˙SONY VO 9850
TLS-4000 MKII

INTERFACE DOCUMENTATION

Interface number   : 1.812.446.20
IF - Doc number   : 10.27.1870

We reserve the right to make alterations.

Summary

1   General Information

1.1   Ordering Information   Order number

- Interface Set
  (including Interface, Cable and Documentation)   21.812.446.20

- Interface Board (Hardware/Software)   1.812.446.20

- Hardware TLS serial Interface   1.812.490.20

- Software Set   1.812.952.20

- IF–Cable 5m   1.023.779.00

- Interface Docu–number   10.27.1870

- Hardware (serial IF) Docu–number   10.27.3050

1.2   Slave Model

- SONY VO – 9850

- Device with compatible connection: SONY VO – 9800

1.3   Software

- First release (index 20)   1.812.952.20 (07/91)

2   Installing Procedures

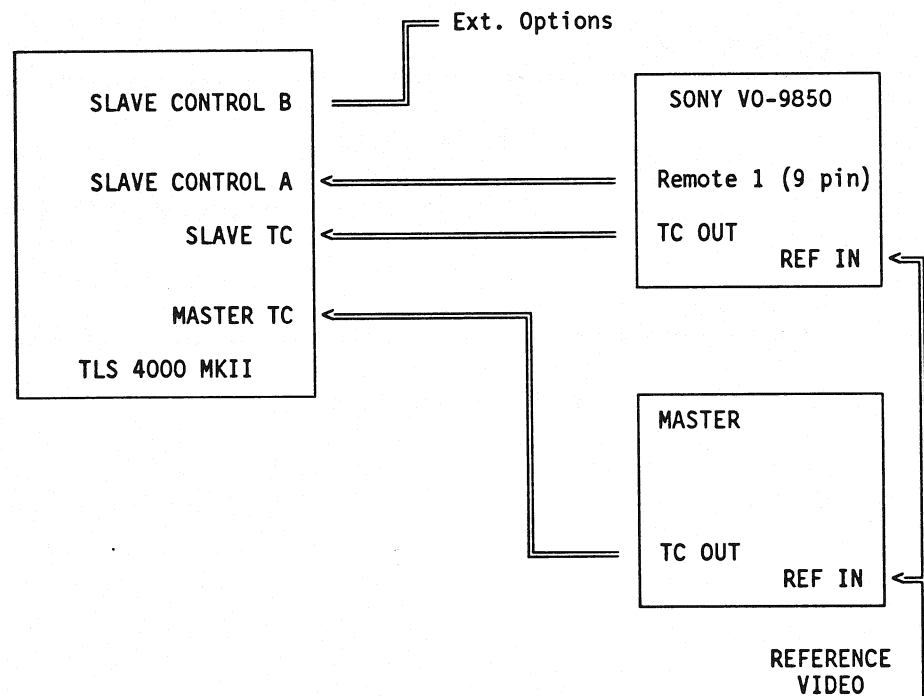## 2.1   TLS 4000 Requirements   Order number

- Synchronizer Board   1.812.320.23 or later

- Interface: correct setup of the DIL–SWITCHES (see section 3.3)

2.2   Slave Requirements

- The slave mashine must be equiped with a time code option BKU – 704 or BKU – 705.

2.3   Connection Slave–Synchronizer

```
                                    ┌── Ext. Options
                                    │
  ┌──────────────────────┐          │          ┌──────────────────────┐
  │                      │          │          │  SONY VO-9850        │
  │  SLAVE CONTROL B  ═══╪══════════┘          │                      │
  │                      │                     │  Remote 1 (9 pin)    │
  │  SLAVE CONTROL A  ◄══╪═════════════════════╡                      │
  │     SLAVE TC      ◄══╪═════════════════════╡  TC OUT              │
  │                      │                     │          REF IN  ◄═══╡
  │     MASTER TC     ◄══╪═══════════┐         └──────────────────────┘
  │                      │           │
  │  TLS 4000 MKII       │           │         ┌──────────────────────┐
  └──────────────────────┘           │         │  MASTER              │
                                     │         │                      │
                                     │         │                      │
                                     │         │                      │
                                     └─────────╡  TC OUT              │
                                               │          REF IN  ◄═══╡
                                               └──────────────────────┘

                                                         REFERENCE
                                                         VIDEO
```

2.4   Quick Test, Adjustments

Insert the Interface after switching off the synchronizer. Connect the slave machine and switch on synchronizer and slave.

During the first 5 seconds the interface will perform a short selftest. The result is commented with some led messages. If no errors have been found, the display is available for operation messages (see section 3.5)

A good timecode on tape is essential for synchronizer operation and should be checked for master and slave.

No adjustments are necessary.

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: not available.

- Lock time (typ):
  (in CUED status,   Master Start – SYNC)   :   < 5 sec
  (in CHASE 8* vnom,   Master Start–SYNC)   :   < 15 sec

- Compensation of Record
  Dropin/out Delays: compensated

- Sync accuracy: 0 frames.

- Park accuracy: typical ± 0.5 frames

3.2   Summary of Supported Functions

Operating conditions:

- STOP   a SHTL STILL 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 ca. 30 times nominalspeed
                       (0–8 with SHTL)
- SFORW,SREW   Variable from 0 to ca. 8 times nominalspeed

- 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:

  A specific subset of single byte commands can be executed at certain time-
  code conditions. (PLAY, RECORD, STOP, EVON, EVOFF ...)

- STATUS Request:

  The status information is requested and updated through the serial commu-
  nication link by the interface software.

- Audio/Video/TC channel setup:

  They can be changed through the serial link. The channel assignment is:

CHANNEL 1 .. 4	=	Audio Track 1 .. 4
CHANNEL 5	=	Video Track
CHANNEL 6	=	Control Track
		(for selecting INSERT/
		ASSEMBLE MODE)

  all other channals are not available.

- TRANSPARENT
  Commands: Implemented with automatic check sum computation.

- KEYBOARD
  DISABLE: 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

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

Default settings: all switches in OFF position

3.4   Additional Features at the SLAVE CONTROL B Connector

RECEN   (PIN 2):
                    This signal is used to enable/disable the RECORD function with an external hardware. According to DIL-Switch position 1 and the level of the signal RECEN, RECORD commands are passed to the slave or modified to PLAY.

REL1   (PIN6), REL2 (PIN7):
                    A general purpose relay is controlled by EVON/EVOFF commands. The switch REL1/REL2 is closed with the command EVON.

3.5   LED Diagnostic Display

This section is realized by using an inverter to drive each LED.
The input of the inverters is directly connected with pin 2, 3 and 4 of the port D
of the MPU.

The standard led messages are as follows:

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).

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

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	
–	–	–	The interface works correctly
*	–	–	Fatal SW or HW error (eg ROM defect)
*	–	*	Watch dog error
*	*	–	Clock error
*	*	*	Illegal opcode

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 shold be reconfigured and the LED message should not be the same.

3.6   Applications Hints

- For proper operation it is recommended not to try to locally control the machine when operating with the synchronizer.

- Remote switching of the synchronizer from the slave machine is NOT available. (except with a hardware adaptation at the slave maschine)

- If you want to use remote switching, you have to connect a DC voltage within a range of 5V to 25V to pin 5 of the serial remote connector of the SONY VO-9850.

4   Service Instructions

4.1   Hardware Description

Refer to the description "TLS SERIAL INTERFACE".

4.2   Jumper Description
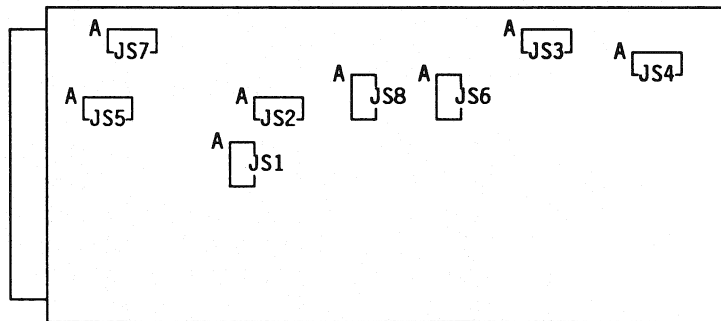
Functions of jumpers:

	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 a pullup resistor	Capstan reference output has no 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 position for SONY VO 9850

4.3   Signal Description, Slave Connectors

SLAVE CONTROL A:

Pin	Signal	Type	Description
1	MGND	0 V	from VO_9800, connected with signal GND
2	–		
3	–.		
4	–		
5	CAPEN	l out	(not used)
6	RX/RA	RS422 in	Tx A from VO_9800
7	MOVCLK	l in	(not used)
8	TX/TA	RS422 out	Rx A from VO_9800
9	–		
10	MOVDIR	l in	(not used)
11	+5V		IF power supply
12	0.0 V		signal GND
13	CAPCL	l out	(not used)
14	RB	RS422 in	Tx B from VO_9800
15	–		
16	–		
17	–		
18	–		
19	–		
20	–		
21	–		
22	–		
23	–		
24	TB	RS422 out	Rx B from VO_9800
25	MVCC	(5..25V)	(from VO_9800 for remote switching)

o. In	optoisolator input, driven by open collector, or by a switch to GND. (activ : > 10 mA)
o. out	optoisolator output (open collector max 30V/0.03A)
I. out	logic output, active low (open collector max 30V/0.3A)

SLAVE CONTROL B:

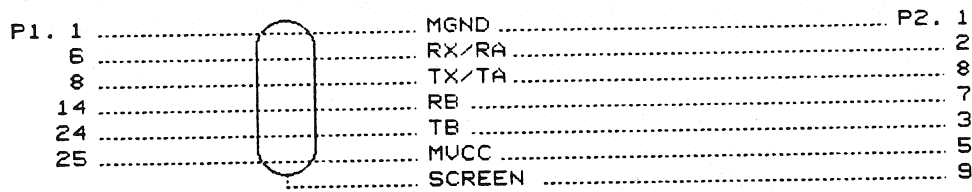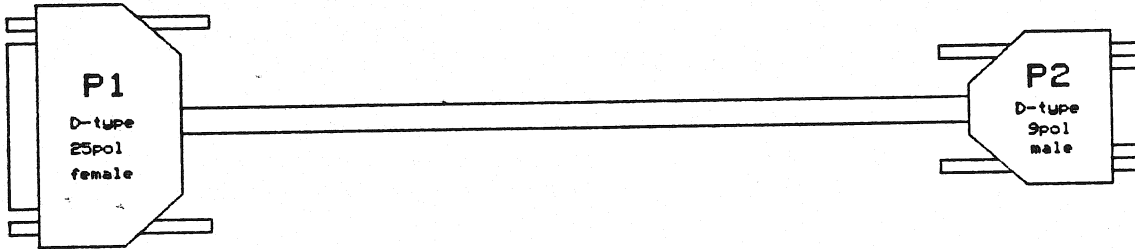| Pin	Signal	Type	Description
1	0.0 V		signal GND
2	PAIN11 (RECEN)	o. in	record enable/safe input
			(see DIL Switch S1, ref sec 3.3)
3	XVSREF/PAIN10		(not used)
4	–		
5	XVSENB/PAIN9	I in	(not used)
6	REL1	current lp.	event relay contact 100V/0.3A
7	REL2	current lp.	event relay contact 100V/0.3A
8	–		
9	–		
10	–		
11	+5V		IF power supply
12	SREHSL/PAIN12	I in	(not used)
13	–		
14	–		
15	–		
16	–		
17	–		
18	–		
19	–		
20	0.0 V		signal GND
21	MVCL	I out	(not used)
22	–		
23	–		
24	MVDR	I out	(not used)
25	0.0 V		signal GND

o.in optoisolator input, driven by open collector, or by a switch to GND
(activ : > 10 mA)

o. out optoisolator output
(open collector max 30V/0.03A)

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

Remark: Schematics → see universal serial IF

4.4   IF Cable Description

```
TLS 4000 MK2                          SONY VO-9800
SLAVE CONTROL A                          REMOTE 2
```

```
   P1                                    P2
 D-type                                D-type
 25pol                                  9pol
 female                                 male
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```
P1. 1 ............................    MGND ............................  P2. 1
   6  ............................    RX/RA ...........................     2
   8  ............................    TX/TA ...........................     8
  14  ............................    RB .............................      7
  24  ............................    TB .............................      3
  25  ............................    MVCC ...........................      5
      ............................    SCREEN .........................      9
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		TLS4000 MK2			PAGE 1 OF 1	
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