

LIF

lanc interface

user manual

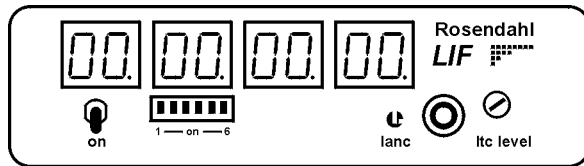
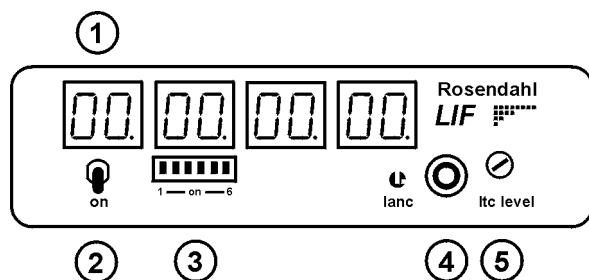


TABLE OF CONTENTS

1	Front Panel	2
2	Back Panel	3
3	Unit Operation	
	I. LTC and MTC Generation from LANC-TC	4
	II. Converting MMC into LANC	5
	III. Converting Sony P2 into LANC	6
4	DIP Switches	
	I. DIP 1-2, Machine Control Mode	8
	II. DIP 3-4, Midi Cue Mode	8
	III. DIP 5-6, Video Standard	9
5	Specifications	10

1 Front Panel



(1) LED display

The display shows incoming and generated time code. The rightmost decimal point is used as „locked“ indicator. See also the unit operation section for more information.

(2) „on“ switch

Turns the power to the LIF on and off. Each time the LIF is powered up, it runs through the display test and shows the software version. (This manual refers to Software version 1.00)

(3) DIP switches

Select the video system (PAL,NTSC), the machine control protocol (MMC, Sony P2) and the *midi cue mode*.

See the DIP switch section for detailed information.

(4) „LANC“ connector (front)

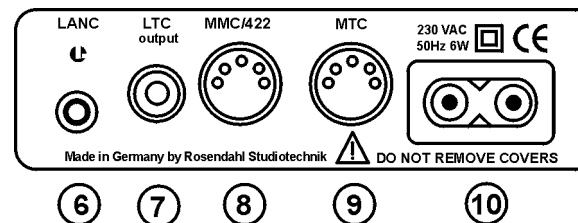
3,5 mm stereo jack connector. Use the provided 3,5 to 2,5 mm jack to jack cable for connection to the 2,5 mm LANC socket of the video tape recorder or camcorder.

Note: The LANC device must support „time code“, which is embedded in the LANC data stream. The LANC device must also be set to LANC mode = SLAVE and COUNTER mode = TIME CODE.

(5) „ltc level“ potentiometer

The „ltc level“ potentiometer allows you to adjust the LTC output level from 0-3 Vpp.

2 Back Panel



(6) „LANC“ Connector (back)

This connector is in parallel circuit with the LANC connector on the front panel (4). Use one of them for normal operation or both to link the LANC signal through the LIF to a LANC-Editor.

(7) „LTC output“ Connector

This RCA connector outputs unbalanced LTC time code. The output level can be adjusted with the „ltc level“ potentiometer at the front panel. The LIF outputs running time code at play speed as well as positional time code for cueing and locating.

(8) „MMC/422“ Connector

This 5-pin DIN connector has two different functions depending on the DIP1 setting. MMC (midi machine control) input or bidirectional Sony P2 (RS 422) port.

(9) „MTC“ Connector

This 5-pin DIN connector outputs Midi Time Code (MTC). The MTC signal can be applied to any MIDI interface. For reliable operation use only shielded MIDI cables.

(10) VAC input

Use the provided AC power cord to connect the LIF to the AC power supply through this connector.

3 Unit Operation

I. LTC and MTC Generation from LANC time code

The LANC (Local Application Control) connection is bidirectional. It communicates transport control commands (as „stop, play, rewind...“) from the LANC *master* to the *slave* and also time code and status data from the LANC *slave* to the *master*.

The LIF interface is always a LANC *master*. It transmits transport commands and receives time code and status data. Therefore the connected LANC device must be set to LANC mode = SLAVE and COUNTER select = TIME CODE.

Most Camcorders support LANC slave mode when they are set to the „VTR mode“.

The LIF shows the received time code on the LED display.

In nominal play speed operation (play, record), the LIF starts synchronized LTC and MTC generation to the incoming time code. This „locked“ generation status is indicated on the LED display by the rightmost decimal point.

In all other operation modes (still, shuttle...) the LIF generates positional LTC and MTC bursts according to the selected *MIDI cue mode*.

These bursts serve to cue up a time code slave also at non nominal speed.

The time code conversion is also working when the LANC slave is controlled by an other LANC master (for instance a LANC-Editor), linked through the two LANC connectors of the LIF. In this configuration the LIF should not receive MMC or Sony P2 commands.

Note: The LANC time code is always synchronized to the video and audio *outputs*.

If you want to record audio tracks synchronized to the output time code you must compensate the runtime delay of the VTR by programming a time code offset. (Sony DHR-1000 for instance needs an offset of 4 frames)

II. Converting MMC into LANC

MMC (Midi Machine Control) is a general purpose protocol which initially allows MIDI systems to communicate with and to control ATRs and VTRs. Some HD-Editors (for instance Roland VS880; Soundscape SSHDR-1 or digidesign ProTools 4) do output MMC commands.

Note: MMC serves only for remote control. For synchronizing the HDR to the VTR a separate MTC connection is still required.

Please refer to the Manual of the used HDR for „MTC chase synchronisation“ and „Output MMC midi machine control“.

Set DIP Switch 1 to position „0“ (up) and connect the MMC controller output to the „MMC/422“ connector (8) with a shielded MIDI cable.

Set up the LANC controlled device as described above in chapter 3.I.

The following tabel lists the supported MMC commands and response/information fields.

Command Bitmap Array

05 REWIND	04 FWD	03 DEFPLAY	02 PLAY	01 STOP	
		0A EJECT	09 PAUSE		
	44 LOCATE		42 READ		40 WRITE
					47 SHUTTLE

Response/Information Field Bitmap Array

					01 selected TC	
0D GP5	0C GP4	0B GP3	0A GP2	09 GP1	08 GP0/LOC	
					0F GP7	0E GP6
					21 S-STC	
2D S-GP5	2C S-GP4	2B S-GP3	2A S-GP2	29 S-GP1	28 S-GP0/LOC	27
					2F S-GP7	2E S-GP6
						40 Signatur
					48 MC-Tally	

Note: The LIF interfaces LANC-VTRs or Camcorders only as *players* because these consumer machines are not able to perform real time punch in/ punch out functions. Command 06h (Record Strobe) issues the play command.

III. Converting Sony P2 into LANC

The Sony P2 protocol (also called „Sony RS422“) is used for machine control in professional video and audio environments. The LIF converts the fundamental transport functions and response fields from Sony P2 to a LANC-device. In that case the LIF is always the Sony P2 „controlled device“ (Emulating a BVU950).

Set up the LANC device as described above in chapter 3.1. Set DIP switch 1 to position „1“ (down) and connect the Sony P2 controller to the MMC/422 connector (8). For this connection a special cabel with a serial 100 ohms resistor (in RXD +) is required:

5 pin DIN socket (LIF)	9 pin Sub-D (Controller)
(1) TXD -	(2)
(2) Ground	(6)
(3) TXD +	(7)
(4) RXD -	(8)
(5) RXD +	(3) with 100 ohms serial

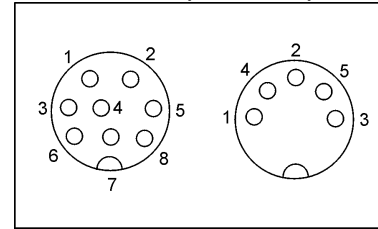
This cabel works with RS-422 conform Sony P2 controller ports as found on CB Electronics SR-4, Fast 601, Sony BVE 900....

For connecting the LIF to a serial MAC port (as used for machine control from *Avid Media Composer* or *ProTools machine control*) an other special cable with a serial 1K2 ohms resistor (in RXD +) is required:

5 pin DIN socket (LIF)	8 pin Mini DIN (Serial Apple)
(1) TXD -	(5)
(2) Ground	(4)
(3) TXD +	(8)
(4) RXD -	(3)
(5) RXD +	(6) with 1K2 ohms serial

Note: The LIF interfaces LANC-VTRs or Camcorders only as *players* because these consumer machines are not able to perform real time punch in/ punch out functions.

DIN connectors (solder side)



The following table lists the supported Sony P2 commands and response fields.

P2 Command	Response
00 11 Device Type Request	BVU 950 (DIP2 = 0) CB-VLANC (DIP2 = 1)
20 00 Stop	Ack
20 01 Play	Ack
20 04 Standby off	Ack
20 05 Standby on	Ack
20 0F Eject	Ack
20 10 Fast FWD	Ack
2X 11 Jog FWD	Ack
2X 12 Var FWD	Ack
2X 13 Shuttle FWD	Ack
20 20 Rewind	Ack
2X 21 Jog Rev	Ack
2X 22 Var Rev	Ack
2X 23 Shuttle Rev	Ack
20 30 Preroll	Ack
24 31 Cue up with data	Ack
20 42 Auto Edit	Ack
44 14 In data preset	Ack
44 15 Out data preset	Ack
44 31 Preroll time preset	Ack
61 06 Current time sense	74 04 LTC time data
61 20 Status sense	7X 20 Status data

4 DIP Switches

The table below lists the functions of the DIP switches.
„0“ is switch up position, „1“ is switch down position (on).

DIP-No.	Settings	Function
1-2	0-0	machine control mode MMC midi machine control
	1-0	Sony P2, BVU 950 Emulation
	1-1	Sony P2, CB V-Lanc
3-4	0-0	midi cue mode MTC and MMC locate, play
	1-0	MTC full message
	0-1	MTC full message & quarter bursts
	1-1	MTC full message & quarter bursts-2
5-6	0-0	video standard PAL 25 fps
	1-0	NTSC 29,97 non drop
	1-1	NTSC 29,97 drop frame

I. DIP 1-2, Machine Control Mode

Use setting 0-0 for MMC midi machine control mode.
For „Batch digitizing“ with „Avid Media Composer“, „Fast 601“ or Tektronix „Lightworks“ use setting „1-0“ (BVU950 Emulation).
For use with CB Electronics SR-4 set DIPs to 1-1.
See also chapter 3.III.

II. DIP 3-4, Midi Cue Mode

Midi Time Code is the standard used to translate SMPTE time code into MIDI messages. There are two basic types of messages, described as Quarter Frame and Full message. The Quarter Frame message is used for normal running status at play speed. The Full message communicates a specific time for locating or cueing.

Unfortunately many devices which are using MTC do not have implemented the Full message.

That is why the LIF supports some other *midi cue modes* for locating or cueing your sequencer / audio workstation frame accurately to the VTR time code. One of these methods to cue up a DAW is the use of the MMC „Locate“ command, if the slaved DAW supports MMC slave mode together with MTC slave mode. Therefore set the *midi cue mode* to Locate. (for example with Digidesign ProTools 4.2, Roland VS-880, Fostex FD8...) Then the LIF outputs an MMC locate command instead of the Full message.
Other recording software can be located by a loop or a burst of several quarter frames. The Creamware Triple DAT Software, for example, works fine with the *midi cue mode* quarter bursts-2.

The match on the LTC side is called *positional time code*. This is a continuous loop of one frame for cueing or locating.

III. DIP 5-6, Video Standard

Set the video standard according to the connected LANC-device setting.

5 Specifications

2x LANC input

3,5 mm stereo jack, 5Vpp bidirectional,
synchronized UART, 9600 Kb/s

LTC output

RCA female 0-3 Vpp adjustable, 500 ohms
positional time code output for cueing
(25, 29,97 drop, 29,97 fps)

MIDI output

5-pin DIN, The Complete MIDI 1.0
MTC quarter frame and full messages
MTC quarter loops, MMC locate, MMC responses

MMC input / RS422

5-pin DIN, opto isolated input 5mA current loop (pin 4/5)
31.25 Kb/s as MMC input, 38.4 Kb/s as RS422.
EIA RS422-A output 38.4 Kb/s (pin 1/3)

Power

Euro EN 60.320, 230 VAC, 50 Hz, 30 mA
115 VAC, 60 Hz, 60 mA (US-version)

LED Display

8 x HP 7503, 6mm (0,3") red

Dimensions

11,4 cm W x 3,1 cm H x 16,8 cm D,
1U-19" rackmount kit available

Weight

0,7 kg



Declaration of Conformity

We,
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Friedrich Rosendahl
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herewith confirm that the product:

Type: Time Code Interface
Model: LIF

meets the requirements of the council of the European communities
relating to electromagnetic compatibility (Council Directive
89/336/EEC)

Technical Data:	CENELEC EN 50 081-1	1/1992
	CENELEC EN 50 082-1	1/1992

The CE symbol is awarded to high-quality appliances which comply
with the European Directive 89/336/EEC or the EMVG (law relating
to electromagnetic compatibility of appliances) and which offer the
following significant benefits:

- *Simultaneous and interference-free operation of adjoining
appliances
- *No unpermitted interference signals
- *High resistance to electro-smog