

# SONY VO-5850 TLS-4000

## INTERFACE DOCUMENTATION

Interface number : 1.812.414.21

IF - Doc number : 10.27.0961

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## 1 General Information

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### 1.1 Ordering Information

Order Number

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>■ Interface Set<br/>(including Interface, Cable and Documentation)</li> <li>■ Interface Board (Hardware/Software)</li> <li style="padding-left: 20px;">Software Set</li> <li style="padding-left: 20px;">IF-Cable 5m</li> </ul> | <p>21.812.414.21</p> <p>1.812.414.21</p> <p>1.812.957.21</p> <p>1.023.714.81</p> |
|--|--|

### 1.2 Slave Models

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- SONY VO-5850      U-matic Video Tape Recorder (Low Band)
- Slaves, which may be controlled with the same interface:
  - SONY VO-7630      only for master control mode including locator functions (not suitable for slave synchronisation due to limited search mode resolution)

### 1.3 Software

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- First release (index20)      1.812.957.20 04/87
- Update to index 21      1.812.957.21 14/90

This new software release includes a general update of the first one (index 20). If software is updated from index 20 to 21, both interface hardware and cable have to be modified too.

The main advantages of the new update are better status decoding for mixed operation with controller and local functions and compatibility with new similar machines as the VO-7630.

## 2 Installing Procedures

### 2.1 TLS 4000 Requirements

Order Number

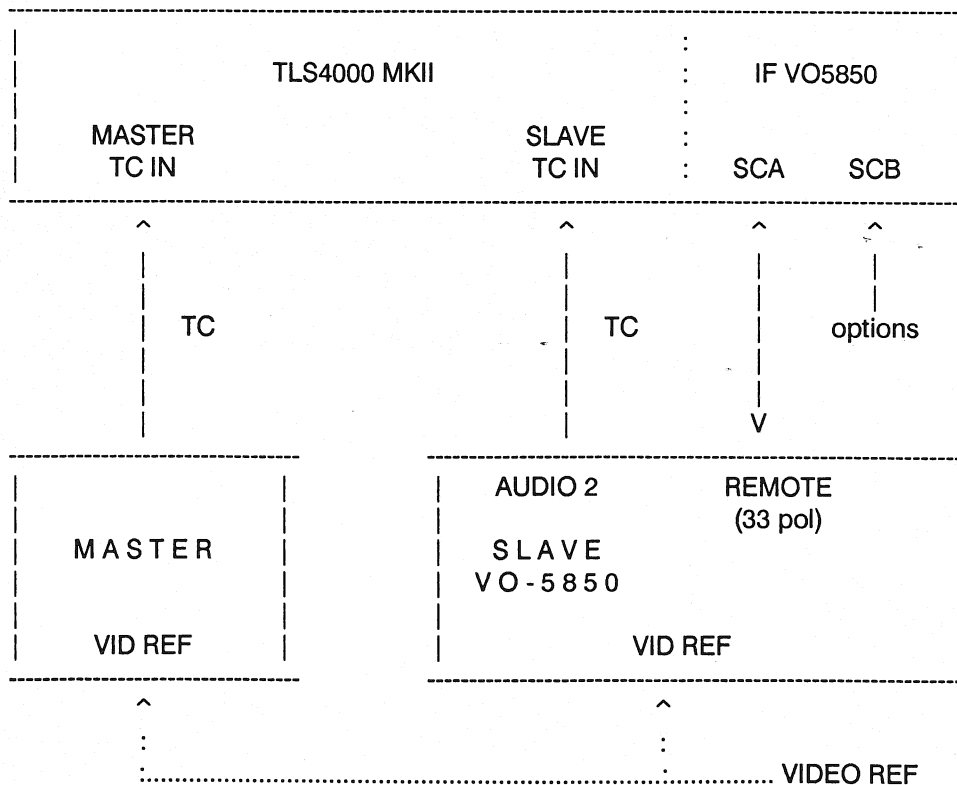
- Synchronizer TLS 4000 Mk2 with
 

Synchronizer Board	1.812.320.23
Interface VO5850	1.812.414.21
IF-Cable	1.023.714.81
- Power supply may be set to 'remote switching' which allows to switch on the TLS with the VO-5850.
- The DIL-switches in the interface have to be set according to the requirements (see section 3.3).

### 2.2 Slave Requirements

- SMPTE/EBU-Timecode recorded on one of the audio tracks. Take care of correct recording (video and tc information have to be synchronous).

### 2.3 Connections Slave-Synchronizer



## 2.4 Quick Test, Adjustments

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- After switching on the system, the Diagnostic Display at the front of the interface board should stay dark. If the LED's flash with a frequency of about 1 Hz, then an error was detected at an initial test. If the left LED stays switched on, the VO-5850 can't be recognized. (see also section 3.5)
- The wiring of control track and direction signals may be checked by disconnecting the Slave Timecode Line. The LCU or Controller display should now be updated with correct speed and direction. Proper reading of SMPTE/EBU Timecode in PLAY Mode is essential for synchronisation purposes and should also be checked (master and slave).
- No adjustments are necessary.

## 3 Operating Instructions

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### 3.1 Technical Specifications

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- Slave Type:  
Video Tape Recorder with SMPTE/EBU Timecode
  - No code during wind modes, but with control track information, direction has to be detected by interface!
  - Video type synchronisation (chase mode until one frame accuracy, video synchronisation slave internal)
  - Parking in GOTO and LOCK direct on master
  - Direct transition from chase to play
  
- Tape Deck control:  
with 33pol REMOTE connector (mainly parallel, some functions on a synchronous serial link)
  
- Capstan Control:
  
- Movepulse Frequency:  
Video control track 50 Hz or 59.94 Hz at nominal speed.
  
- Record Dropin/Dropout delays are compensated by the TLS.  
There is no compensation of the delay TC-Head to video head.
  
- typical lock times:  
(from CUED, Master Start - SYNC): < 3sec  
(from CHASE 10\* $v_{nom}$ , Master Start - SYNC): -
  
- Sync Accuracy: 0 frames
- Park Accuracy: +-1 frame

### 3.2 Summary of supported functions

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#### Tape Deck Commands:

- STOP  
may be executed as STOP or PAUSE (selectable by DIL-Switch 3).
  
- PLAY
  
- REC is translated to the VO-5850's EDIT command, either in 'INSERT' or 'ASSEMBLE' Mode, depending on the actual audio channel settings.
  
- EDIT  
corresponds to the PAUSE command of the VO-5850.

- **FORW, REW**  
SHTLF, SHTLR If the corresponding speed parameter is faster than 12 times playspeed, these commands are executed as FFORW or REW. If the speed is slower, the VO-5850 will receive a SEARCH command (providing video information with maximum 5 times playspeed).
- **LOC, LOCREL**  
All LOCATE commands are performed by the interface.
- **REHEARSE**  
There is no rehearse function available with the VO-5850. If RECORD commands are sent with the REHEARSE mode set, they will be changed to PLAY.
- **EVENT RELAY COMMANDS**  
are available (see section 3.4)
- **CONDITIONAL COMMANDS**  
The timecode triggered execution is possible for the following commands:  
Tape Deck Commands            STOP .. SHTLR  
Relay Event Commands        EVON, EVOFF
- **TX MODE**  
the local keyboard of the VO-5850 can be disabled.
- **STATUS DETECTION**  
The actual status of the VO-5850 is read periodically from the parallel and serial remote lines. Status modifications caused by local control can be detected, but there are some recommendations concerning the use of the local SEARCH command (section 3.6).
- **AUDIO CHANNEL CONTROL**  
Only the READY/SAFE information can be set and read. Mute and source selection is not available. The channel assignments are as follows :  
  
Channel 1 : Audio Track 1  
Channel 2 : Audio Track 2  
Channel 3 : Video Track  
Channel 4 : virtual 'Control Track'. If set ready, RECORD commands are performed in ASSEMBLE, otherwise in INSERT mode.
- **MUTE and TRANSPARENT Commands are not supported**

### 3.3 DIL-Switches

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DIL-Switch SZ71 allows the selection of the following functions:

- Switch 1: Record Enable  
Defines the polarity of the RECEN signal (section 3.4).  
OFF : RECORD enabled when high level at RECEN pin or input open  
ON : RECORD enabled when low signal at RECEN pin
- Switch 2: Video Format  
OFF : 25 fps  
ON : 29.97 fps
- Switch 3: Stop Mode  
OFF : STOP is performed as VO-5850 STOP  
ON : STOP is performed as VO-5850 PAUSE
- Switch 4: Locate Ballistics  
OFF : standard for VO-5850  
ON : for VO-7630
- Default settings:  
1 = OFF, 2 = OFF, 3 = ON, 4 = OFF

### 3.4 Additional Features at SLAVE CONTROL B Connector

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- RECEN (Pin2):  
This signal is used to enable/disable any RECORD function by hardware. According to DIL-Switch position 1 and the level of the signal RECEN, RECORD commands are passed to the VO-5850 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 command EVON.
- MVCL (Pin9), MVDR (Pin10):  
Control track frequency (50 or 59,94 Hz) and direction signal (HIGH = forward) are provided to supply further slave synchronizers with master tallies.



### 3.5 LED Diagnostic Display

There are 2 LEDs situated at the front of the interface board. They provide information about the result of the initial self test and the online status.

#### DL 1 2 (front view)

- When the synchronizer is switched on, the interface processor performs a short self test. Any resulting error is signalled with a blinking display (about 1 Hz):

DL 1 2 (- LED off, # LED blinking)

DL1	DL2	
#	-	RAM error detected
#	#	SSDA error detected (MC68A52)

- During runtime the display lights, if one of the communication lines fails:

DL 1 2 (- LED off, \* LED on)

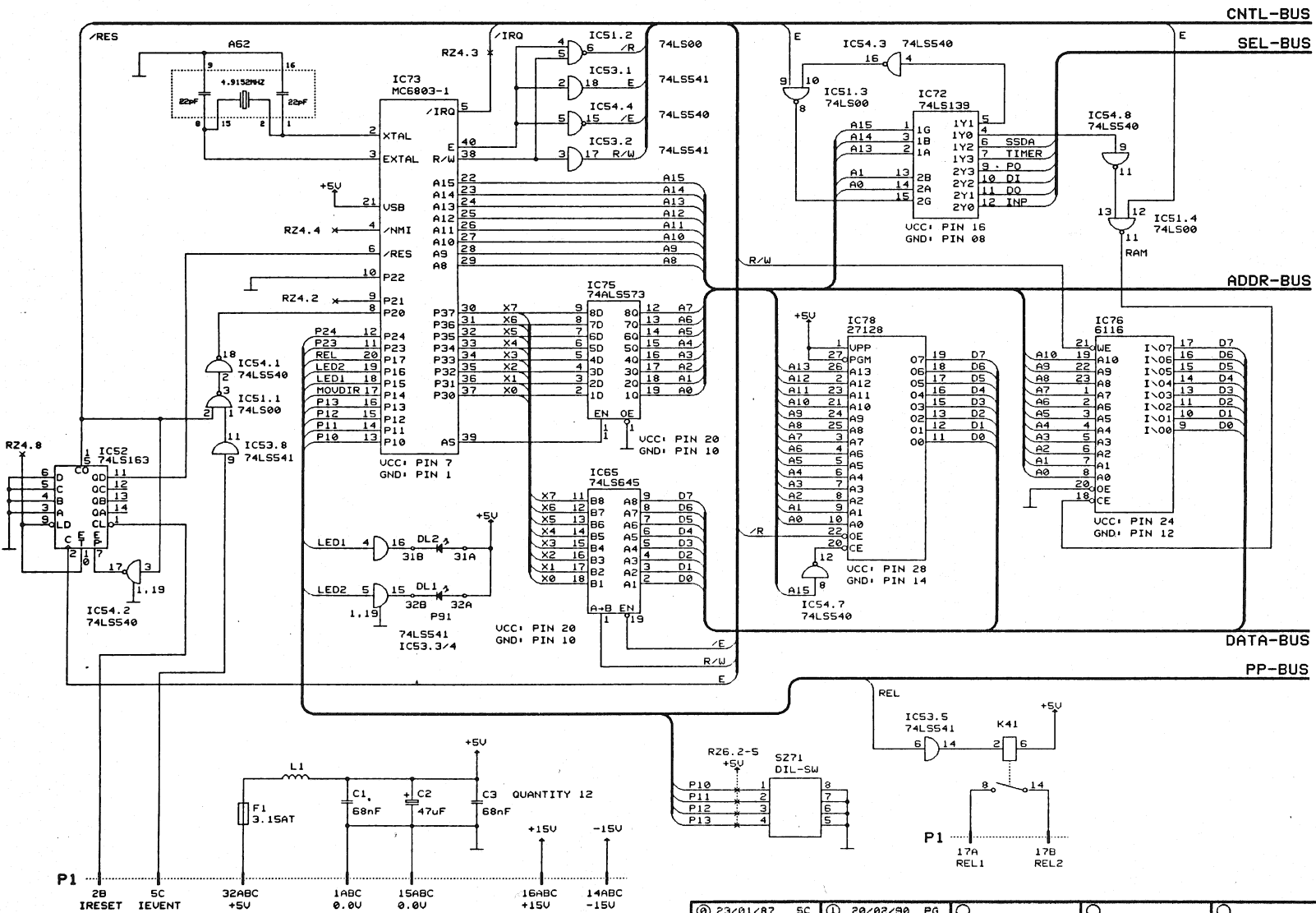
DL1	DL2	
*	*	connection to synchronizer fails
*	-	irregular condition at remote port to VO-5850
-	-	regular status

### 3.6 Application Hints

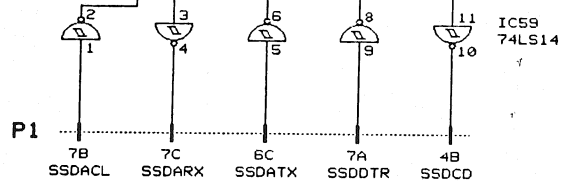
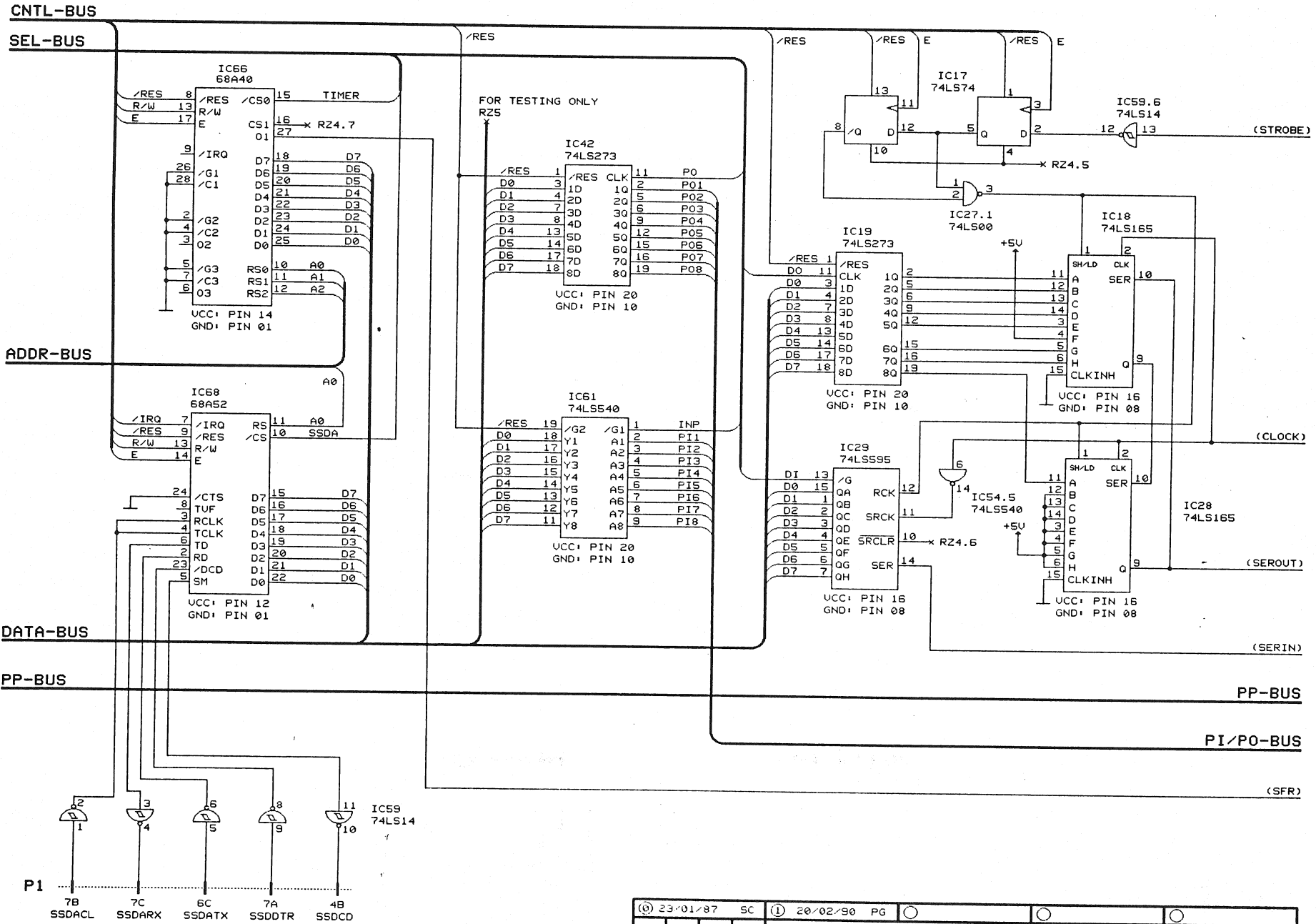
- Synchronizer is switched on by VO5850 (remote switching)
- For proper operation it's recommended not to switch between synchronizer and local control when in SEARCH mode. Always leave any synchronizer mode (as LOCK, GOTO, EDIT) or local search first.
- Recording track select is available with the TLS, but may be done also at the slave directly. Note that after switching on the synchronizer, all selects are overwritten.

4 Service Instructions

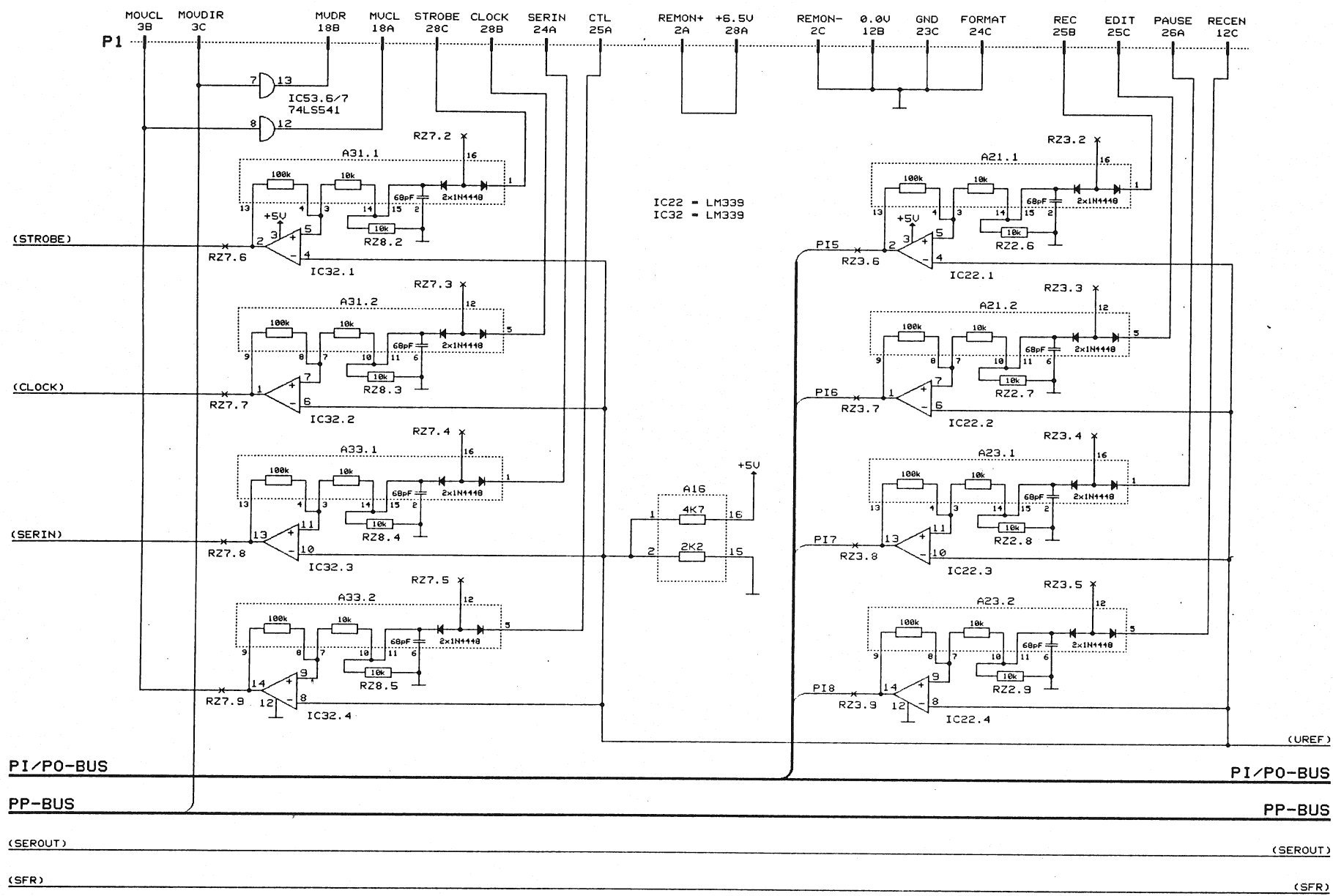
4.1 Diagrams



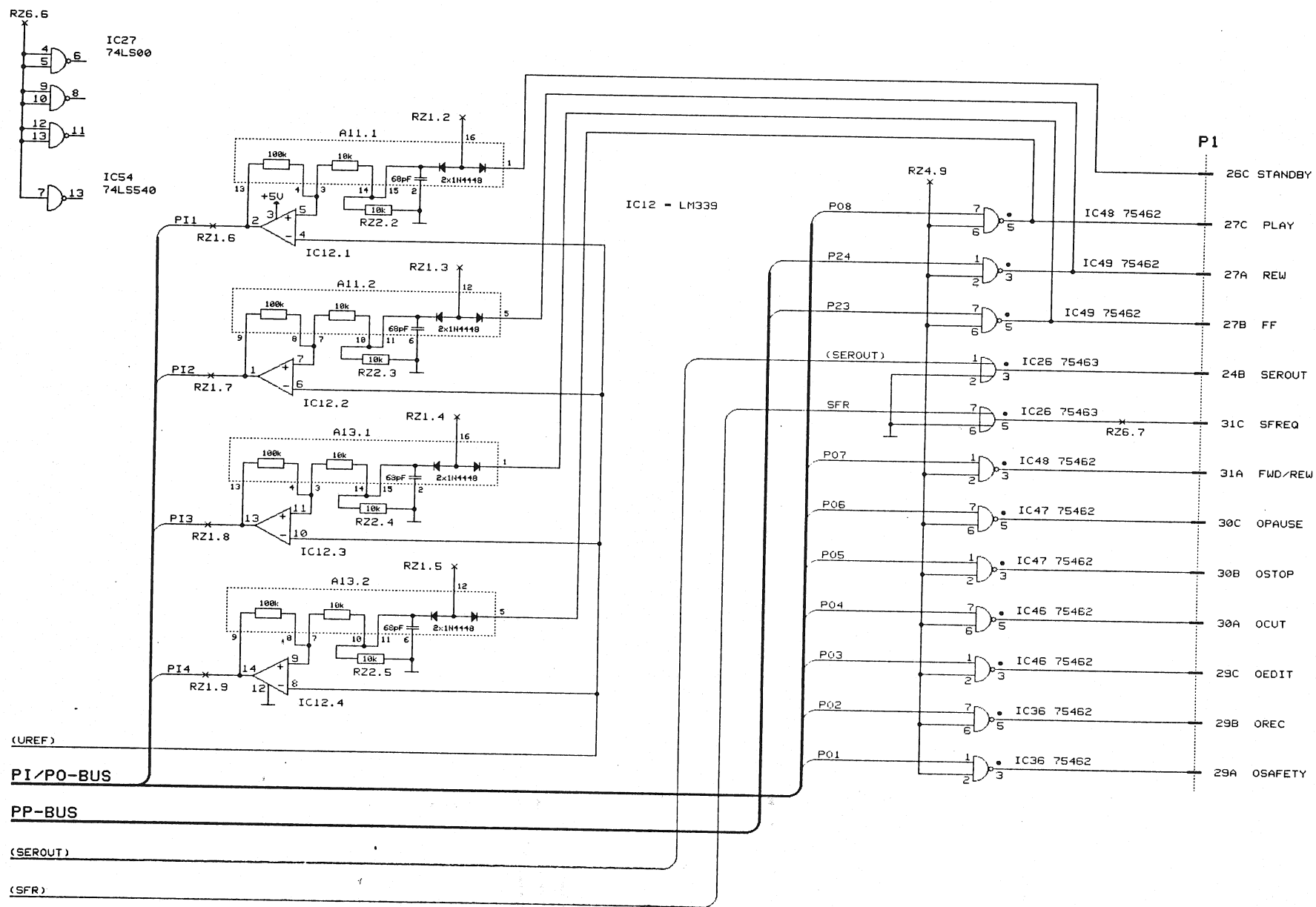
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TLS4000 MK2				PAGE 1 OF 4		



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TLS4000 MK2				PAGE 2 OF 4		



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					SC	1.812.414.21
TLS4000 MK2			PAGE 3 OF 4			



EDITION: 4. Juli 1990

E1/11

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4.3 Component position list

IF SONY VO-5850 1.812.414.21

Ad	POS	REF.No	DESCRIPTION	MANUFACTURER
A...	11	1.812.208.00	Assembly 406-11	St
A...	13	1.812.208.00	Assembly 406-11	St
A...	16	1.812.217.00	Assembly 416-16	St
A...	21	1.812.208.00	Assembly 406-11	St
A...	23	1.812.208.00	Assembly 406-11	St
A...	31	1.812.208.00	Assembly 406-11	St
A...	33	1.812.208.00	Assembly 406-11	St
A...	62	1.812.201.00	Assembly 120-52	St
C....	1	59.99.0205	68N -20%, 63V,CER	
C....	2	59.25.3470	47U -10%, 16V,EL	
C....	3	59.99.1200	.68U 20%, 63V,PE Quantity: 12	
DL...	1	50.04.2107	LED red ,555-2007	Di
DL...	2	50.04.2107	LED red ,555-2007	Di
F....	1	51.01.0122	3,15 AT 220V, 5 * 20	
IC...	12	50.11.0104	LM 339 N	,A
IC...	17	50.06.0074	SN 74 LS 74 N	
IC...	18	50.06.0165	SN 74 LS 165 N	
IC...	19	50.06.0273	SN 74 LS 273 N	
IC...	22	50.11.0104	LM 339 N	,A
IC...	26	50.05.0203	SN 75 463 P,SN 55 463 JG	
IC...	27	50.06.0000	SN 74 LS 00 N	
IC...	28	50.06.0165	SN 74 LS 165 N	
IC...	29	50.06.0595	SN 74 LS 595 N	
IC...	32	50.11.0104	LM 339 N	,A
IC...	36	50.05.0227	SN 75 472 P, SN 75 462 JG	
IC...	42	50.06.0273	SN 74 LS 273 N	
IC...	46	50.05.0227	SN 75 472 P, SN 75 462 JG	
IC...	47	50.05.0227	SN 75 472 P, SN 75 462 JG	
IC...	48	50.05.0227	SN 75 472 P, SN 75 462 JG	
IC...	49	50.05.0227	SN 75 472 P, SN 75 462 JG	
IC...	51	50.06.0000	SN 74 LS 00 N	
IC...	52	50.06.0163	SN 74 LS 163 AN	
IC...	53	50.06.0541	SN 74 LS 541 N	
IC...	54	50.06.0540	SN 74 LS 540 N	
IC...	59	50.06.0014	SN 74 LS 14 N	
IC...	61	50.06.0540	SN 74 LS 540 N	
IC...	65	50.06.0645	SN 74 LS 645 N	
IC...	66	50.16.0113	MC68 A40 HD68 A40,	Mot,Hi
IC...	68	50.16.0114	MC68 A52 HD68 A52, S68A52	Mot,Hi,AMI
IC...	72	50.06.0139	SN 74 LS 139 N	
IC...	73	50.16.0107	MC 6803P-1, HD 6803P-1	,A Mot,Hi
IC...	75	50.06.1573	SN 74 ALS 573 N	Ti
IC...	76	50.14.0107	HM 6116 LP-4,MSM 5128-15	,A Hi,OKI
IC...	78	50.14.0125	see Note P-27128 A, HN 27128 AG25	,A It,Hi
K....	41	56.02.1003	5 V 1*A 100V/0,5A, Print	
L.....	1	62.01.0115	Wide Band HF-Choke	
P.....	1	54.01.0354	Card Connector 3 * 32 Euro Wrap	
RZ....	1	57.88.4332	8*3.3K 5%, Single Line	
RZ....	2	57.88.4103	8*10K 5%, Single Line	
RZ....	3	57.88.4332	8*3.3K 5%, Single Line	
RZ....	4	57.88.4332	8*3.3K 5%, Single Line	
RZ....	6	57.88.4332	8*3.3K 5%, Single Line	
RZ....	7	57.88.4332	8*3.3K 5%, Single Line	
RZ....	8	57.88.4103	8*10K 5%, Single Line	
SZ...	71	55.01.0164	4 * ON, DIL-Switch	

NOTE : Software release 1.812.957.21 (IC 78)  
 RZ 05 is for testing only

CER = CERAMIC, EL = ELECTROLYTIC, PE = MET. POLYESTER

MANUFACTURERS : AMI = American Microsystem Inc.  
 Di = Dialco  
 Hi = Hitachi  
 It = Intel  
 Mot = Motorola  
 OKI = OKI Semiconductor  
 St = Studer  
 TI = Texas Instruments

1.812.414.21 INTERFACE SONY VO-5850 PG 90/02/2000

#### 4.4 Signal Descripton Slave Connectors

##### SLAVE CONTROL A:

Pin	Signal	Type	Description
1	GND	0.0V	signal ground
2	SERIN	l in	serial received data line
3	SEROUT	l out	serial transmitted data line
4	FORMAT	0.0V	format : 33 pin remocon
5	CTL	l in	control track frequency
6	REC	l in	straight RECORD status
7	EDIT	l in	EDIT status (insert or assemble)
8	PAUSE	l in	PAUSE status
9	-		
10	STANDBY	l in	STANDBY status
11	REW	l i/o	FAST REWIND command/status
12	FF	l i/o	FAST FORWARD command/status
13	PLAY	l i/o	PLAY command/status
14	REMON+	+6.5 V	supply voltage from slave for remote power on
15	CLOCK	l in	serial transmission clock line
16	STROBE	l in	serial transmission strobe line
17	FUNCT.	l out	FUNCTION command (key pressed)
18	OREC	l out	RECORD command (not used)
19	OEDIT	l out	EDIT command
20	OCUT	l out	CUT OUT command
21	OSTOP	l out	STOP command
22	OPAUSE	l out	PAUSE command
23	FWD/REW	l out	SEARCH direction command (H : forw)
24	-		
25	SFREQ	l out	SEARCH frequency (nom. 6 kHz)

signal types:

l in	logic input, active low (LOW : < 1V, HIGH > 2V or open)
l out	logic output, active low (open collector, max 28V/0.3A)
l i/o	bidirectional logic signal



SLAVE CONTROL B: (see section 3.4)

Pin	Signal	Type	Description
1	GND	0.0V	signal ground
2	RECEN	I inp	record enable/safe
3	-		
4	-		
5	-		
6	REL1		relay contact (100V/0.5A)
7	REL2		relay contact (100V/0.5A)
8	-		
9	MVCL	ttl out	buffered move clock
10	MVDR	ttl out	buffered move direction
11	-		
12	-		
13	-		
14	-		
15	-		
16	-		
17	-		
18	-		
19	-		
20	-		
21	-		
22	-		
23	-		
24	-		
25	-		

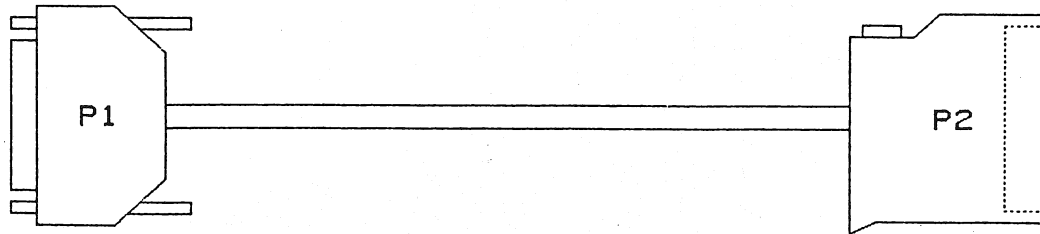
signal types:

I in	logic input, active low (LOW: < 1V, HIGH > 2V or open)
ttl out	ttl buffer output (I <sub>MAX</sub> = 12 mA)

4.5 IF-Cable Description

TLS 4000 MK2  
SLAVE CONTROL A

SONY VO-5850



P1. 1	.....	GND	.....	P2. 14
2	.....	SERIN	.....	K
3	.....	SEROUT	.....	L
4	.....	FORMAT	.....	S
5	.....	CTL	.....	15
6	.....	REC	.....	3
7	.....	EDIT	.....	2
8	.....	PAUSE	.....	17
10	.....	STANDBY	.....	18
11	.....	REW	.....	11
12	.....	FF	.....	12
13	.....	PLAY	.....	13
14	.....	REMON+	.....	1
15	.....	CLOCK	.....	D
16	.....	STROBE	.....	J
17	.....	FUNCTION	.....	C
18	.....	OEC	.....	5
19	.....	OEDIT	.....	6
20	.....	OCUT	.....	7
21	.....	OSTOP	.....	8
22	.....	OPAUSE	.....	9
23	.....	FWD/REW	.....	10
25	.....	SFREQ	.....	B

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