

Time Code and CaptionMaker

CPC-600 CaptionMaker
Captioning and Subtitling Software

CPC –700 CaptionMaker
Captioning and Subtitling Software with Time Code



Computer Prompting & Captioning Co.
The Industry Leader Since 1985

1010 Rockville Pike, Suite 306
Rockville, MD 20852
USA

info@cpcweb.com
www.cpcweb.com

voice (301) 738-8487
fax (301) 738-8488
TTY (301) 738-8489

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Time Code & CaptionMaker

Time Code Readers (For CPC-700 Only)

What is time code, and how is it related to captioning?

Time code is a chronological time stamp on each frame of video tape. The CPC-700 CaptionMaker software can associate each caption with a precise frame of video with the help of time code, permitting perfect synchronization of captions and spoken dialogue. Video Master copies of all professional video tape use time code. VHS tapes do not have time code.

Time code exists on videotapes so producers can precisely synch audio and visual effects, shot changes and other special effects (i.e. synching a camera shot change with a change in speaker). It is measured in hours, minutes, seconds and frames (00:00:00:00). There are 30 frames in one second. Frames are the basic unit of measurement and every frame of video has a time code associated with it. Time code ascends in chronological order along with the tape. You will use time code to synch captions or subtitles with a show's script. Video Masters generally exist on professional high quality tapes and are used only in professional high-end video decks costing tens of thousands of dollars each. Time code can either be an audio signal (longitudinal time code - LTC) or part of the video signal (vertical interval time code - VITC), and can be placed on an inexpensive VHS tape.

LTC & VITC time code

LTC time code is an audio signal. For professional video tape format, there are special tracks for the LTC time code. VHS tapes (which are used at home) do not have any separate track for time code. You must use one of the audio channels to keep the time code. If you connect the LTC time code output from a video tape to the audio in of a TV monitor, It will sound like a hi-pitched ringing noise.

On the other hand, VITC time code is a part of the video. It sits on any one of the lines 10 through 16 of the 525 lines (for NTSC video). Closed captions reside on line 21 of the video.

Although it is possible to use VITC time code with the CaptionMaker, (FINISH THIS SENTENCE)

Getting a VHS work tape with LTC time code

A VHS with time code on one of its audio channels is referred to as a "VHS work tape." A VHS tape has two audio channels: Channel 1(The white on a Television or VCR's A/V jacks) and channel 2(The red on a Television or VCR's A/V jacks). Since LTC time code is an audio signal, you can insert it on one of the VHS's audio channels. The other audio channel will be mixed with dialogue, music and other audio effects.

The easiest way to make a VHS work tape is to make a dub from the master. It is simple to transfer the master's time code onto the VHS work tape during the dubbing process. If do not have access to the master tape, or cannot perform the above option for other reasons, you can generate time code onto the work tape using a Time Code Generator, which could be a card in your PC or an external Time Code Generator, such as the Horita. This is called an audio dub. You can insert an audio signal onto one of the audio channels of the dub, and on the other audio channel you can insert time code. If you ever wanted to make a dub from a VHS work tape, you would route only the audio channel that has the script on it to the record tape.

Equipment needed for reading and generating LTC time code (NW)

You need a Stereo Hi-Fi VCR to be able to read two separate audio channels. The record should also be a Stereo Hi-Fi VCR. You must have a time code reader card, which sits inside your computer and reads the time code from your playback VCR via an audio cable, and allows the CaptionMaker to retrieve the data. If you need to generate time code, you will need a Horita Time Code Generator.

Summary

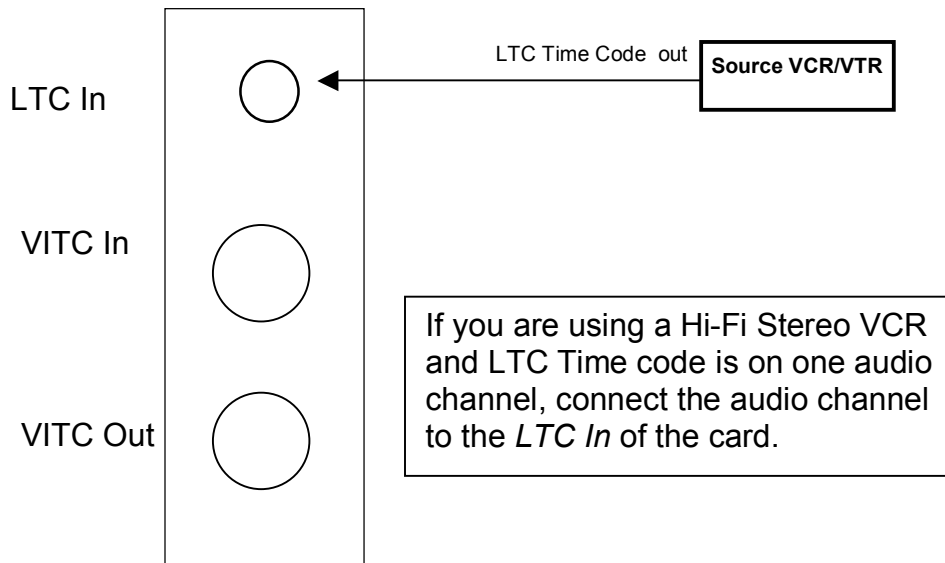
Going with the time code system will cost you more money and increase your set-up time initially. But the difference of quality between captioning your tapes using time code as opposed to not using time code will be amazing. You will be able to precisely place captions to the exact frame of video, editing caption placement and timing will be as simple as rewinding the tape to a point before you made a mistake. It will save time when generating your final copy, encoded with either closed or open captions or subtitles. It is very important that captioning be done in a professional manner, with great care taken to make sure each captioning job is error-free and timed correctly. Time code will help you achieve this objective.

Installing the Card Inside the Computer

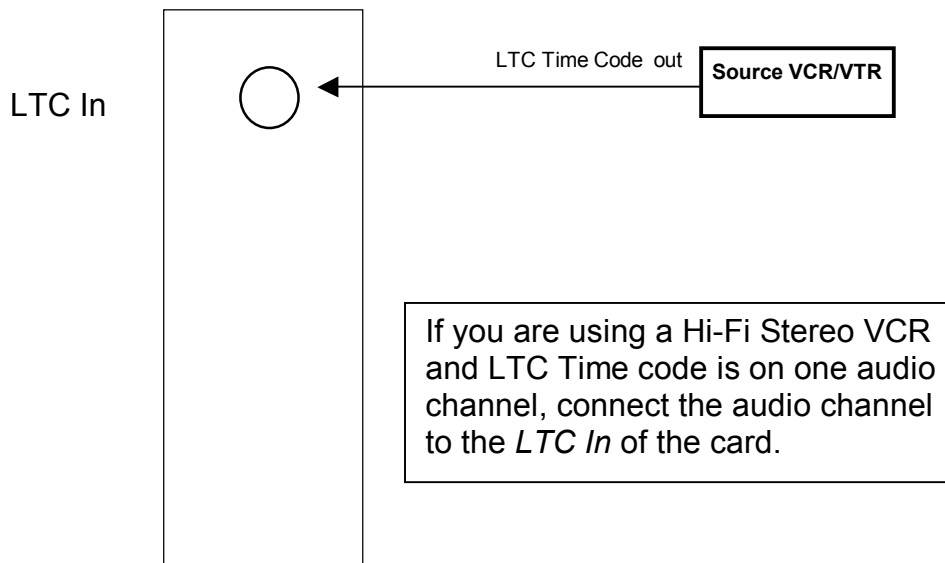
Choose an empty slot in your PC, which is farthest from the power supply. Put the Time Code reader card securely and properly into the slot.

Connection to the Time Code Card

Please check the manual for the time code card for details. Here we have only two diagrams of the most commonly used cards – LTC and VLTC for reading LTC time codes.



AEC PCI-VLTC/RDR Time Code Reader Card



AEC PCI-LTC/RDR Time Code Reader Card

Testing PCI-TC card

If you are using a PCI time code card, insert the floppy disk (labeled Adrienne Electronics TC cards) and restart the computer. The disk is auto bootable. The Adrienne TC software will run automatically.

A DOS screen will appear acknowledging Adrienne Electronic Test/Demo Software running. Make sure your computer is capable of booting from the floppy drive. If it is not, you will have to change the booting configuration from the computer BIOS setup.

Now play the CPC Practice Video Tape and connect the *Audio Out* (right or Red - which contains LTC time code) to the time code card *LTC In*.

Press 1 for the TC board Test/Demo Program.

If the time codes are displayed on the screen, the card is installed properly. Take the disk out, press the ESC key and your computer will reboot to Windows automatically.

Install Time Code Reader Card Driver

Start the computer. When the computer boots up, it will find the *AEC PCI Time Code Card* and it will pop a message window indicating that the computer found a new hardware. You need to install the driver software for this hardware (Time Code Card).

Put the install diskette (labeled Adrienne Electronics) in your a: drive. If you do not have this diskette handy, the appropriate files can be found in the folder *AEC PCI Card* inside the CPC CaptionMaker software CD.

Follow the steps to install the driver. When asked, direct the source of the software driver to the floppy disk drive. Insert the floppy disk and choose the driver from the floppy disk. The driver for the PCI card will be installed automatically.

Restart the computer. This is important. You must restart the computer.

Choosing the Appropriate TC Card From the CaptionMaker Software

Run the CaptionMaker software. From the menu bar, select *Time Code* and then click *Time Code Properties*. Select the name of your time code reader. If you have a *PCI LTC* or *VLTC* card, choose from the list box:


- Time Coder Reader: AEC PCI-TC
- I/O Port: 1000

The time code reader card communicates with the computer through an address. Both the time code cards and the CaptionMaker come preset with the following addresses:


Time code Device Function	Slot Required	Default Address
AEC PCI LTC/RDR	PCI	1000
AEC PCI VITC/RDR	PCI	1000
AEC PCI VLTC/RDR	PCI	1000
AEC LTC/IOR Reader	ISA	02A0
AEC LTC/MMR Reader	ISA	CC00
AEC LTC/RDR Reader/Generator	RG1 ISA	CC00
AEC VITC/RDR Reader	ISA	CC00
AEC VLTC/RDR Reader/Generator	RGX ISA	CC00

The default Port (address) for the PCI-TC should be 1000. If you did not change the address on the card, there is no need to change the address in the software. If you assign an address on your card that is different from the default, you must enter the new address under TC address inside the CaptionMaker software.

Click on the Locate button. If the driver is installed properly, you should get a message which says the card has been found, and you should be able to read time code now.

Click on the *Time Code* menu and click on *Start Time Code*. If you are playing the video tape and time code is being fed into the card, you should see the time codes being displayed. You may also click on the  icon inside the time code tool bar just about the Caption/Subtitle to display the time code.

Drop frame or Non-drop frame Time Code

The CaptionMaker recognizes both drop frame and non-drop frame time code. To switch between the two, click on the square watch icon , or go to Time Code → Time Code Reader Properties. Now the window that pops up will have two tabs, *Reader* and *Colors*. Click on the *Colors* tab. At the bottom most part, you will see three check boxes. You may use these options so that you can tell the type of time code you are using.

Installing ISA Time Code Cards

If you are using an Adrienne Electronics *ISA* card (which is often called PC as opposed to PCI) card, you must install the device driver for the card. After you have installed the CaptionMaker software, you may need to tell the CaptionMaker about your time code reader.

The following table displays all the Adrienne ISA time code reader cards and the corresponding default addresses:

Adrienne Time code Cards	Slot Required	Default Address
AEC LTC/IOR Reader	ISA	02A0
AEC LTC/MMR Reader	ISA	CC00
AEC LTC/RDR RG1 Reader/Generator	ISA	CC00
AEC VITC/RDR Reader	ISA	CC00
AEC VLTC/RDR RGX Reader/Generator	ISA	CC00

From the menu bar, select Time Code → Properties. Select the name of your time code reader and the appropriate address. Click on the Locate button and you will go through an installation process. A DOS window will appear. You will see number of messages on the screen. *Press any key seven times to go through seven message screens.* Now you have to give all the information for the appropriate card you have installed inside the computer. Now go through the following steps to complete the installation process. Make sure you type the appropriate information for two entries:

1. Which time code reader card?
2. Address used

These are very specific to the card you have.

Screen Display	Your specific card	Enter from the Keyboard
Number of time code reader cards?	One card present	0
Which time code reader card?	LTC/IOR	1
	PC-MMR	2
	PC-VLTC or VITC	3
Address used	LTC/IOR	2A0
	All others cards	CC00
IRQ used	No IRQ used	0
Is all the above information correct?	If you typed all the information correctly.	Y
Exit setup	Exit the installation process	X

After the process is completed, you must reboot the computer to put the driver for the card in effect.

ISA Time Code Card Drivers

If you have any difficulty installing the driver from the CaptionMaker software, you may get the driver software from one of these places:

You may get it from the CaptionMaker CD, under the folder *AEC ISA Card*. The exact path is:

AEC ISA Card\W95-CODE\REGISTRY (For Windows 95/98) and
AEC ISA Card\NT-CODE\REGISTRY (For Windows Nt/2000)

The driver is Aec95set.exe (For Windows 95/98) and

The driver for is Aecsetup.exe (For Windows Nt/2000)

You can also download it from the Adrienne website <http://www.adrielec.com/files.htm>

Adrienne ISA Time Code Card and Windows XP

Follow these instructions in case you are using the OS *Windows XP*.

Below are the steps that you should take to make it work. Note that you'll have to copy two files and run a DOS program to do this.

Insert the CaptionMaker CDROM into the CDROM drive in your computer (Let's call it the D Drive).

Run the software *Aecsetup.exe* which is located in the folder *D:\AEC ISA Card\NT-CODE\REGISTRY* inside the CaptionMaker CDROM. Follow the instructions outlined above on how to configure your ISA card with the *Aecsetup* program.

Copy the file *Winrt.sys* file from the folder *D:\AEC ISA Card\NT-CODE\REGISTRY* to the folder *C:\WINDOWS\SYSTEM32\DRIVERS*

Copy the file *Aec_nttc.dll* from the folder *D:\AEC ISA Card\NT-CODE\REGISTRY* to the folder *C:\WINDOWS\SYSTEM32*

Now restart your computer. After it is rebooted your time code reader card should be working properly.

Trouble Shooting

After installing the driver for the ISA cards, if you still can not read time code, you may have one of the following two problems:

1. Wrong driver for the card
2. Conflict of address the card is set at

Conflict of address is a very rare incident. First you should look into installing the right driver once again. After you install the driver for the card, two files are copied into two folders in your computer's registry. The first file is *WinRT* which is located in `HKEY_LOCAL_MACHINE → System → CurrentControlSet → Services → Class`

And the second file is *WrtDev0* located in
HKEY_LOCAL_MACHINE → System → CurrentControlSet → Services → VxD

Note: If you already installed the CaptionMaker software, you will find these two files are in the *C:/Program file/CPC/CaptionMaker/Adrienne* subdirectory.

Deleting Wrong Registries

If somehow the driver is installed incorrectly, you need to delete the driver first, before you can install the driver again. **If you have never edited the Windows registry before, you may want to ask a computer professional to help you. If done incorrectly, editing the registry can cause many problems with your computer. If you are not experienced with editing the registry, it is important to be very careful, and follow the below instructions exactly.**

- Click on the *Start* button located at the bottom left corner of your computer screen.
- Click on *Run* and then
- Type *Regedit*
- Double click on *HKEY_LOCAL_MACHINE*

You need to go to 2 locations following the tree structure below.

```
HKEY_LOCAL_MACHINE
  System
    CurrentControlSet
      Services
        Class
          •
          •
          •
          •
          •
          •
          WinRT (go to the very bottom of the list to find it)
        VxD
          •
          •
          WrtDev0
```

Delete both *WinRT* and *WrtDev0* folders. Restart the computer. This process will remove the unwanted drivers from the system completely. Now install the driver for your card following the procedure described earlier.

How would we know that there is a conflict of address?

The only way there can be a conflict of address is if you are using an ISA board. If you have a PCI board, there cannot be a conflict of address. If you are using an ISA board and you are having problems installing it, it is possible that there is a conflict of address. It is very unlikely that there is a conflict of address even with an ISA card, so this should be done as a last resort.

First, boot from the floppy disk. Test the card. (If you do not have the floppy disk you may download the files from <http://www.adrielec.com/files/>).

Make sure you are running a tape with time code on it and the second audio out channel is connected to the right input on your board. If you can read time code, that means there is not a conflict of address.

If it is still not working, take the disk out and reboot to Windows. Once in Windows, run aec95.exe from the floppy disk. When in the aec95.exe program(which can also be located on the CaptionMaker Cd in the Adrienne-ISA folder), change the address, and then reboot with the floppy. Keep attempting this and changing the address until the test program works.

AEC External TCR boxes: 2 & 10 (LTC) 20 (LTC & VITC)

AEC (Adrienne Electronics Co.) external time code reader works in Sony BVU protocol only. The AEC box dip switches must be set for the following SONY BVU parameters:

Baud rate = 38400
Data bits = 8
Stop bits = 1
Parity = Odd.

Inside the AEC box, there is a set of 8 dip switches. Make sure the dip switches are set to the following (If you bought the AEC box through CPC, Adrienne sets the default setting to Sony BVU which is given below. Normally the factory setting is different):

11110111

Reading Dip Switches

The end of the dip switch, indicates the position of that switch. Make note of the numbers 0 and 1 written on the right hand side of the switch box on the board; 0 means open and 1 means closed.

For example: If you are looking at the dip switches in a way that the numbers 1 through 8 go from left to right and the top of switch #1 is in the down position, then switch #1 is set to 0, or open.

Connections

The LTC time code out(red) from the VCR is connected to the LTC-IN of the box. Connect the serial/com port of the computer to the AEC box serial I/O 9 pin plug using the cable provided by AEC. The serial cable is not a standard serial cable.

If you do not have a cable provided by AEC, you can make your own cable with the connections below:

Pin #	Function
1	
2	TX422-
3	RX422+
4	
5	TX232
6	
7	TX422+
8	RX422- and RX232
9	Chassis GND

Testing Time Code

When the VCR is properly connected, and LTC time code is being fed to the AEC box, the green light in front of the AEC box should be steadily lit.

When the AEC box does get a time code feed, the green light starts to blink.

From the CPC CaptionMaker menu choose Sony BVU-800 from *Time code* → *Time Code Properties* menu. Now click on *Start Time Code* and click on OK. Time code should now be displayed inside the time code window near the right center of the screen.

Details of Switch Settings

- 1 Baud Code #1
- 2 Baud Code #2
- 3 Odd (1) or Even (0) Parity
- 4 Parity Enabled (1) or Disabled (0)
- 5 Seven (1) or Eight (0) Data Bits, & Protocol Control
- 6 Box Address Bit #2
- 7 Box Address Bit #1
- 8 Broadcast (1) or Polled (0) Operating Mode

The two "Baud Code" bits function as follows:

Switches 1 & 2	Baud Code
1 1	38400 (recommended)
1 0	19200

0 1	9600
0 0	1200

Sony BVU-800 Protocol VTRs

Time code can be read via any VCR/VTR which works with Sony BVU-800 protocols.


An optional RS 232 to RS 422 interface cable (can be obtained from CPC) is required. The RS 232 end is connected to the serial port of the computer; and the RS 422 end is connected to the VTR.

To choose the proper machine, go to *VTR Control* → *Properties* and choose Sony BVU-800 as your VTR device. Now click on the *Configure* button. CPC has the default setting for all the parameter used by most VTRs.

Baud 38400
Data 8
Parity Odd
Stop 1

Make sure your VTR is also set to those parameters. Make sure to choose the right comm. Port, it should not have any conflict with the Comm. Port you may be using for another device, such as your encoder.

If you do not get the desired result, you may change the delay values under *Delay Option*.

Click on the  button next to the time code display window. Time code should display in the Time Code window.

You should also be able to control the VTR from the computer. See below for details under VTR control.

Panasonic AG-5710 SVHS VCR

Time code can be read via any one of the Panasonic AG-5700 family of VCRs.

You need a straight serial cable to connect between the computer serial port and the VCR serial port.


To choose the proper machine, go to *VTR Control* → *Properties* and choose Panasonic AG-5710 as your VTR device. Now click on the *Configure* button. CPC has the default setting for all the parameter needed.

Baud 9600
Data 8
Parity No

Stop 1

Make sure your VTR is also set to those parameters. Make sure you choose the right comm. Port and it does not have any conflict with the Comm. Port you may be using for another device, such as the encoder.

If you do not get the desired result, you may change the delay values under *Delay Option*.

Click on the  button next to the time code display window. Time code should display in the Time Code window.

You should also be able to control the VTR from the computer. See below for details under VTR control.

The Panasonic AG5700 series VTRs use an internal motor to simulate timecode, meant to be an alternative to putting timecode onto a VHS tape. But the motor inside the VCR does not maintain a perfect steady speed, and constant maneuvering of the tape during the time coding process loses track of the precise count of the frame counter, so the simulated time code is not as reliable as true time code residing on a video tape. Before discussing the most effective way of using Panasonic AG-7510 for captioning, we need to understand how time code helps captioning process and video generation loss.

Captioning and Video Generation Loss

For analog video, you will always lose one generation of video, because caption information changes the content of Line 21 of the video, and there is no way to change the content without making another copy of the original uncaptioned video.

Since VHS tapes do not have time codes, to work with CPC-700 CaptionMaker you need to make a copy of the tape with time code in audio channel 2. Then you use that copy to make the final captioned copy, and as a result you lose 2 generations in total.

With Panasonic AG-5710, even with its limitations, you can effectively only use one generation.

How Panasonic AG-5710 Works

The Panasonic AG-5710 VCR, which is a higher end VCR, keeps note of a counter as the tape is played. CPC CaptionMaker can read the counter via a serial cable and converts the counter to simulated time code. The serial cable is connected between the computer and the VCR. So you may need two serial ports on the computer - one for the VCR and the other for the closed caption encoder (if you use one).

This machine would ideally do away with the need of making a time-code dub altogether, not requiring you to go through the extra step of first creating a time code dub of the

uncaptioned video tape, and then allowing you to use the master to create a captioned video tape losing only one generation.

But there is a little problem. Time stamping a file usually requires a large number of stop/pause/play/fast forward/rewind of the tape, and the VCR sometimes loses track of the precise frame counter of the tape. As a result, the time code could be up to a few seconds different than it was when you originally started captioning the tape. For this reason, it is not recommended that you use the Panasonic AG5710 to create the time stamped file without first laying down true time code onto a work videotape.

Use of PC System timer (Computer Clock)

It is possible to use the PC System timer as a substitute for the real VHS's time code in the final AutoSyncing process, allowing only one generation of the video to be lost. To do this, you do everything normally up until the final step. You must put time code onto a videotape. You must use that "work tape" to retrieve time code for your captions. The only difference comes in the final AutoSyncing process.

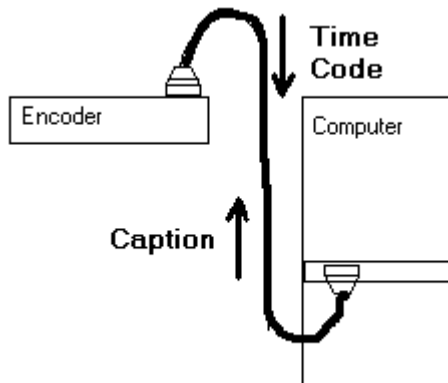
1. Rewind your videotape to the beginning. You want to find a reference point that is clear and easy to recognize, and at least a few seconds before the first captioned word.
2. Now rewind the tape again. Create a new line above at the very top of the file, and put your cursor on it. The second that your reference point appears, press the [+] key in order to timestamp the reference point.
3. If you have already tested your file and know that the captions are formatted and timed well, you are now ready for the final process. Take the work tape out of the playback VCR, and put in the master tape. Rewind the master tape.
4. Now go to TimeCode -> Properties, and select PC System Timer as the time code reader.
5. Put your cursor over the timestamp of your reference point line. Right click on it, and put your mouse over "Set system timer to current start time". Don't click on it, but be ready to.
6. Now, play the master tape. The second that you see your reference point, click your mouse on "Set system timer to current start time". Now quickly go to the top of the screen and click on AutoSync.

If you did everything correctly, you should now see perfectly synced captions showing up on your television monitor.

Tip: While AutoSyncing you may adjust the timing by pressing (Alt + & Alt -) to advance or slow down the captions by 1/3rd of a second. Using this method, it is possible to overcome the limitation of AG-5710 and produce a video with captions successfully, or correct a small timing error you may have made with the PC System Timer.

Ultech InsertaCap/DisplayaCap Time Code Reader

The same serial cable is used to send out the caption data to the encoder from the computer, can receive time code data from the encoder as shown in the picture below. Since the InsertaCap/DisplayaCap has a very small buffer of 32 characters, CaptionMaker relies on Xon/Xoff to send and receive data back and forth. For these reasons, the InsertaCap's time code reading is a bit unreliable. The InsertaCap's main function is to send/receive caption data. When the responsibility of reading time code is added, it may not be able to handle every task effectively, and will many times send "choppy" time code readings.



You need an XLR female to Phono female adapter (an option you can get from CPC) that fits into the InsertaCap/DisplayaCap. Connect the XLR adapter to the Time code socket labeled LTC time code on the back of the unit. Connect the time code coming out of the Playback VCR/TBC-1000. The Time Code light on the front panel of the InsertaCap/DisplayaCap will be lit.

Now you have to let the CaptionMaker know that you are using the time reader inside the InsertaCap/DisplayaCap. Go to the *Time Code* menu. Choose the last option *Time Code Reader Properties*, and select UltechInsertaCap or DisplayaCap.

Once you do this, you are set to read the time code.

Note: There have been some reports that this option does not work properly all the time. Sometimes it reads a wrong time code value. So be careful. Although the InsertaCap supports time code reading, it is not recommended.

Inserting LTC Time Code Using Horita TG-50

If you are working with the CPC-700 (which works with time code on the videotape), you must first insert time code on the videotape (if it doesn't already have it). VHS tapes used at home and libraries do not have time code.

The Horita TG-50 generates LTC (Longitudinal) time code. LTC time code is an audio signal (An annoying buzzing sound) and can be placed on one of the two audio channels

of a VHS tape. You have to use a HiFi Stereo VCR to separate the program audio (i.e. dialogue of people speaking), and the time code (i.e. buzzing sound) through two audio channels.

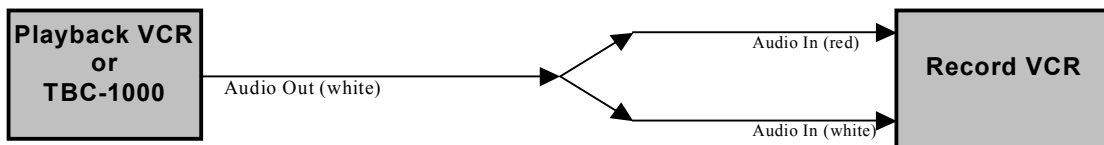
Inserting time code is a straightforward process. It is just like making a dub (copy) from the Playback VCR to the Record VCR. The only difference is that you will add time code while you are making the dub. You can put either only audio time code or you can put both audio and video time code. Audio time code is essential, video time code is optional.

Two VCRs are needed to add time code. In the following example, we are going to use the same two VCRs, which are already being used for the captioning process.

(An easier way to add time code is to have two additional VCRs which will only be used to add time code. This is easier, since you will not have to disconnect and the reconnect cables).

You may have a connection for the Audio Out (white) from the Player VCR in the following way. If you do not have a Y-cable, your Audio Out (White) from the Player VCR is probably connected directly to the Audio In (white) of the Record VCR.

The diagram below shows how the audio is connected for the process of recording the audio for the captioning process. This is the set up prior to cables being disconnected to add time code.



*Audio connections for caption recording process
using a Y RCA cable (one RCA female input and two RCA male output)*

There are two ways you can use the *Horita TG-50* as your time code generator. The first, which is essential for captioning, is to insert audio time code on one of audio channels of the VHS tape. Again, this is a must for captioning.

If you also want to see the burn-in time code on the screen you'll have to use the video connections as well. This is not essential for captioning. But if you want to do that, you should consult the *Horita* manual.

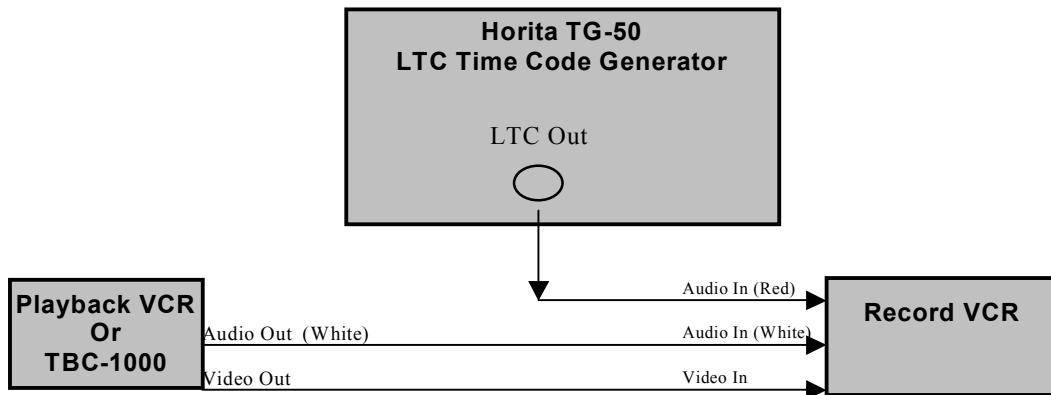
Connections for Adding Audio Time Code to a Videotape

You need a cable with two male *RCA connectors*.

Disconnect one end of the Y-cable from the Audio In (red) from the Record VCR.

Connect Horita *TC Out* to *Audio In* (red) of the Record VCR

The *LTC* time code which is an audio signal comes from the *Horita TG-50* goes directly to the Audio (Red) In and is recorded onto one audio track of the videotape.



Compare the Audio connections for inserting LTC Time code to the audio channel to the previous diagram which shows audio connections for the caption recording process.

Inserting Audio Time Code

1. On your Horita device, make sure that you have the *data* switch set to TC.
2. Push the *Mode* switch (in the front) to the right (SET) position and hold it for a couple of seconds until you see the red light starts to blink at a faster rate.
3. Now play the master tape (without time code).
4. Press the Record button on the Record VCR to start recording the video with audio on the left channel (white) and time code on the right channel (red).

Inserting Time Code Using BCD TC-100

Here we will describe how to insert LTC Time Code & Burn-in Time Code using BCD TC-100 Reader/Generator

Connections

Set the dip switches on the back of the BCD Box as follows:

- 1 → Down
- 2 → Up
- 3 → Down
- 4 → Down

Connect LTC out from BCD box to the Right Audio-In of the Record VCR.

Connect Left audio-out of the Player VCR to the Left audio-in of the Record VCR.

Connect Video-out from the player VCR to the BCD video-in.

Connect video-out from the BCD box video out to the Record VCR video-in.

Connect video-out of the Record VCR to the video-in of the monitor.

Connect a serial cable from the computer to the BCD box.

You may choose size, color, position and other features of burn-in time code by sending certain codes from your computer to the BCD TC-100, You may use “HyperTerminal” from Windows 95/NT to send these codes to the BCD box. Here are some of the most used Burn-in Display features:

Display

- BURN 1-100 → on, (1 through 100 controls vertical position)
- BURN 0 → off.

Size

- DSIZ 0 → small
- DSIZ 1 → large.

Horizontal Position

- DCOL 1-255

Foreground & Background

- DBAK 0 → white on black,
- DBAK 1 → black on white,
- DBAK 2 → white on video background,
- DBAK 3 → black on video background.

Regenerate TC

- RLIN 10-20 -> Regenerate VITC Time code

Drop/Non-Drop TC

- CODE 2 → Drop Frame
- CODE 3 → Non-Drop Frame

Zero TC Setting

- ZERO → Generates TC from 00:00:00:00

Recommended Settings: Send the following commands to the BCD box

Q
BURN 20
DSIZ 0
DCOL 50
DBAK 0
RLIN 10
CODE 3 (This is Drop-Frame)
ZERO

VTR Control Using Panasonic AG-5710 & Sony BVU-800 VTR

You may control the VCR/VTR from the computer provided you one of the following groups of VCRs.

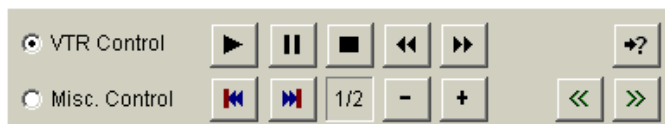
- All VTRs equipped with Sony BVU-800 protocols and
- Panasonic AG-5700 family of VCRs

For AG-5710, you need a standard straight serial cable.

For Sony-BVU protocol VTRs, an optional RS 232 to RS 422 interface cable (can be obtained from CPC) is required. The RS 232 end is connected to the serial port of the computer; and the RS 422 end is connected to the VTR.

To choose the proper machine, go to *VTR Control* → *Properties* and choose the right VTR device. Now click on the *Configure* button. CPC has the default setting for all the parameter used by most machines. Make sure your VTR is also set to those parameters. If you do not get the desired result, you may change the delay values under *Delay Option*.

All VTR control options are available in the *VTR Control* menu at the top of the screen. They are also available via the VTR Control icons on the top right hand side of the screen. Each option is self-explanatory.



These buttons are used to play, pause, rewind, fast forward the tape at different speeds. If you use the buttons a couple of times, the meanings of the buttons will be clear. See Chapter 8: Menus for details.

Note: If you do not have a VCR with a serial port on it (usually home VCRs and lower priced VCR), you would not be able to control the VCR from the

CaptionMaker screen. Make sure you have the *Misc. Control* radio button above is selected instead of the *VTR Control*. This way you can not accidentally click on the VTR control icons.

Most Frequently Asked Questions

How do you know that a tape has LTC time code on it?

If you are using a VHS tape and time code is in audio channel 2, play the tape and connect the Audio Out 2 (Red or Right) to a speaker or Audio In of your TV, you would hear a constant buzzing sound.