE- select BVU device type

This menu selects the response to a 'device type request'.

OPTION	DESCRIPTION
BVU 950	BVU 950 device type
PVW 2800	PVW 2800 device type

Menu selector key functions:

>>	max option selector
<<	min option selector
>	incr option selector
<	decr option selector
?	home

25) RELEASE- select point at which BVU is released to video

OPTION	DESCRIPTION
-50	release between -50 and -25 subframes
-25	release between -25 and 0 subframes
0	release between 0 and 25 subframes
25	release between 25 and 50 subframes
50	release between 50 and 75 subframes

This function allows selection of the release point for fastest BVU synchronization.

Menu selector key functions:

>>	max option selector
<<	min option selector
>	incr option selector
<	decr option selector
?	home

Setting up Com Ports and Connectors:

A) VAC

TO SET 120/240 VAC:

Open the unit and set the VAC selector switch near the VAC connector.

B) COM1

1	NC
2	RS232 RX DATA
3	RS232 TX DATA
4	NC
5	GROUND
6	NC
7	NC
8	NC
9	NC

C) COM2

1	NC
2	RS422 RX DATA-
3	RS422 TX DATA+
4	NC
5	NC
6	GROUND
7	RS422 RX DATA+
8	RS422 TX DATA-
9	NC

D) COM3

COM3 is a bi-directional RS422 port. The pinout below is correct when the TC1128B is a slave. When it is the master, RX and TX are reversed.

1	NC
2	RS422 RX DATA-
3	RS422 TX DATA+
4	NC
5	NC
6	GROUND
7	RS422 RX DATA+
8	RS422 TX DATA-
9	NC

E) LTC IN

TIP	LTC+
RING	LTC-
SLEEVE	GROUND

F) LTC OUT

TIP	LTC+
RING	GROUND
SLEEVE	GROUND

G) VITC IN

The **VITC IN** connector is a BNC.

H) VITC OUT

The **VITC OUT** connector is a BNC.

I) INPUT/ OUTPUT Pin-Out and Functions Chart:

PIN	FUNCTION	NOTES
1	FUSED +5 VOLTS	
2	ONLINE RELAY N.O.	
3	110 OHM TO +5	
4	TACH A FROM ATR-	rate opto input minus
5	FFWD TALLY-	opto input minus
6	FFWD TALLY+	opto input plus
7	STOP TALLY-	opto input minus
8	STOP TALLY+	opto input plus
9	STOP COMMAND	solid state relay closure
10	LDEFEAT COMMAND	solid state relay closure
11	COMMAND COMMON	solid state relay common
12	LOCK COMMAND+	solid state relay closure
13	TACH IN B+	
14	TACH OUT B+	differential output plus
15	TACH IN A+	
16	TACH OUT A+	differential output plus
17	PILOT OUT	50/60 hz pilot out
18	GROUND	
19	TACH C COLLECTOR	
20	ONLINE RELAY WIPER	
21	TACH A FROM ATR+	rate opto input plus
22	FREV TALLY-	opto input minus
23	FREV TALLY+	opto input plus
24	PLAY TALLY-	opto input minus
25	PLAY TALLY+	opto input plus
26	PLAY COMMAND	solid state relay closure
27	FFWD COMMAND	solid state relay closure
28	LOCK COMMAND-	solid state relay closure
29	MUTE COMMAND+	solid state relay closure
30	TACH IN B-	
31	TACH OUT B-	differential output minus
32	TACH IN A-	
33	TACH OUT A-	differential output minus
34	GROUND	
35	TACH C EMITTER	
36	ONLINE RELAY N.C.	
37	TACH B- FROM ATR	direction opto input minus
38	TACH B+ FROM ATR	direction opto input plus
39	REC TALLY-	opto input minus
40	REC TALLY+	opto input plus
41	REV TALLY-	opto input minus
42	REV TALLY+	opto input plus
43	PLAY REV COMMAND	solid state relay closure
44	FREV COMMAND	solid state relay closure
45	MUTE COMMAND-	solid state relay closure
46	REC COMMAND	solid state relay closure
47	12 VOLT TACH B	
48	12 VOLT TACH A	
49	DAC OUT	
50	GROUND	

Options

A) Opto isolated or single ended tach input

The TC1128B, printed circuit card rev. D95D, is shipped with 270 ohm resistors across socket U67. If optoisolation is required, place a Hewlett-Packard HCPL2730 in socket U67. The TACHINA- and TACHINB- returns then must be connected for the opto to work. This allows tach inputs of 5 to 12 volts. For single ended tach input referenced to TC1128B ground, connect TACHINA- and TACHINB- to TC1128B ground in the 50 pin D connector. Alternately, with the 270 ohm resistors from pins 1-7 and 4-6, do not exceed 5 volts tach input. In this case TACHINA- and TACHINB- do not need to be connected.

Refer to the IO SCHEMATIC to see the optoisolator circuit.

B) Opto isolated 9600 hz output option

The TC1128B, printed circuit card rev. D95C, is shipped with a jumper from U38-2 to U38-5. For applications requiring an optoisolated tach output, install a Texas Instruments TIL113 or equivalent in U38.

NOTE: I/O Schematic and jumper modifications are included in printed versions, but are not provided in the online manual. See web site for streamer application and jumper mod. Please call or e-mail to receive I/O Schematic by fax or surface mail.

Applications Index: alphabetic listing

Application:	Development Date	Comments:	Page:
BVU/film tightly coupled system	11/17/96		25
BVU-950 synchronizer	3/20/96		26
DTS to SMPTE	6/17/96	Requires special program	27
Fairlight/flatbed	1/15/98		29
JAMSYNC Application	10/8/98	V3.52	30
Lockbox (exact park of Sony slaved to tach)	9/22/95	AKA: BVU Lockbox	31
Motion master	3/10/97		32
Optical camera rate generator	4/16/95	- forward only, limited top speed	34
Otari MTR90 synchronizer	10/19/95		35
Sony serial protocol slave	8/12/95	AKA: P2 to film motion control	37
SSL Parallel to Sony Controller	8/20/01	V3n54 AKA: SSLTo P2	38
Streamer Application	6/20/01	Requires jumper modification	40
Studer A827 synchronizer	7/20/95		41
Tach to timecode converter	7/20/95	AKA: Biphase to timecode	43
RS232 Serial Commands	3/2/03		45
LTC generation from P2 serial timecode	3/2/03		47

BVU-Film Tightly Coupled System Application Note 11/17/96

Description:

The BVU and tach generator work together through the TC1128B front panel. When a BVU is connected by 9 pin serial communication, motion buttons are relayed to the BVU. The TC1128B then slaves to the BVU serial timecode during PLAY, while the BVU chases film in all other modes.

1. Pertinent TC1128B menu settings:

<u>TC1128B MENU LINE</u>		<u>NOTES</u>
video ref	gen slave	
xx	top speed	set for film system top speed, BVU will chase
xx	acceleration	set for desired film acceleration, BVU will chase
com2:	Sony master	serial cable is a flip cable. BVU must have tc reader.

2. Connections:

A) TC1128B COM2 to BVU SERIAL, 9 pin D, flip cable per following:

	<u>TC1128B</u>	<u>SONY</u>
GROUND	6	6
TX+	3	7
TX-	8	2
RX+	7	3
RX-	2	8

B) video sync to BVU and TC1128B

C) TC1128B to film machine, cable per following:

<u>PIN</u>	<u>FUNCTION</u>	<u>MTE PIN</u>
14	TACH OUT B+	E
16	TACH OUT A+	D
18	GROUND	A

3. Operation:

Put the BVU in REMOTE. The BVU will cue to the timecode of the TC1128B immediately.

4. Expected Performance:

Lock is in the 3-4 second range. The BVU will park within 2 frames of the film position. When film is jogged, the BVU will cue when more than 2 frames from the film position. In fast wind, the BVU will chase. In a fast wind to PLAY transition, the BVU will shuttle to within 1/2 second of the film position and go in to play. The LOCK light and closure on the TC1128B indicate that the BVU is locked to video and that the TC1128B is locked to the BVU.

5. Messages:

"ERROR: no Sony COM " will display if COM2 is Sony master and no Sony machine is found. For tach generation alone, set COM2 to Sony slave to get rid of this message.

6. Use with Lynxes:

For KCU use, this must be the highest priority machine. For VSI-SAL use, this must be the master.

BVU-950 Application Note 3/20/96

1. Pertinent TC1128B menu settings:

TC1128B MENU LINE

xxxx ref tape slave
machine BVU-950
parkahead 00:00:00:00
xx:xx:xx:xx vari tc

NOTES

for instance: tach ref

use this value for quickest lock
timecode of start mark for different tc types

2. Features not available:

varispeed

3. LTC/ serial TC use:

LTC is used for locking, and must be connected. Serial tc is used for highspeed or when LTC is unreadable.

4. Connections:

TC1128B COM2 to BVU SERIAL, 9 pin D, flip cable per following:

	TC1128B	SONY
GROUND	6	6
TX+	3	7
TX-	8	2
RX+	7	3
RX-	2	8

*video sync to BVU and system tach generator
LTC from BVU to TC1128B*

5. Expected Performance:

Lock to film tach is in the 3 to 6 second range in almost all cases. Fastest lock is achieved by letting the BVU park before rolling the system. The tape motion in the BVU is excellent, and no parkahead is needed. The BVU is released to video sync once lock is achieved. If the error exceeds 50 subframes for 3 frames in a row, the BVU will chase.

6. Using different timecode types:

The timecodes match at the sync point. For instance, if the tach reader were reading 24frame film tach and the video were drop frame and the desired match time was 00:59:52:00, this value would be used for the sync point.

DTS to SMPTE Application Note 6/17/96

For V3P56 and higher, the DTS reader is included as a normal menu item.

1. Otherwise, **The DTS to SMPTE program is a separate EPROM.** It has no setup options. The only option is a timecode offset.

Setting values in the menus:

- 1) Use the **DISP** key to scroll up or the **STORE** key to scroll down through the menu.
- 2) Once in the proper menu line, press **SET**.
- 3) Index through the choices one a time with **>** or **<**.
- 4) To increment or decrement digits, press **>>** or **<<**.
- 5) Press **STORE** to keep the new setting, or **SET** to return to the old setting.

2. Connections:

A) 50 pin D to DTS timecode reader 9 pin D connector:

Signal Name	TC1128B 50 pin D	timecode reader 9 pin D
+5 VOLTS	1 (SEE NOTE)	5
GROUND	34 (SEE NOTE)	8

IMPORTANT NOTE: *The head can get power from only one source. If you are using a DTS player, power is supplied by the DTS player. In that case, DO NOT make this connection.*

B) LTC IN phone jack to DTS timecode reader 9 pin D connector:

Signal Name	LTC IN phone jack	timecode reader 9 pin D
LTC IN +	TIP	1
GROUND	RING	6

C) LTC OUT phone jack:

Signal Name	LTC OUT phone jack
LTC OUT +	TIP
GROUND	RING

3. Operation as a DTS to SMPTE converter:

- 1) The top line of the display shows the reel and timecode number. The bottom line shows either the serial number, the output SMPTE timecode, or the offset. The offset is stored in EEPROM, so that it is saved if power is turned off.

4. Event closures

Setting the event time:

- 1) Use the **DISP** key to scroll up or the **STORE** key to scroll down through the menu to the EVENTS line, which looks like "00:00:00:00 1-1 N".
- 2) Once in the proper menu line, press **SET**.
- 3) Index through the HH:MM:SS:FF with **>** or **<**.
- 4) To increment or decrement digits, press **>>** or **<<**.
Press **STORE** to keep the new setting, or **SET** to return to the old setting.

DTS to SMPTE Application Note 6/17/96 CONTINUED

Setting which closures are made:

- 1) Press < or > to index through the closures.
- 2) Press (**STOP**) to toggle the closure on or off.
- 3) Press **SET** then **STORE** if you wish to save the closure in EEPROM.

Note that the first 3 closures are isolated, while the last 5 have a common. The first event is a relay, while the last 7 are solid state relays, with an on resistance of about 100 ohms.

EVENT	CLOSURE	D50 PINS
1	k9600Closure (relay)	2, 20
2	kMuteClosure (isolated closure)	29, 45
3	kLockClosure (isolated closure)	12, 28
4	kStopClosure	9, 11
5	kPlayClosure	26, 11
6	kPlayReverseClosure	43, 11
7	kFastForwardClosure	27, 11
8	kFastReverseClosure	44, 11

Fairlight/flatbed Application Note 1/5/98

1. Pertinent TC1128B menu settings:

TC1128B MENU LINE

tach ref tape slave
machine BVU-950
250hz 25 fr tach reader
rdr direction OFF

NOTES

your tach rate and frame rate
if your flatbed outputs quadrature

2. Features not available:

varispeed

3. LTC/ serial TC use:

Serial tc is used to determine the position of the Fairlight.

4. Connections:

A) TC1128B COM2 to FAIRLIGHT SERIAL, 9 pin D, flip cable per following:

	TC1128B	FAIRLIGHT
GROUND	6	6
TX+	3	7
TX-	8	2
RX+	7	3
RX-	2	8

B) Flatbed tach to TC1128B 50 pin D connector

PIN	FUNCTION	NOTES
13	TACH IN B+	lagging phase of quadrature, or direction
15	TACH IN A+	leading phase of quadrature, or rate
30	TACH IN B-	opto input, return must be connected
32	TACH IN A-	opto input, return must be connected
50	GROUND	

C) video sync to FAIRLIGHT, TC1128B, and system tach generator

5. Expected Performance:

The FAIRLIGHT will park with frame accuracy. You may scrub audio files. When playing, The FAIRLIGHT is released to video sync once lock is achieved. If the error exceeds 50 subframes for 3 frames in a row, the FAIRLIGHT will chase. Ideally, your flatbed would be locked to video in PLAY. If not, there will be an occasional resync.

Jam Sync Application (V3.52) Note 10/8/98

1. Pertinent TC1128B menu settings:

<u>TC1128B MENU LINE</u>	<u>NOTES</u>
video ref gen slave	
accel 99	
Tc when stopped ON	

2. Connections:

video sync to VITC IN
ltc jam source to LTC IN
jammed ltc from LTC OUT

3. Operation:

Put the TC1128B ONLINE. The status 'EX' (EXECUTING EVENT) will appear in the upper right of the display. When LTC is read, the TC1128B will jam sync and generate LTC locked to video. LTC will be read whenever it is good and loaded in to the generator. If LTC input goes away or drops out, the generator will continue from the last good LTC read. To re-arm the jam sync, take the TC1128B OFFLINE and put it ONLINE again.

Lockbox Application Note 9/22/95 (BVU Lockbox)

1. Pertinent TC1128B menu settings:

<u>TC1128B MENU LINE</u>	<u>NOTES</u>
tach ref lockbox slave	
24fr 240hz tach rdr	for 240 hz shaft encoder
machine BVU-950	
parkahead 00:00:00:00	must be zero for lockbox
xx:xx:xx:xx vari tc	timecode of start mark for different tc types

2. Features not available:

varispeed

3. VITC/ serial TC use:

VITC is used for parking, and must be connected. Serial tc is used for highspeed or when VITC is unreadable.

4. Connections:

TC1128B COM2 to BVU SERIAL, 9 pin D, 1:1 cable
video sync to BVU and system tach generator
BVU VIDEO OUT BNC to TC1128B VITC IN BNC

5. Expected Performance:

Lock to film tach is in the 3 to 6 second range in almost all cases. Fastest lock is achieved by letting the BVU park before rolling the system. The tape motion in the BVU is excellent, and no parkahead is needed. The BVU is released to video sync once lock is achieved. If the error exceeds 50 subframes for 3 frames in a row, the BVU will chase.

On tach stop, the BVU will cue to within 4 frames of the tach position, then jog to the tach position at 1/10 speed until the VITC matches the tach position to the **closest field**.

6. Using different timecode types:

The timecodes match at the sync point. For instance, if the tach reader were reading 24 frame film tach and the video were drop frame and the desired match time was 00:59:52:00, this value would be used for the sync point.

Motion Master Application Note 3/10/97

1. Pertinent TC1128B menu settings:

mains ref	gen slave	(video ref is also a common choice)
gen 30 ltc	xxx tach	
18	accel	(typical for 1000' loads)
6	top speed	(typical for 1000' loads)
01:00:00:00	start	(typical starts are 00:59:52:00 or 01:00:00:00)
00.000	varispeed %	
Return to zero	ON	

To set the 'Return to zero ON' switch, go to the 'Timecode mute xxx' line of the menu. Press **STORE**. Press **>** to get to the 'Return to zero xxx' item. Toggle the ON/OFF state by pressing the **□ (STOP)** key. Press **STORE** to keep the desired setting.

2. Connections

A) Tach output connector:

TC1128B INPUT/OUTPUT	MTE 5 PIN AMPHENOL
16 (TACH OUT A +)	D (TACH PHASE 1)
14 (TACH OUT B+)	E (TACH PHASE 2)
50 (GROUND)	A (GROUND)

B) Timecode connector:

The timecode output is on a 1/4 phone jack.

C) External motion switch closures

The TALLY inputs serve as switch closures in for motion control. They are opt isolated, and the returns must be connected.

Signal Name	TC1128B 50 pin D
FFWD TALLY-	5
FFWD TALLY+	6
STOP TALLY-	7
STOP TALLY+	8
FREV TALLY-	22
FREV TALLY+	23
PLAY TALLY-	24
PLAY TALLY+	25
REC TALLY-	39
REC TALLY+	40
REV TALLY-	41
REV TALLY+	42

D) Lamp outputs

The COMMAND outputs serve as lamp closures in for motion control.
There is a single lamp return on COMMAND COMMON.

Signal Name	TC1128B 50 pin D
STOP COMMAND	9
COMMAND COMMON	11
PLAY COMMAND	26
FFWD COMMAND	27
GROUND	34
FREV COMMAND	44
REC COMMAND	46

3. Operation:

Set the START register to the desired timecode start. Typically, reels start at either 01:00:00:00 or 00:59:52:00. Put the film on the start mark. Hold (**STOP**) and press **STORE** to set the TC1128B tach generator to the timecode start.

Optical Camera Application Note 4/16/95

1. Pertinent TC1128B menu settings:

lrc ref	gen slave
Gen fwd only	ON
lrc 30	tach 240
01:00:00:00	start
00:00	parkahead
00:00:00:00	offset
00.000	varispeed %

To set the 'Gen fwd only ON' switch, go the 'Timecode mute xxx' line of the menu. Press **STORE**. Press > to get to the 'Gen fwd only xxx' item. Toggle the ON/OFF state by pressing the (**STOP**) key. Press **STORE** to keep the desired setting.

2. Operation:

The TC1128B should be patched to chase the 3324 timecode. Park the 3324 before 00:59:58:00. Thread the camera, with the film on the start mark for double pass operations. **Press STOP and STORE** simultaneously to set the TC1128B to the start mark. Put the TC1128B online. Run the camera from the PC. As the 3324 passes 01:00:00:00, the TC1128B will roll and synchronize.

3. Notes:

The maximum speed of the generator in the 'Gen fwd only ON' mode is 1.25 speed. The TC1128B will only roll forward.

Otari MTR-90 Application Note 10/19/95

1. Pertinent TC1128B menu settings:

<u>TC1128B MENU LINE</u>		<u>NOTES</u>
tach ref	tape slave	
machine	MTR-90	
parkahead	00:00:00:00	use this value for quickest bi-directional lock
xx:xx:xx:xx	vari tc	code match tc for different tc types
xx:xx:xx:xx	start	timecode start for tach to timecode converter

Setting values in the menus:

- 1) Use the **DISP** key to scroll up or the **STORE** key to scroll down through the menu.
- 2) Once in the proper menu line, press **SET**.
- 3) Index through the choices one a time with **>** or **<**.
- 4) In the 'xxxx ref yyyy slave' menu, index through columns with **>>** or **<<**.
- 5) To increment or decrement digits, press **>>** or **<<**.
- 6) In the 'accel', 'top speed', and 'Timecode mute xxx' menus, **>>** or **<<** go to the menu limits.
- 7) In the flags menu line 'Timecode mute xxx', press **□ (STOP)** to toggle the ON/OFF state of the flag. Other flags are accessed by pressing **>** or **<**.
- 8) Press **STORE** to keep the new setting, or **SET** to return to the old setting.

2. Connections:

- A) 50 pin D to Honda connector:

<u>Signal Name</u>	<u>TC1128B 50 pin D</u>	<u>MTR90 Honda</u>
TACH FROM ATR-	4	15
FFWD TALLY-	5	4
FFWD TALLY+	6	20
STOP TALLY-	7	3
STOP TALLY+	8	20
STOP COMMAND	9	12
LDEFEAT COMMAND	10	6
COMMAND COMMON	11	17
TACH C COLLECTOR	19	18
TACH FROM ATR+	21	20
FREV TALLY-	22	5
FREV TALLY+	23	20
PLAY TALLY-	24	2
PLAY TALLY+	25	20
PLAY COMMAND	26	11
FFWD COMMAND	27	13
GROUND	34	17
DIR- FROM ATR	37	21
DIR+ FROM ATR	38	20
REC TALLY-	39	1
REC TALLY+	40	20
REV TALLY-	41	5
REV TALLY+	42	20
FREV COMMAND	44	14
REC COMMAND	46	10

B) Tach connector

TC1128B INPUT/OUTPUT	MTE 5 PIN AMPHENOL
15 (TACH IN A +)	D (TACH PHASE 1)
13 (TACH IN B+)	E (TACH PHASE 2)
50 (GROUND)	A (GROUND)

C) Timecode connector:

The timecode input to the TC1128B should be in the -10 to -6 dB range for best performance.

3. Operation as a tach chase synchronizer:

- 1) Read timecode from the tape.
- 2) Enter the **START** timecode in to the TC1128B START menu.
From this point on, hold (**STOP**) and press **STORE** to reset the tach to timecode converter to the start mark.
- 3) Put the TC1128B ONLINE.
- 4) When a new reel is loaded, hold (**STOP**) and press **STORE** to reset the tach to timecode converter to the start mark.

Sony Serial Protocol Slave Application Note 8/12/95

1. Pertinent TC1128B menu settings:

video refgen slave (other references may be used)
gen 30 ltc 240 tach (typical for non drop ltc, Magnatech tach out)
18 accel
6 top speed
01:00:00:00 start (typical starts are 00:59:52:00 or 01:00:00:00)
00:00 parkahead
00:00:00:00 offset
00.000 varispeed %
Return to zero OFF
COM2: Sony

To set the 'Return to zero OFF' switch, go the 'Timecode mute xxx' line of the menu. Press **STORE**. Press > to get to the 'Return to zero xxx' item. Toggle the ON/OFF state by pressing the (**STOP**) key. Press **STORE** to keep the desired setting. If 'Return to zero ON' is set, runouts in reverse will be eliminated, but reverse or fast reverse motion near the start mark may get the TC1128B into a 'RETURN TO ZERO' state.

2. Connections

A) COM2 connector

TC1128B COM2	CONTROLLER
2 (RX -)	8 (TX -)
3 (TX +)	7 (RX +)
6 (GROUND)	6 (GROUND)
7 (RX +)	3 (TX +)
8 (TX -)	2 (RX -)

B) TACH OUT connection

TC1128B INPUT/OUTPUT	MTE 5 PIN AMPHENOL
16 (TACH OUT A +)	D (TACH PHASE 1)
14 (TACH OUT B +)	E (TACH PHASE 2)
50 (GROUND)	A (GROUND)

3. Operation:

Put the film machines on the start mark. To set the TC1128B tach counter to the timecode start, hold (**STOP**) and press **STORE**. Put the TC1128B ONLINE. The COM2 L.E.D. indicates that characters are being received from the controller.

SSL Parallel to Sony Controller Application Note 3/2/02

1. Pertinent TC1128B menu settings:

<u>TC1128B MENU LINE</u>		<u>NOTES</u>
video ref	gen slave	
xx:xx:xx:xx	start	timecode at the start mark
Gen 30	96 tach	this is the lowest tach rate
Gen direction	ON	we want rate and direction, not quadrature
Com2:	Sony master	

Setting values in the menus:

- 1) Use the DISP key to scroll up or the STORE key to scroll down through the menu.
- 2) Once in the proper menu line, press SET.
- 3) Index through the choices one a time with > or <.
- 4) In the 'xxxx ref yyyy slave' menu, index through columns with >> or <<.
- 5) To increment or decrement digits, press >> or <<.
- 6) In the 'accel', 'top speed', and 'Timecode mute xxx' menus, >> or << go to the menu limits.
- 7) In the flags menu line, 'Timecode mute xxx', press SET to permit access to the flags. Press STOP to toggle the ON/OFF state of the flag. Index to other flags are accessed by pressing > or <.
- 8) Press STORE to keep the new setting, or SET to return to the old setting.

2. Connections:

A) TC1128B 50 pin D to SSL S29E 25 pin:

Signal Name	TC1128B 50 pin D	SSL S29E 25 PIN
+5 VOLTS	1	2,9,10 (LAMP, TACH, DIR COM)
FFWD TALLY-	5	4
FFWD TALLY+	6 TO +5 VOLTS (PIN 1)	NC
STOP TALLY-	7	5
STOP TALLY+	8 TO +5 VOLTS (PIN 1)	NC
STOP COMMAND	9	18
COMMAND COMMON	11 TO +5 VOLTS (PIN 1)	NC
FREV TALLY-	22	3
FREV TALLY+	23 TO +5 VOLTS (PIN 1)	NC
PLAY TALLY-	24	6
PLAY TALLY+	25 TO +5 VOLTS (PIN 1)	NC
PLAY COMMAND	26	19
FFWD COMMAND	27	17
GROUND	34	15 (SW COMMON)
FREV COMMAND	44	16
TACH OUT A+ (RATE)	16	22
TACH OUT B+ (DIR)	14	23
GROUND	50	14

SSL Parallel to Sony Controller app note continued:

B) Video sync

Connect NTSC or PAL sync to VITC IN.

C) Sony deck connection

COM2 to Sony deck is a 1:1 cable, pins 2,3,6,7,8. If we have COM, the COM2 light on the TC1128B will illuminate.

The SSL "Master Machine Setup" is:

AUTOLOCATOR TYPE: 2
DECISION INTERVAL: .02
FWD DIRECTION: HIGH
MULTIPLAY SPEED: NO
PULSES/SEC 96
TARGET WINDOW 1.07
DROP OUT COMMAND 1
DROP IN COMMAND 1
TIME FOR STARTUP 1.10
TIME FOR STOP .18
PESSIMISM FACTOR (FWD) 12
PESSIMISM FACTOR (REV) 12
SHORT LOCATE: 0
MAX STOPPING DISTANCE: 28
FRAMES TO STOP FROM PLAY: .06
FRAME JOG CARD FITTED: NO (CONSOLE DEPENDENT)

TESTING

1) Testing the Sony slave portion.

If we have a COM2 light, we are properly connected. Press motion keys on the TC1128B. The Sony machine should move under control of the TC1128B motion keys.

2) Testing the SSL to TC1128B portion.

One function of the TC1128B is a tach to MTR90 synchronizer. That is why the COMMAND outputs are labeled COMMAND, even though they indicate to the SSL the state of the TC1128B. The TALLY inputs were to detect the MTR90 state, although they are used in this case to control the TC1128B. The inputs are opto isolated, which is why the TALLY+ side is connected to TC1128B +5v, and the SSL is making a closure from TALLY- to TC1128B ground. If you wish to confirm the cable before testing the SSL connection, try grounding PLAY TALLY- to see if the TC1128B goes in to forward motion. If it does, connect the SSL and see if you have motion control.

To reset the TC1128B to the timecode start, hold STOP and press STORE.

Streamer Application Note V4.XX 6/20/01

This Program version 4.XX replaces the VITC generator with a streamer function. It can be triggered in two ways, either by a closure or by programming the EDIT IN point in Sony P2 protocol on COM2. The streamer is an 84 field long event. During the streamer, a white vertical bar sweeps from left to right, and a white stationary bar is displayed on the right side. The bars touch at the EDIT IN point.

Existing TC1128B's can be modified to perform the streamer function with the addition of one jumper and replacing the program. Please refer to drawing STREAMER.PDF for an illustration of the board modification.

The trigger closure input is REC TALLY+ and REC TALLY-. This is an optoisolated input. One method of providing current for the opto is to connect the REC TALLY+ to the FUSED +5 VOLTS available on the 50 pin D connector, and make a contact closure from GROUND on the 50 pin D connector to REC TALLY-. Pin numbers are given in the table below.

50 PIN D CONNECTIONS

I) INPUT/ OUTPUT

PIN	FUNCTION	PIN	FUNCTION
1	FUSED +5 VOLTS	40	REC TALLY+
18	GROUND		YOUR NORMALLY OPEN CONTACT
39	REC TALLY-		YOUR WIPER CONTACT

The TC1128B can be used in a linear tach generator mode to generate quadrature for film machines or MMR8's, or it can be used in a nonlinear mode. The suggested setup for nonlinear mode is:

VIDEO REF GEN SLAVE
ACCEL 99
TOP SPEED 12
TC WHEN STOPPED ON
STREAMER ON
COM2 SONY SLAVE

Studer A827 Application Note 7/20/95

1. Pertinent TC1128B menu settings:

<u>TC1128B MENU LINE</u>		<u>NOTES</u>
tach ref	tape slave	
Machine	A-827	
parkahead	00:00:00:00	use this value for quickest bi-directional lock
xx:xx:xx:xx	vari tc	code match tc for different tc types
xx:xx:xx:xx	start	timecode start for tach to timecode converter
A827 rec en	ON/OFF	ON to go into RECORD when synchronizing fwd

Setting values in the menus:

- 1) Use the **DISP** key to scroll up or the **STORE** key to scroll down through the menu.
- 2) Once in the proper menu line, press **SET**.
- 3) Index through the choices one a time with **>** or **<**.
- 4) In the 'xxxx ref yyyy slave' menu, index through columns with **>>** or **<<**.
- 5) To increment or decrement digits, press **>>** or **<<**.
- 6) In the 'accel', 'top speed', and 'Timecode mute xxx' menus, **>>** or **<<** go to the menu limits.
- 7) In the flags menu line 'Timecode mute xxx', press **?** (STOP) to toggle the ON/OFF state of the flag. Other flags are accessed by pressing **>** or **<**.
- 8) Press **STORE** to keep the new setting, or **SET** to return to the old setting.

2. A827 settings:

32 tach pulses per second (shunt to lower position on A827 tach card)
 Communications format: 9600 baud, no parity, 1 stop bit

3. Connections:

A) Serial connector:

Connector sex: female 9 pin D cable connector at TC1128B, male 9 pin D cable connector at Studer.

TC1128B COM 1	STUDER A827 SERIAL
2 (RX)	2 (SNDATA)
3 (TX)	8 (RCVDATA)
5 (GROUND)	9 (GROUND)

B) Parallel connector:

Connector sex: 50 pin male D cable connector at TC1128B, 25 pin male D cable connector at Studer.

TC1128B INPUT/OUTPUT	STUDER SYNCHRONIZER
19 (9600 HZ OUT)	13 (EXT REF)
34 (GROUND)	1 (GROUND)
20 (ONLINE WIPER)	1 (GROUND)
2 (ONLINE N.O.)	5 (VARISPEED SW)
4 (ATR TACH-)	7 (TAPE MOVE CLK)
37 (ATR DIR-)	10 (TAPE MOVE DIR)
tie pins 1, 21, 38 (+5V TO ATR TACH+ and ATR DIR+)	

C) Tach connector:

TC1128B INPUT/OUTPUT	MTE 5 PIN AMPHENOL
15 (TACH IN A +)	D (TACH PHASE 1)
13 (TACH IN B+)	E (TACH PHASE 2)
50 (GROUND)	A (GROUND)

D) Timecode connector:

The timecode input to the TC1128B should be in the -10 to -6 dB range for best performance.

4. Operation as a tach chase synchronizer:

- 1) Read timecode from the tape.
- 2) Enter the **START** timecode in to the TC1128B START menu. From this point on, Press (**STOP**) and **STORE** to reset the tach to timecode converter to the start Mark.
- 3) Put the A827 online twice to make it cue up.
- 4) When a new reel is loaded, press (**STOP**) and **STORE** to reset the tach to Timecode converter to the start mark.

Tach to Timecode Converter Application Note 7/20/95

1. Pertinent TC1128B menu settings:

tach ref	gen slave	
gen 30 ltc	xxx tach	
18	accel	(typical for 1000' loads)
6	top speed	(typical for 1000' loads)
30 fr 240 hz	tach reader	(example for MTE type tach input)
01:00:00:00	start	(typical starts are 00:59:52:00 or 01:00:00:00)
00:00	parkahead	
00:00:00:00	offset	
00.000	varispeed %	
Return to zero	OFF	
Tc when stopped	OFF/ON	if ON, the tach output and ltc output run at 1x when stopped

To set the 'Return to zero OFF' switch, go to the 'Timecode mute xxx' line of the menu. Press STORE. Press > to get to the 'Return to zero xxx' item. Toggle the ON/OFF state by pressing the □ (STOP) key. Press STORE to keep the desired setting.

2. Connections

A) Tach output connector:

TC1128B INPUT/OUTPUT	MTE 5 PIN AMPHENOL
16 (TACH OUT A +)	D (TACH PHASE 1)
14 (TACH OUT B+)	E (TACH PHASE 2)
50 (GROUND)	A (GROUND)

B) Timecode connector:

The timecode input is on a 1/4 phone jack.

3. Operation:

- Set the START register to the desired timecode start. Typically, reels start at either 01:00:00:00 or 00:59:52:00. Put the film on the start mark. Hold □ (**STOP**) and press **STORE** to set the TC1128B tach generator to the timecode start.
- Read some timecode. This should be close to the timecode start. Set the display to the REF line to check the location of the timecode reader.
- Put the TC1128B ONLINE. Play a bit of code at it. It will cue to the timecode and park. *If it starts to chase far away, you do not have the timecode start set correctly.*
- Put the timecode source into PLAY. The TC1128B will chase and lock within 3-4 seconds. In normal operation, the ERR display is most useful: Press **STORE and DISPLAY** together to get to the ERR display. This will show the error between the reference and TC1128B, and will go to SUBFRAMES when in lock. *If this is a very large number, then you have set the timecode start incorrectly.*

RS232 Serial Commands App Note V3P56 3/1/02

IBM COM settings:

9600 baud , no parity, 8 bits, 1 stop bit.

Pertinent TC1128B menu settings:

COM1 9600 N81

Connections:

<u>TC1128B COM1 PIN</u>	<u>IBM COM PIN</u>	<u>SIGNAL</u>
2	3	IBM TX, TC1128B RX
3	2	IBM RX, TC1128B TX
5	5	GND

Operating guide:

Commands are single characters followed by operands if any, terminated with a LF (line feed, decimal 10). Responses are terminated with the prompt character ':'. Unknown commands cause a help message to print. Try using a terminal program like HyperTerminal. Do a CR LF (carriage return, line feed). See what prints. Commands that need operands will supply info about the operands. For example, do ? without an operand, followed by a CR LF. A list of available queries will print.

Current operands:

{'C',clear,"CLEAR COUNTER"},	clears generator to tc start
{'O',online,"ONLINE"},	followed by 0 OFFLINE 1 ONLINE
{'R',ref_sel,"SELECT REF"},	followed by 0 SMPTE, 1 DTS, 2 tach
{'S',start_set,"SET START"},	followed by hhmmssff
{'?',query,"QUERY"},	followed by query character

current queries:

{'E',query_error,"QUERY TC ERROR"},	returns signed ASCII error
{'O',query_online,"QUERY ONLINE"},	returns 0 OFFLINE 1 ONLINE
{'R',query_ref_sel,"QUERY REF"},	returns ascii ref type
{'T',query_tc,"QUERY TC"},	returns ASCII tc
{'V',query_status,"QUERY STATUS"},	returns VSI status of generator

The status returned by the command '?V' will be one of the following values.

VSI status:

0,	STOPPED
1,	STOPPING
2,	PLAYING
3,	TSORIDE
4,	SHUTTLE
5,	FASTWIND
6,	REWIND
7,	SYNCING
8,	SSYNCR
9,	MSYNCR
10,	MEPERIOD
11,	BIAS
12,	CUEING
13,	CUED
14,	SEARCH
15,	SEARCHC
16,	EXEVENT
17,	CHASING
18,	CHASING_ACCURATELY
19,	SLOWPLAY
20,	PWROFF
21,	LOCAL
22	UNTHREAD

If your application requires additional commands, please let us know your requirements at info@jskengineering.com.

LTC generation from Sony Protocol serial timecode App Note 3/5/02

Pertinent TC1128B menu settings:

COM2 Sony Master

Connections:

1:1 connection of pins 2,3,6,7,8 from TC1128B COM2 to the P2 device.
Black burst to VITC IN

Operator's Guide:

If the TC1128B is not ONLINE, it will generate LTC referenced to the P2 serial timecode of the P2 device. Use the motion control buttons on the P2 device. This function is useful for generating LTC for P2 devices that have no LTC recorded or do not have an LTC generator.