SONY PCM 7050
TLS-4000 MKII

INTERFACE DOCUMENTATION

Interface number : 1.812.445.20
IF - Doc number   : 10.27.3030

Summary

1   General Information

1.1   Ordering Information   Order number

- Interface Set
  (including Interface, Cable and Documentation)   21.812.445.20

- Interface Board (Hardware/Software)   1.812.445.20

- Hardware TLS serial Interface   1.812.490.20

- Software Set   1.812.922.20

- IF–Cable 5m   1.023.779.00

- Interface Docu–number   10.27.3030

- Hardware (serial IF) Docu–number   10.27.3050

1.2   Slave Model

- SONY PCM 7050

- Device with compatible connection: SONY PCM 7030

1.3   Software

- First release (index 20)   1.812.922.20 (02/92)

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 SONY PCM 7050 or 7030 must be equiped with the time code reader and generator unit DABK 7030.

- Common video reference for master and slaves.
  (switch SYNC at frontpanel: VIDEO)

- Menu Settings: SYNC REC   ON
                             SYNC PB   ENABLE
                             REF TCF, TC DLY   according to application

2.3   Connection Slave-Synchronizer
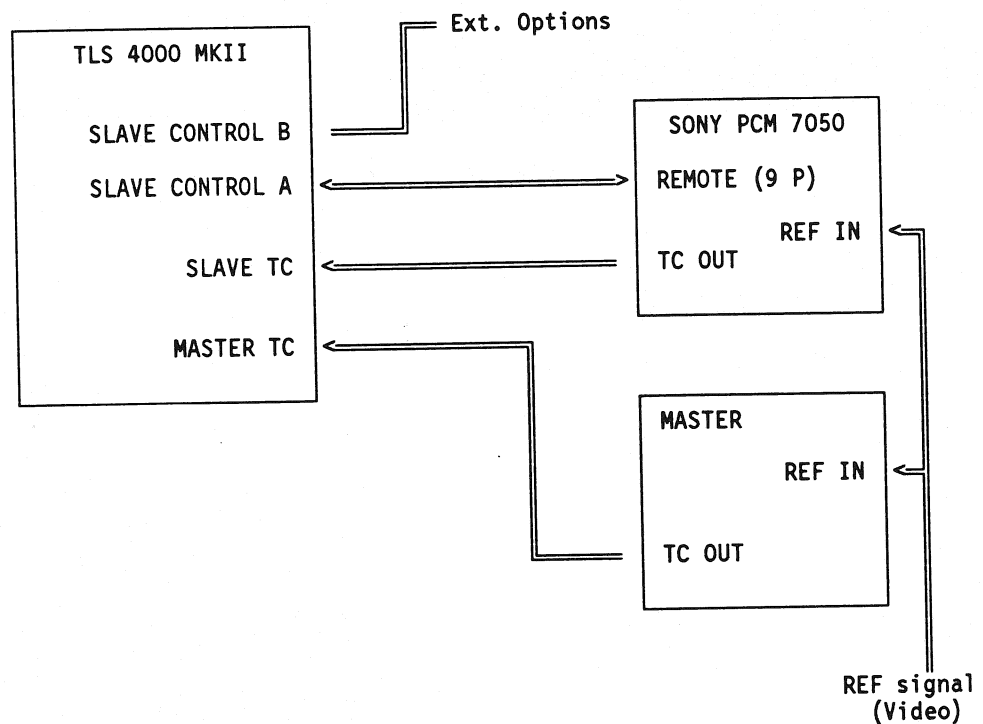
2.4   Quick Test, Adjustments

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:
- RDAT
- SMPTE/EBU timecode (available during wind modes) without move information
- GOTO with PLAY–STOP sequence
- Chase–Stop with waiting in advance
- transition Chase to Playsync direct

■ Tapedeck Control:
- by serial communication RS 422 SONY protocol

■ Capstan control:
- is not available if the device is controlled by the REMOTE (9P)

■ Movepulse information:
- no movepulse information available.

Compensation of Record Dropin/out Delays: compensated by synchronizer (includes both transmission delays and compensation of distance between erase and record head.

■ Park accuracy: < 40ms

■ Wow & Flutter: within slave specifications

■ Lock time typical:
(in CUED status,   Master Start – SYNC)   :   4 sec
(in CHASE 10* vnom, Master Start – SYNC)   :   15 sec

3.2   Summary of Supported Functions

Tape Deck Commands:

- **STOP**   stop (standby off)
- **PLAY**   with available varispeed range (±12%)
- **REC**   with recording types (EDIT INSERT/ASSEMBLE)
- **EDIT**   the same as STOP
- **FORW,REW**   with parameter control
                      full speed (150 play), x16, x8, x3, x1, x1/2 and x1/5
                      play available
- **SHTLF,SHTLR**   the same as FORW/REW

- **LOC,LOCREL**   performed by interface

- **REHEARSE:**   available.

- **MUTE:**   not implemented

- **EVENT Relays:**   is available (see section 3.4)

- **CONDITIONAL COMMANDS:**
  A specific subset of single byte commands can be executed at certain time-code conditions. (PLAY, STOP, RECORD, RELAY ON, RELAY OFF)

- **STATUS Request:**
  Status information is updated periodically by means of serial communication.

- **AUDIO Channel Control:**
  "READY/SAVE" of both channels (only together) can be controlled. Local changes of any status can be recognized and transferred to the synchronizer.

  CHANNEL 1   = Audio Track 1 .. 2
  CHANNEL 7   = Timecode Track

  Only one channel can be set "READY" at the same time.
  A further "READY" command won't be accepted.

- **TRANSPARENT Commands:**
  Command and data request strings can be sent through the synchronizer to the slave.
  Parts of the protocoll (header and checksum) are added by the interface.

- **KEYBOARD DISABLE:**
  not implemented.

3.3   DIL–SWITCH Functions

DIL–Switch SZ81 allows the setting of the following modes.

- Switch 1: RECORD ENABLE
  Defines the polarity of RECEN (see section 3.4)
  OFF : RECORD enabled when
          – low level at RECEN pin
  ON   : RECORD enabled when
          – high level at RECEN pin or input open

All other switches are not used and should be in OFF position.

Default Settings: all switches in OFF position

3.4   Additional Features at 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.

MUTE   (PIN8):
               This signal can be used to control an external mute circuit or a
               mixing console. They can mute the audio signal during chase
               and locate phases.
               If the synchronizer generates a mute signal the MUTE output
               will be active low, otherwise it will be high or open.

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 JS1 to position AB and reset the interface (power off – power on). After the initialisation the three LEDs should blink again. Put JS1 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   Application Hints

■ Remote switching of the synchronizer from the slave machine is not available.

4   Service Documentation

4.1   Jumper Settings
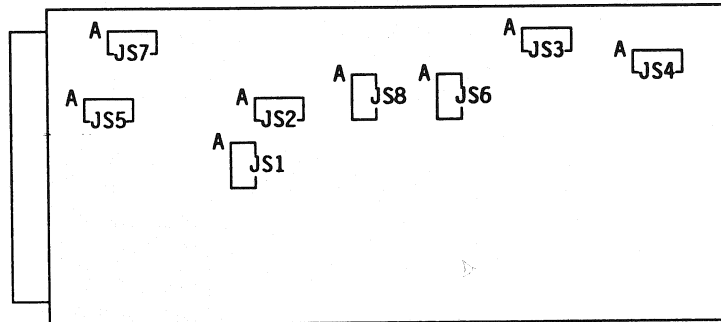
Functions of jumpers:

	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 a pullup resistor *	Capstan reference output has ∅ 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 PCM 7050/30

4.2   Signal Description, Slave Connectors

SLAVE CONTROL A:

Pin	Signal	Type	Slave Sig.	Description
1	MGND		SYSTEM GND	ground of SONY PCM 7050
2	–			
3	–			
4	–			
5	CAPEN	I out		(not used)
6	RX/RA		TXD	Tx A from SONY PCM 7050
7	MOVCL	I in		(not used)
8	TX/TA		RXD	Rx A from SONY PCM 7050
9	PAIN5	I in		(not used)
10	MOVDIR	I in		(not used)
11	+5V			(not used)
12	0.0V		SHIELD	screen
13	CAPCL	I out		(not used)
14	RB		TXD	Tx B from SONY PCM 7050
15	–			
16	–			
17	–			
18	–			
19	PAOUT5	I out		(not used)
20	–			
21	–			
22	–			
23	–			
24	TB		RXD	Rx B from SONY PCM 7050
25	MVCC			(not used)

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

I In   logic input, active low, optoisolated
   (I–low) > 10 mA)

SLAVE CONTROL B:

Pin	Signal	Type	Description	
1	0.0V			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)
6	REL1			event relay contact 100V/0.3A
7	REL2			event relay contact 100V/0.3A
8	PAOUT6	I out		MUTE output
9	–			
10	–			
11	+5V			IF power supply
12	PAIN12	I in		(not used)
13	–			
14	DC			(not used)
15	–			
16	–			
17	–			
18	–			
19	–			
20	0.0V			signal GND
21	MVCL	I out		(not used)
22	SCITX			(not used)
23	SCIRX			(not used)
24	MVDR	I out		(not used)
25	0.0V			signal GND

I out logic output, active low
(open collector max 30V/0.03A)

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

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│ **Remark: Schematics → see universal serial IF** │
└───┘

4.3   IF Cable Description

TLS 4000 MK2
SLAVE CONTROL A

SONY VO-9800
REMOTE 2

P1
D-type
25pol
female

P2
D-type
9pol
male
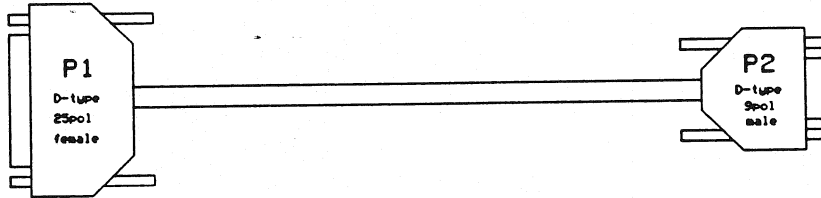
```
P1. 1 .................             MGND ...................... P2. 1
    6 .................   ( )       RX/RA .............................. 2
    8 .................   ( )       TX/TA .............................. 8
   14 .................   ( )       RB ................................. 7
   24 .................   ( )       TB ................................. 3
   25 .................   ( )       MVCC ............................... 5
            ( )                     SCREEN ............................. 9
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⑥ 29-JAN-92 / OM	① TLSIFKAB.P01	②	③	④	
	TLS-4000 M2			PAGE 1 OF 1	
STUDER INTERNATIONAL	IF-KABEL SONY VO-9800		5M	4H	1.023.779.00