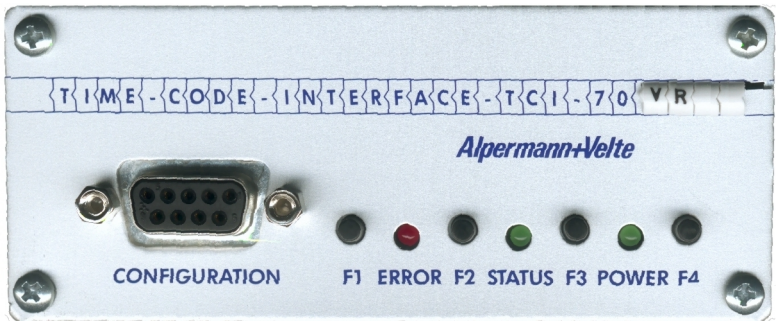
Operating Manual
Version: 3.22
February 5, 2004

Time-Code-Interface

TCI-70



Alpermann+Velte

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A1 Safety Instructions

General rules: Only use the device as directed in dry rooms. Treat the **TCI-70** with the same care as other studio devices. Please follow the advises in the following operators manual.

Damages in transit: If the device shows obvious damages from transit the haulier in question must be notified and the dealer must be informed.

Position: Please take care of a sufficient air circulation where the device is positioned. Extreme temperatures, dust, humidity, shocks and strong electromagnetic fields must be avoided.

Maintenance: Clean the housing only with a soft cloth. Do not use polish or cleaning agents.

Repairs: Thanks to latest electronic technique, the TCI-70 does not need extra maintenance. There are no parts inside the device that should be repaired by you. **Leave this to an authorized service partner.**

A2 Copyright

Information in this publication replace all previously published information. Technical changes reserved. The mentioning of the names of products by other manufacturers only serves the purpose of information. It is no misuse of trademarks what so ever.
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A3 CE-Declaration

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This is to certify that the product:

TCI-70

With the following rate respectively normative documents correspond to:

1. EN 55022, class B
2. IEC 801-2
3. IEC 801-3/ENV 50140

The following conditions must be given:

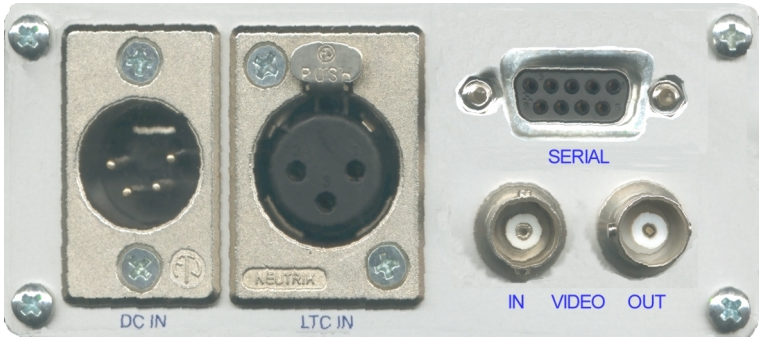
Audio-, Video- and Data cable must be shielded.

A4 General Information

The AV-TCI-70 is a modular system that differs in special software components. The operation manual contains all available modules. Only suitable operations apply to the chosen configuration.

B Operation Description

B1 The rear panel of the TCI-70



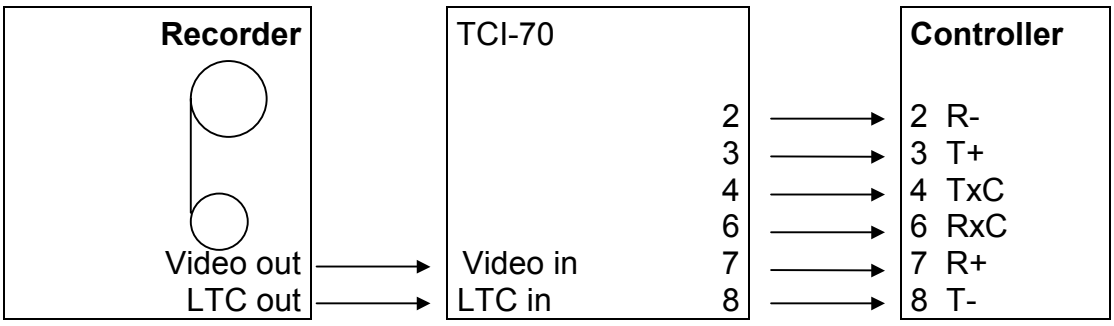
Connections and technical data

Housing		Aluminum
Dimensions		113 x 42 x 168 mm (B x H x T)
Weight		about 500 g
Input Voltage		10 - 30 V DC
Power Consumption		2 W
Acceptable Ambient Temperature		5 - 40°C
Relative Humidity		35 - 85 %
In-/Outputs:	Connector	Signal description
Power	4-Pin XLR M	1 = V- 4 = V+
LTC In	3-Pin XLR F	1 = GND 2 / 3 = Signal balanced 400 mV_{pp} - 5 V_{pp} Speed: 3,5 - 600 Frames/Sec
		Or
LTC Out	3-Pin XLR	1= GND 2 / 3 = Signal balanced –24 dB - +3 dB
Video In	BNC	Composite-Video-Input with termination 75 Ohm
Video Out	BNC	Composite-Video-Output, 75 Ohm

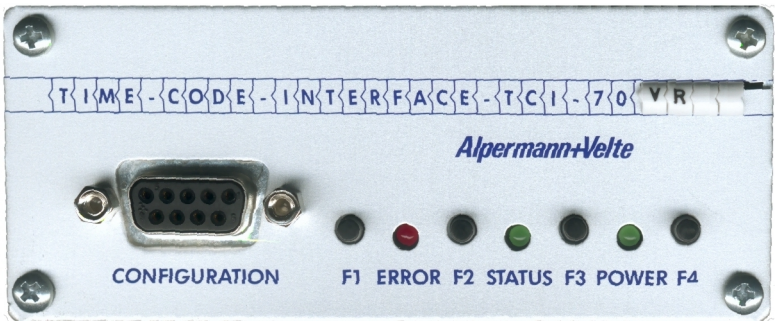
Interface:		Description
		Pins
CONFIGURATION	9-pin D-Sub F	RS232 Interface to configure the unit. Use a 1:1-cable to connect a PC.
		2 TxD (Output) 3 RxD (Input) 5 GND 6 DTR 7 CTS (Input) 8 RTS (Output)
SERIAL	9-pin D-Sub F	RS232- or RS422- interface to connect Timecode data.
		RS232
		2 TxD (Output) 3 RxD (Input) 5 GND 7 CTS (Input) 8 RTS (Output)
		RS422
		2 T- Out 3 R+ in 4 RxC 5 GND 6 TxC 7 T+ out 8 R- in

Example for Connection

Interface RS 422 between recorder and controller:



B2 The Front Panel of the TCI-70



Displays

The operation mode is being displayed by three LED‘s.

LED	Color	Meaning
POWER	Green	The LED always lights up if energy is supplied and instrument is operational.
STATUS	Green	LED off: No Timecode is being read. LED on: Instrument reads Timecode.
ERROR	red	LED flashes if error is recognized e.g. missing Timecode data or error in serial interface.

Buttons

Function of the buttons is explained below, but can also be changed via serial interface:

Button	Function	Meaning
F1	Ins right	Moves insert to right. If insert touches far right frame it will be placed far left next time button is being pressed.
F2	Ins down	Moves insert down. If insert touches lower frame it will be placed on upper frame next time button is being pressed.
F3	Ins T/U/R/G	Switch insert between generator/time, reader/time, generator/user and reader/user.
F4	Ins on/off	Switch insert on or off.

B3 Configuration

Configuration interface

With the interface „Configuration“ the functions of the TCI-70 can be adjusted. This is an RS 232 interface at 38.4000 bps. Usually it is being operated by a Windows PC and the enclosed 32 bit windows program “TCI70“. The protocol of the interface uses ASCII commands which even ensure the configuration with a PC other than a Windows PC, with a terminal emulation program.

Configuration program for Windows PC’s

The TCI-70 can be configured with a PC with Windows 95/98 or Windows NT 4.0 with the 32 bit windows software “TCI70“. It is not necessary to install the program. You might start it directly from floppy by following these instructions:

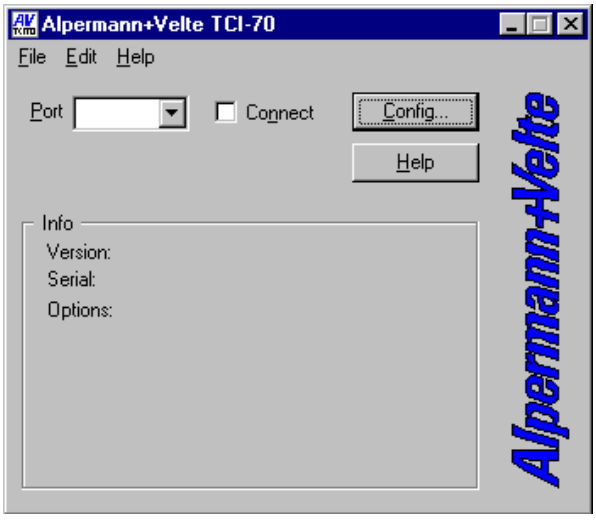
- Insert disk in A:
- double-click “My Computer“
- double-click 3,5-Diskette (A:)
- double-click TCI70

If you use the configuration program regularly, we recommend to store it on hard disk e.g. your desktop, which makes starting the program faster:

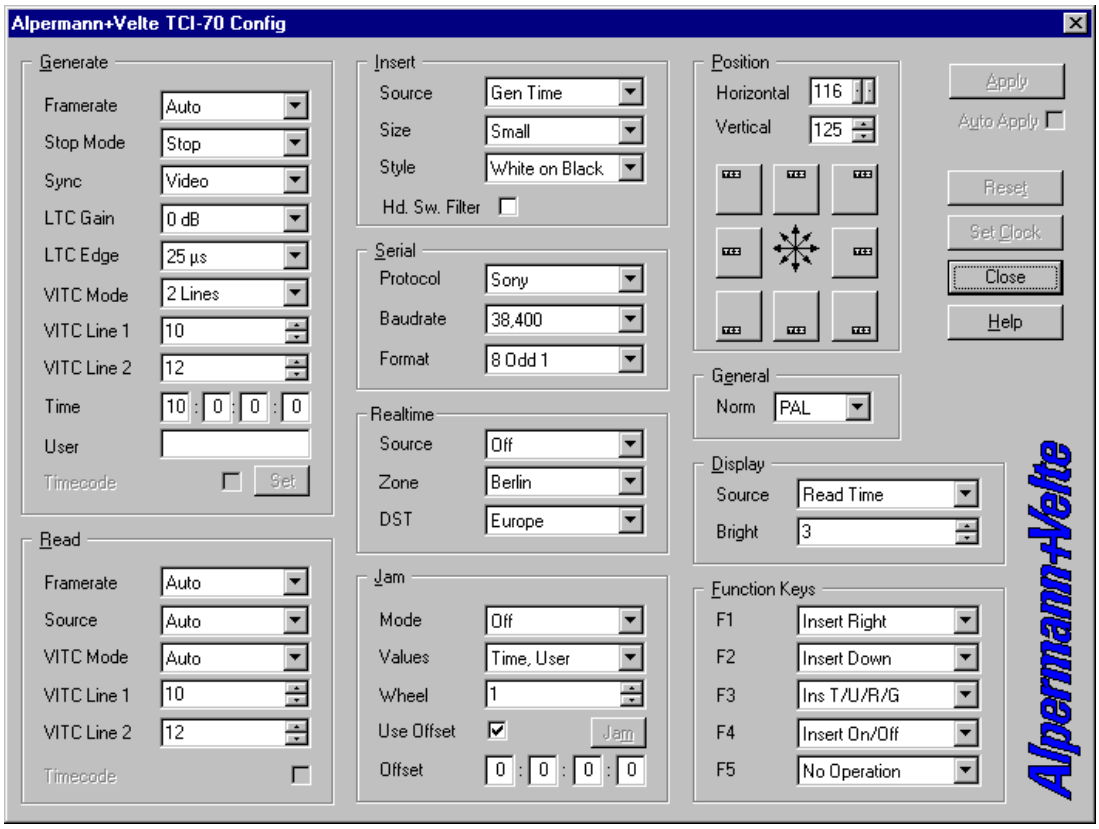
- insert disk in A:
- double-click “My Computer
- double-click 3,5-Disk (A:)
- drag the program TCI70 to desktop with right mouse button and chose “move here“
- drag the help icon TCI70 to desktop

If you do not use the configuration program anymore and you would like to remove it from your hard disk, simply drag both icons to the trash icon.

To configure the TCI-70, it has to be connected to a PC with serial interface. Use a 1:1 connected cable with D-Sub-9 plug and D-Sub-9 jack. Then start the program. The beside window appears.



Chose the interface you want to connect the TCI-70 with, in the window “Port“. Then click “Connect“. The program will try to make a connection with the TCI-70 and will shoe the operation details in the window “Info“. You can open the configuration window by clicking “Configuration“



All configuration settings are displayed here. If you change one of the preset information it will not have any effect on the TCI-70. Only if “Apply“ is pressed the change will be submitted to the TCI-70. That way you can experiment with the settings first without interfering with the current operation. If all changes shall be submitted to the TCI-70 immediately mark “Auto Apply“.

The meaning of all entries can be found in the online help, that you can refer to any time by pressing F1.

Factory presets

The following profile is preset at the factory. It can be reloaded at any time by using the command „Edit / Load Profile... / 0“:

Generator / Rate	Auto	P0C
Generator / Stop	Stop	P0D
Generator / Sync	Video	P0E
Generator / LTC / Gain	0 dB	P0F
Generator / LTC / Edge	25ms	P14
Generator / VITC / Mode	Lines	P10
Generator / VITC / Line 1	10	P11
Generator / VITC / Line 2	12	P12
Generator / Time	10:00:00:00	P18
Reader / Rate	Auto	P29
Reader / Source	Auto	P2A
Reader / VITC / Mode	Auto	P2C
Reader / VITC / Line 1	10	P2D
Reader / VITC / Line 2	12	P2E
Jam / Mode	Off	P1C
Jam / Wheel	1	P1E
Jam / Values	Time and User	P1D
Jam / Offset	00:00:00:00	P20
Jam / Use Offset	On	P1F
Interface / Protocol	Sony	P48
Interface / Baudrate	38400	P49
Interface / Format	8O1	P4A
Display / Source	Read Time	P59
Display / Bright	5	P5A
Keyboard / Function Key 1	Ins Right	P5C
Keyboard / Function Key 2	Ins Down	P5D
Keyboard / Function Key 3	Ins T/U/R/G	P5E
Keyboard / Function Key 4	Ins On/Off	P5F
Keyboard / Function Key 5	No Operation	P60
Misc / Norm	PAL	P58

B4 Real time mode

Real time with external real time-receiver

To connect an external receiver an RS232 data interface is needed in the TCI-70. On the part of the TCI-70 only the RxD line is used. For the Meinberg C51 DCF-receiver respectively the Alpermann+Velte GPS-CR GPS-receiver the cable must be wired as following:

Meinberg C51	TCI-70		Alpermann+Velte GPS-CR	TCI-70
DSUB25M	DSUB9M		DSUB9M	DSUB9F
3	3	Data	3	3
7	5	Gnd	5	5

To control the serial reception the status LED (green) of the TCI-70 blinks in real time mode. If, for example the real time receiver is running freely due to a troubled reception the Error-LED (red) blinks additionally.
To receive real time information via serial interface, its parameters must be adjusted correctly. For the internal or external Alpermann+Velte DCF or GPS receivers the parameters are 2400 / 7 / E / 1 with the Meinberg_R protocol.

Telegram reception via serial interface

The necessary adjustments for the real time mode using the serial interface are summed up in the user profile 207 and can be loaded by using the function Edit / Load Profile of the configuration program.

Real time via interface		B207
Insert / Source	Gen Time (6)	P3C
Interface / Protocol	Meinberg R	P48
Interface / Baudrate	2400	P49
Interface / Format	7E1	P4A
Realtime / Source	Serial	P50
Display / Source	Gen Time (6)	P59
Keyboard / Function Key 1	Insert Frames	P5C
Keyboard / Function Key 2	Insert T/U/R/G	P5D
Keyboard / Function Key 3	Insert On/Off	P5E
Keyboard / Function Key 4	Realtime On/Off	P5F

By this the time code generator TCI-70 is provided with real time information via the serial interface. In addition it will be inserted in the visible picture with six digits and is shown on the display (if any). By using the function keys the video insertion can be switched to eight digits (F1), instead of generator time to user-bits or to the time code reader (F2), the video insertion can be switched off (F3) and the real time mode can be switched on or off (F4).

Real time with DCF-receiver built-in

The TCI-70 is available with an built-in DCF receiver. The receiver is internally connected with the serial interface. The socket for the antenna is at the rear end of the device in place of the output of the serial interface.
The TCI-70 has to be set to the real time generator mode, that can be set by loading profile 207 (refer to previous section " Telegram reception via serial interface"). Then the state of the DCF-receiver can be read from the LED at the front panel. The Error-LED (red) blinks in second-intervals if no valid data telegram is received. That is always the case in the first 2-3 minutes after the device is switched on or if the reception is disturbed due to a badly adjusted antenna. Anyway, the DCF-receiver provides real time information, but that's only crystal accurate.
The status LED (green) shows the DCF telegram exactly as it is provided by the receiver. The LED should blink in regular second-intervals. Usually, the 59 second is missing. If the LED does not blink or it flickers irregularly, the antenna must be placed somewhere else or be turned to improve the reception.
In principle the installation of the antenna should be at the roof. Many problems will not arise if this is fulfilled. Do not place the antenna near computers or video monitors. Avoid steel girders or metal plates.
If additionally to the DCF-receiver built-in (Option D), a RS232 data interface (Option 2) is installed, on that the secondly time telegram is output. With that, another TCI-70 can be real time synchronized, too. The second TCI-70 has to be in the real time generator mode (profile 207, refer to previous section " Telegram reception via serial interface"), and the interfaces of the two units have to be connected with the following cable:

TCI-70 with Options D und 2		TCI-70 with Option 2
DSUB9M		DSUB9M
2	Daten	3
5	Gnd	5

Real time with battery-backed real time clock (option T)

The necessary adjustments for the real time mode using the built-in battery-backed real time clock are summed up in the user profile 208 and can be loaded by using the function Edit / Load Profile of the configuration program.

Real time via clock module		**B208**
Insert / Source	Gen Time (6)	P3C
Realtime / Source	Clock	P50
Display / Source	Gen Time (6)	P59
Keyboard / Function Key 1	Clock Adjust	P5C
Keyboard / Function Key 2	Clock Set	P5D
Keyboard / Function Key 3	Insert On/Off	P5E
Keyboard / Function Key 4	Realtime On/Off	P5F

By this the timecode-TCI-70-T is provided with real time information by the clock module, in addition it will be inserted into the visible picture with six digits and is shown on the display (if any). By using the function keys the real time clock can be set (F1, F2), the video insertion can be switched off (F3), and the real time mode can be switched on or off (F4).

Setting the battery-buffered real time clock (option T)

With the function keys Clock Adjust (F1) and Clock Set (F2) the time of the clock module can be set.

- To regulate divergences of some seconds of the clock press the function key F1 at minute-interval. By this the clock is set to the next full minute (30 seconds correction).
- To set the clock ahead press F2. Any further pressing of the key sets the clock one minute more ahead. If you keep F2 pressed the clock will run ahead faster.
- To set the clock back press F2 and keep the function key pressed. Any pressing of F1 sets the clock one minute back. If you keep F1 pressed, the clock will run backwards faster.

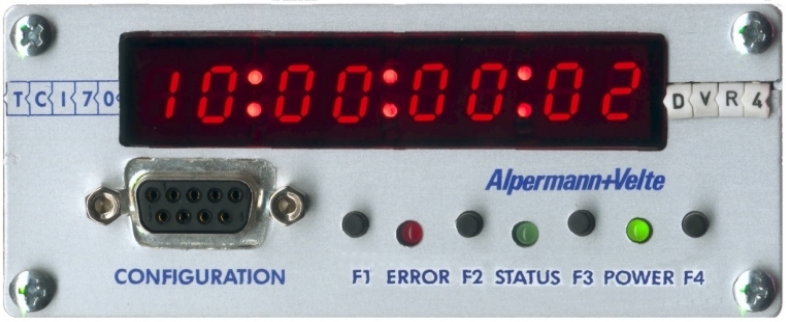
B5 Display

The TCI-70 is available with a built-in LED display (option D). This chapter describes the differences that the “option D” has in comparison with the other TCI-70 versions.

Technical data

Housing	Aluminum
Dimensions	113 x 42 x 168 mm (B x H x T)
Weight	about 500 g
Input Voltage	10 - 30 V DC
Power Consumption	5 W
Acceptable Ambient Temperature	5 - 40°C
Relative Humidity	35 - 85 %

The Front Panel of the TCI-70-D



Buttons

Function of the buttons is explained below, but can also be changed via serial interface:

Button	Function	Meaning
F1	Display T/U/R/G	Switch display between generator/time, reader/time, generator/user and reader/user.
F2	Display Bright +	Adjust the brightness of the LED’s with 7 steps. Brightness increases, at the highest possible brightness the decimal points shortly light up. Next key press selects the lowest possible brightness.
F3	Ins T/U/R/G	Switch insert between generator/time, reader/time, generator/user and reader/user.
F4	Ins on/off	Switch insert on or off.

Factory presets

The following profile is preset at the factory. It can be reloaded at any time by using the command „Edit / Load Profile... / 0“:

Generator / Rate	Auto	P0C
Generator / Stop	Stop	P0D
Generator / Sync	Video	P0E
Generator / LTC / Gain	0 dB	P0F
Generator / LTC / Edge	25ms	P14
Generator / VITC / Mode	Lines	P10
Generator / VITC / Line 1	10	P11
Generator / VITC / Line 2	12	P12
Generator / Time	10:00:00:00	P18
Reader / Rate	Auto	P29
Reader / Source	Auto	P2A
Reader / VITC / Mode	Auto	P2C
Reader / VITC / Line 1	10	P2D
Reader / VITC / Line 2	12	P2E
Jam / Mode	Off	P1C
Jam / Wheel	1	P1E
Jam / Values	Time and User	P1D
Jam / Offset	00:00:00:00	P20
Jam / Use Offset	On	P1F
Interface / Protocol	Sony	P48
Interface / Baudrate	38400	P49
Interface / Format	8O1	P4A
Display / Source	Read Time	P59
Display / Bright	5	P5A
Keyboard / Function Key 1	Display T/U/R/G	P5C
Keyboard / Function Key 2	Display Bright +	P5D
Keyboard / Function Key 3	Ins T/U/R/G	P5E
Keyboard / Function Key 4	Ins On/Off	P5F
Keyboard / Function Key 5	No Operation	P60
Misc / Norm	PAL	P58