SONY BETACAM SP
TLS-4000 MKII

INTERFACE DOCUMENTATION

Interface number : 1.812.442.21
IF - Doc number : 10.27.1361

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Summary

1 General Information

1.1 Ordering Information

Order number

- Interface Set
  (including Interface, Cable and Documentation) 21.812.442.21
- Interface Board (Hardware/Software) 1.812.442.21
- Hardware: TLS Serial Interface 1.812.490.20
- Software Set 1.812.986.21
- IF-Cable 5m 1.023.771.00
- Interface Docu-number 10.27.1361
- Hardware (serial IF) Docu-number 10.27.3050

1.2 Slave Model

- SONY BVW-75P
- Device with compatible connection: BVW-60P BVW-65P BVW-70P BVW-70S BVW-75S

1.3 Software

- First release (index 20) 1.812.986.20 (26/90)
- Update: New channel assignment 1.812.989.21 (21/91)

2 Installing Procedures

2.1 TLS 4000 Requirements

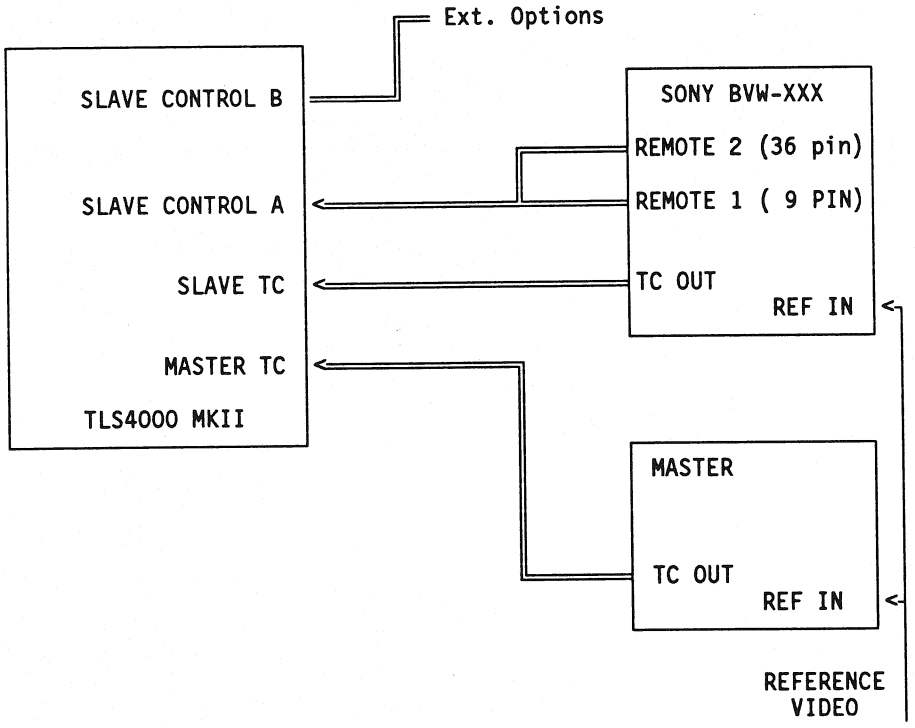
Order number

- Synchronizer Board — 1.812.320.23 or later
- Interface: — right setup of the DIL-SWITCHES (see section 3.3)

2.2 Slave Requirements

- The switch S302 in the SY-61 board must be set ON to have the tape direction signal available at pin 34 of the Remote input 2 of the BVW.
- Switch S1 in the SY-64 board should be put in LTC. If VITC is correctly recorded, switch S1 in the SY-64 board may be also put in AUTO.
- Switch REMOTE 1 / LOCAL / REMOTE 2 on the front panel should be but in REMOTE 1 position.

2.3 Connection TLS4000 - Slave



2.4 Quick Test, Adjustments

After "power on" a quick diagnostic test is done (ca 5 sec).
If an error occured, the left LED will blink (refer to section 3.5 for error codes).
Otherwise no LED should blink.

The wiring of control track and direction signal (and the right set up of switch S302 in SY-61 board, ref section 2.2) can be checked by disconnecting the Slave time code line. The LCU or controller display should now be updated with correct speed and direction.

No adjustments are required.

3 Operating Instructions

3.1 Technical Specifications

- Slave type:
  - Video Cassette Tape Recorder.
  - GOTO function direct
  - Parking in LOCK direct
  - CHASE-PLAY direct.
- Link type: serial, RS 422A, SONY protocol.
- Capstan control: -
- Movepulse information: Clock and direction.
  Freq: frame rate (25 Hz for PAL model)
  Dir : Low = REW.
- Lock time (typ): (in CUED status, Master Start - SYNC): 3 sec
  (in CHASE 10*vnom, Master Start - SYNC): 6 sec
- DropIn DropOut delays are compensated directly by the TLS.
  There is no compensation of the delay TC-head to Video-head.
- Sync accuracy: 0 frame;
- Park accuracy: ± 0.5 frame.

3.2 Summary of Supported Functions

Operating conditions:

- STOP — a STOP command is sent
- PLAY — only nominal speed is available
- REC — is performed with the SONY command "EDIT ON"; A PLAY will be performed if no channel is "ready" and "assemble mode" is not selected.

- EDIT — same as STOP
- FORW, REW — Variable from 0 to 42 times nominalspeed (0-24 with SHTL)
- SHTLF, SHTLR — same as FORW,REW

- LOC, LOCREL — all "locates" are performed by the interface

- MUTE — not implemented

- REHEARSE — available with "SELECT EE ON" instead of "REC"

- EVENT Relays — implemented

  There is a relay available for the user. The relay can be switched on by the EVON synchronizer command and off by the EVOFF command.

- CONDITIONAL COMMANDS: The timecode triggered execution is possible for the tape deck commands and the relay commands.

- STATUS Request: The status information is requested and updated through the serial communication link by the interface software.
  Additional speed information is available from the move pulse connection.

- Audio/Video/TC channel setup: They can be changed through the serial link. The channel assignment is:

TLS	BVW
channel 1 :	Audio 1
channel 2 :	Audio 2
channel 5 :	Video
channel 6 :	Control (safe = INS, ready = ASM)
channel 7 :	TC

  channel 8 to 32 are not used.

- TRANSPARENT Commands: Implemented with automatic check sum computation.

- KEYBOARD DISABLE: Not implemented.

3.3 DIL-SWITCH Functions

The following functions are given to the DIL SWITCH S1:

- Switch 1: Active polarity of the RECEN signal.
  OFF : recording mode enabled with RECEN LOW
  ON : recording enabled with RECEN HIGH or open

- Switch 2: Machine type, 25 or 30 frames.
  OFF : 25 frames machine;
  ON : 30 frames machine.
  After changing this setting the interface should be resetted.

All other switches are not used, but they should be in off position to guarantee compability with later software versions.

Default setting: all switches in off position.

3.4 Additional Features at the SLAVE CONTROL B Connector

RECEN (PIN 2):
Hardware record enable. The function of this input is defined by the DIL-SWITCH 1. (refer to section 3.3)

REL1 (PIN6), REL2 (PIN7):
This relay contact can be used for general purpose applications. It has to be turned ON and OFF by the EVON and EVOFF synchronizer commands.

MVCL (PIN21), MVDR (PIN24):
This output (open collector) provides slave movepulse information for external use. The nominal frequency is 25 Hz for 25 fps machines.
The direction output is LOW when the machine is going forward.

3.5 LED Diagnostic Display

Three LEDs are situated at the front of the interface board. They provide information about the result of the initial selftest and the online status.

DL 1 2 3 **(Front view)**
(# = LED blinking, - = LED off, * = LED on)

- An initialization procedure is executed after reset and the main hardware devices are tested. Any resulting error is signalled with a blinking left LED (DL1, about 1 Hz).

- If all LEDs are blinking, the internal EEPROM of the processor has to be reconfigured. This should only happen if the processor was replaced and the interface switched on for the first time. If this happend, you have to switch JS 1 to position AB and reset the interface (power off - power on). After the initialisation the three LEDs should blink again. Put JS 1 back to position BC and reset the interface again.
  Now the 68HC11 should be reconfigured and the LED message should not be the same.

DL1	DL2	DL3	
#	-	-	CPU-RAM test failed.
#	-	*	RAM test failed.
#	*	-	SSDA test failed.
#	#	#	Microprocessor 68HC11 has to be reconfigured.

- If no error was found, DL1 stays dark and the other two LEDs light, if communication with the slave or the synchronizer fails.

DL1	DL2	DL3	
-	*	*	no connection with the synchronizer board
-	*	-	no connection with the SLAVE
-	-	*	SLAVE error (ex: tape out)

- If the left LED is on, a fatal processor error has occurred. A reset is necessary to return to operation mode. The interface board should be checked whenever such an error was encountered. In this case the interface should be resetted and this error message should not occur anymore.

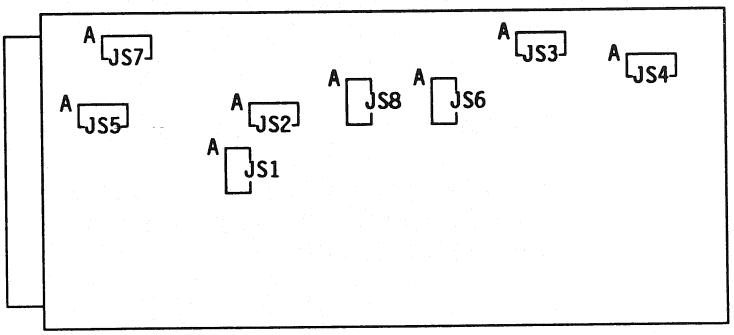
DL1	DL2	DL3	
*	–	–	Fatal SW or HW error (eg ROM defect)
*	–	*	Watch dog error
*	*	–	Clock error
*	*	*	Illegal opcode

3.6 Applications Hints

- For proper operation is recommanded not to try to locally control the machine when operating with the synchronizer.
- Care must be taken to have LTC and VITC properly recorded on the tape if the user wants to set the time code switch on the AUTO position.
  (ref section 2.2)
- Remote switching of the synchronizer from the slave machine is available.
- If a NTSC model is used, the default setting of the DIL switches should be changed according to section 3.3. The synchronizer has to be resetted after a DIL-SWITCH modification.

4 Service Documentation

4.1 Jumper Settings



Functions of jumpers:

	Position AB	Position BC
JS1	Processor in special test mode	Processor in normal expanded mode *
JS2	PE6 input of the processor is LOW	PE6 input of the processor is HIGH *
JS3	Serial output TX/TA connected to MAX232 (RS 232)	Serial output TX/TA connected to 75176 (RS 422) *
JS4	Serial input of 68A50 is connected to MAX232 (RS 232)	Serial input of 68A50 is connected to 75176 (RS 422) *
JS5	IF ground is connected to the slave ground *	No connection between IF ground and slave ground
JS6	Capstan reference output has no pullup resistor *	Capstan reference output has a pullup resistor
JS7	Opto isolated inputs are supplied from the IF *	Opto isolated inputs are supplied from the slave
JS8	Capstan pullup resistor is supplied with 5V (or MVCC if JS7 'AB')*	Capstan pullup resistor is supplied with 15V

* Default setting for Sony Betacam

4.2 Signal Description, Slave Connectors

SLAVE CONTROL A:

Pin	Signal	Type	Slave Sig.	Description
1	MGND		0 V	from BETACAM
2	-			
3	-			
4	-			
5	CAPEN	I out		(not used)
6	RX/RA		TXA	Tx A from BETACAM
7	MOVCL	I in	CLT	move signal clock from BETACAM
8	TX/TA		RXA	Rx A from BETACAM
9	PAIN5	I in		(not used)
10	MOVDIR	I in	DIR	move signal direction from BETACAM LOW = rewind
11	+5V			(not used)
12	0.0 V		SIG. GND	signal GND
13	CAPCL	I out		(not used)
14	RB		TXB	Tx B from BETACAM
15	-			
16	-			
17	-			
18	-			
19	PAOUT5	I out		(not used)
20	-			
21	-			
22	-			
23	-			
24	TB		RXB	Rx B from BETACAM
25	MVCC	+5V	+5V	supply voltage of BETACAM

I out logic output, activ low
(open collector max 30V/0.3A)
I in logic input, active low, optoisolated
(I-low > 10 mA)

SLAVE CONTROL B:

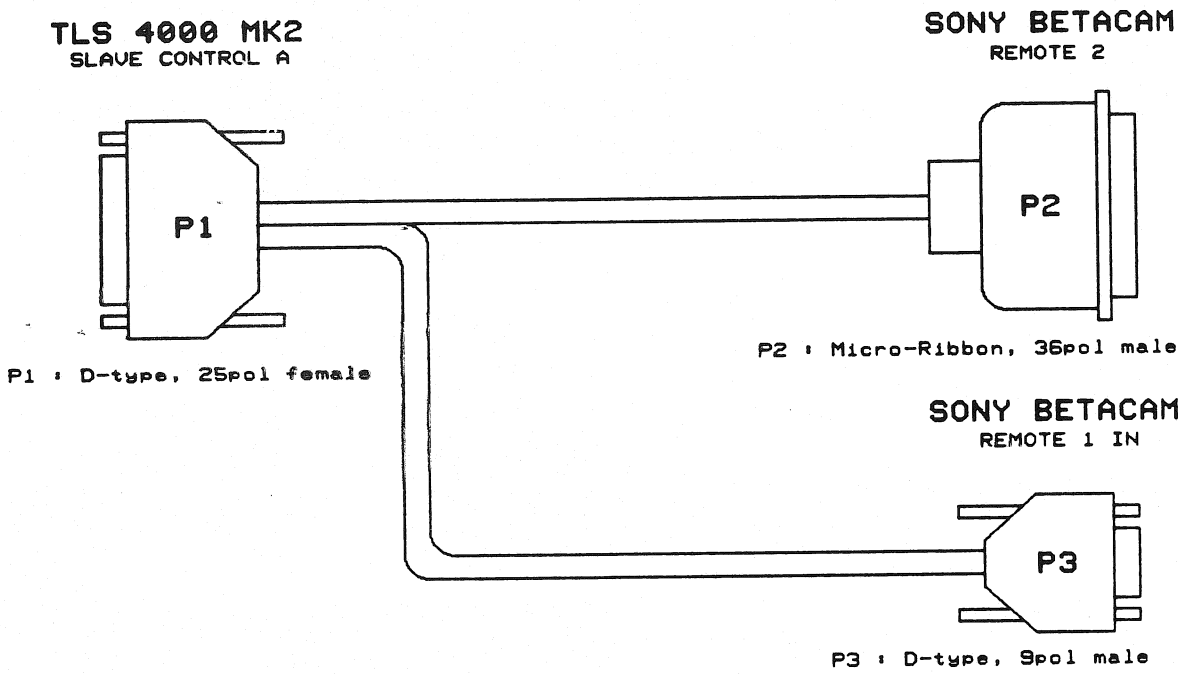
Pin	Signal	Type	Slave Sig.	Description
1	0.0 V			signal ground
2	RECEN/PAIN11	I in		record enable/safe input (see DIL Switch 81.1))
3	XVSREF/PAIN10	I in		(not used)
4	-			
5	XVSENB/PAIN9	I in		(not used) external
6	REL1			event relay contact 100V/0.3A
7	REL2			event relay contact 100V/0.3A
8	PAOUT6	I out		(not used)
9	-			
10	-			
11	+5V			IF power supply
12	PAIN12	I in		(not used)
13	-			
14	DC			(not used)
15	-			
16	-			
17	-			
18	-			
19	-			
20	0.0 V			signal GND
21	MVCL	I out		move signal clock
22	SCITX			(not used)
23	SCIRX			(not used)
24	MVDR	I out		move signal direction (LOW = FORW)
25	0.0 V			signal GND

I out logic output, active low
(open collector max 30V/0.3A)

I in logic input, active low, optoisolated
(I-low > 10 mA)

Remark: Schematics → see universal serial IF

4.3 IF Cable Description



P1. 7	MOVCL	P2. 26
10	MOVDIR	34
25	MVCC	1
	SCREEN	36

1	MGND	P3. 1
6	RX/RA	2
8	TX/TA	8
14	RB	7
24	TB	3
	SCREEN	9

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