CaniTime
Timing & Photofinish
for
Greyhound racing
HDMI
version

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Technical setup

CaniTime runs on a standard Windows PC.
The operating system can be any current Windows version, 32 or 64 bit
Currently, development and testing uses Windows 10 64 bit.

PC specifications

Any reasonably powerful PC can run CaniTime.
As a rule of thumb, the following specifications should be met:

- **CPU**: 2 GHz Pentium or better
- **RAM** 2 GB or better
- **Disk**: 50 GB free disk
- **USB** ports
  See below!

N.B! The performance of a specific computer when running a graphics-intensive program as CaniTime (when playing back video files) is determined not only by the speed of the CPU, but to a large extent also by the performance of the graphics circuits in the PC. These graphics circuits are positioned either on a dedicated graphics plug-in board or integrated on the motherboard.

Producers of graphics circuits often emphasize their 3D performance. However, this is not important for programs like CaniTime which only use 2D graphics. Experience shows that for 2D graphics performance, the graphics integrated on the motherboard is often performing extremely well.

HDMI input

Previous versions of CaniTime used video cameras with DV/Firewire.
This (HDMI) version however uses modern video cameras with HD/HDMI.

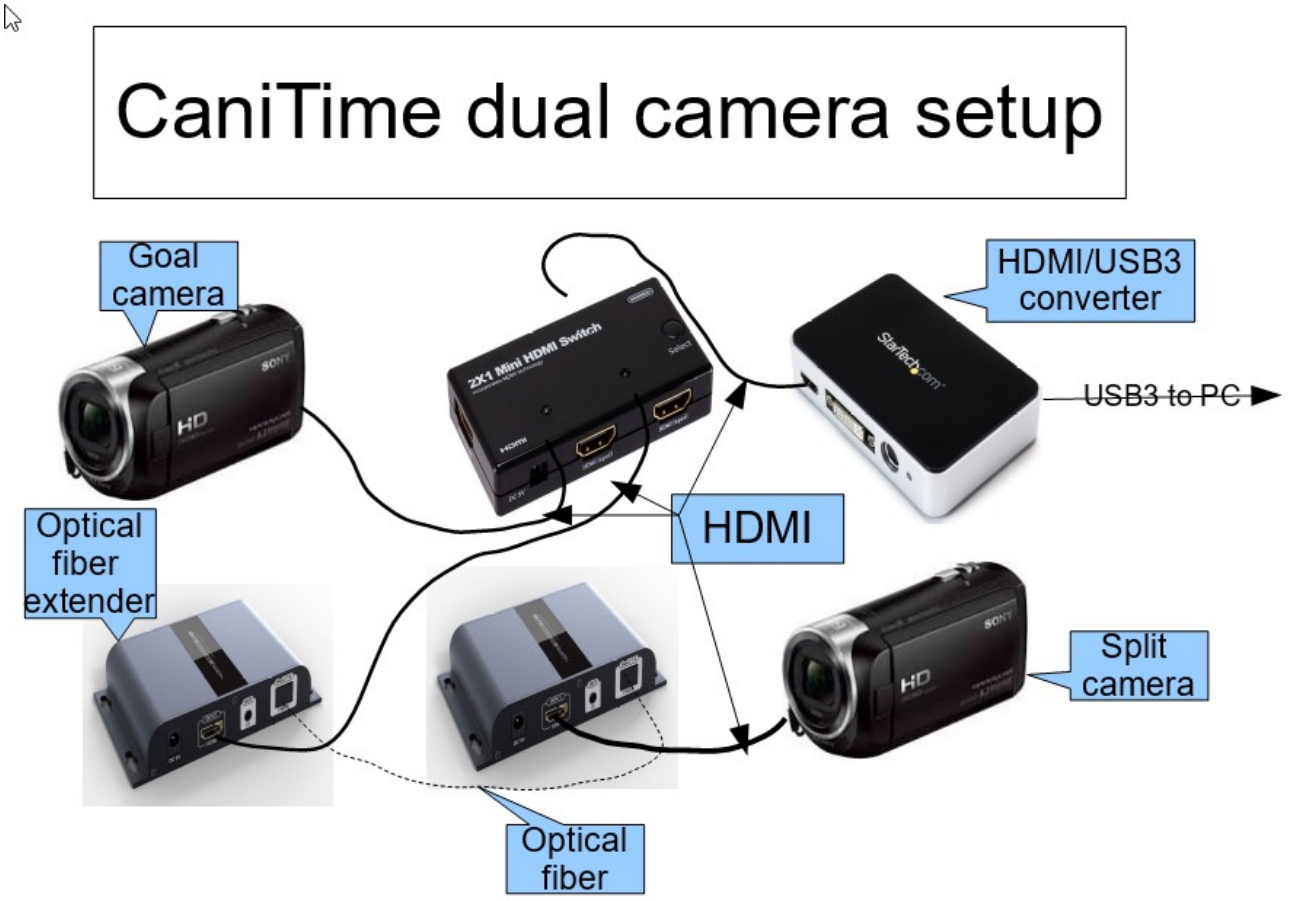
USB ports

The control box has no special needs.
If however your HDMI capture device is an HDMI → USB3 converter, you will of course need an USB3 port on your PC!

Connecting cameras

CaniTime/HDMI can record data from two cameras, the *Goal camera* and (optionally) the *Split camera*. Both cameras share a common HDMI input port by means of an HDMI switch

The *Goal camera* will normally be positioned close to the CaniTime PC and use a normal HDMI cable. 10 meter HDMI cables are readily available. The *Split camera* however will be positioned at a fairly long distance from the PC, and therefore some kind of HDMI extender will have to be used. The most reliable method of long range HDMI connection is to use an extender that uses *optical fiber.* Here follows an illustration of a two-camera setup:



The control box

CaniTime is delivered with a special ***Control box.***
The box is connected to the PC using a standard USB connection.

Control box functions

Illustration 1: The CaniTime control box

The functions of the start box controls are as follows:

- **Start armed**
  If this switch is in the *off* position, CaniTime will not react to changes in the input from the start box.
  Only with this switch in the *on* position will a start be initiated, given that all other prerequisites are fulfilled.

- **Start box circuit indicator light**
  Above the **Start armed** switch is a LED light. This light indicates the status of the circuit connected to the **remote input** of the control box.
  A connected circuit is indicated by light *on*, an open circuit is indicated by light *off*.
  It is recommended that the start box switch is wired in the **NC** (Normally closed) configuration. If you do so, you will have a positive confirmation in the indicator light that the connection from the start box switch to the CaniTime control box is OK.
  N.B. The indicator light will only function if the CaniTime program is running. The indicator light represents the status that the CaniTime program senses!

- **Heat Start button**
  If no connection from the startbox is used, this button allows to perform a manual start.

- **Video Capture**
  This toggle switch will activate video capture when in the **on position.**
  The capture will be made from the camera that is actice through the HDMI switch (if one is used=

Control Box connections

USB

The USB connection connects the control box to the PC.

Remote start

This input is used for connection of the start box for the dogs.
It is recommended that the electrical switch on the start box is wired for NC (Normally Closed) so that the switch opens when the race starts. This method gives a positive feed-back (shown on the LED) to the CaniTime control box that there is is good electrical connection between the CaniTime control box and the start box switch.

Control Box serial numbers

Each Control Box has a *serial number*. The CaniTime program can read this number, and it is also written on the bottom of the box.
CaniTime uses the serial number to verify that the box is authorized. (i.e. belongs to a paying customer)
If CaniTime detects that the serial number is not authorized (or nor connected at all) the program will only work with limitations. It can read and process recorded files,but it can not capture.
The **Control Box** frame will display information about an attached box as shown here.
The green ”Attached..” text means that the box is authorized.
If the text is red, it means that the box is not authorized

Illustration 2: No box attached

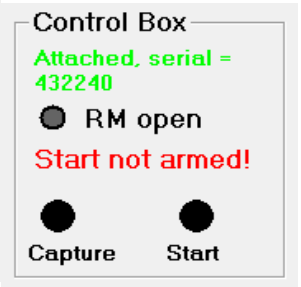


Illustration 3: Box attached and authorized

With a box attached, you can see feedback on all the controls on the box, allowing you to verify that the box is functioning OK.

Preparing for a race

Preparation tasks

In preparing for a race, there are a number of tasks to be performed.

- **Selecting the video source**
  This procedure is normally only performed once, since the settings are saved.
  See instructions at page 49
- **Setting up both cameras**
  It is necessary that cameras are set up correctly.
  See page45
- **Selecting a suitable Crop Size**
  Further info at **page 44**
- **Positioning goal lines**
  For both the split- and goal camera. CaniTime shows a goal line as an electronic overlay to the picture. You need to assure that this goal line is positioned correctly.
- **Entering race data**
  CaniTime stores all the data for each heat.
  This data is used when producing result printouts

Preparing a storage folder

Each race produces a separate CaniTime file. These files are placed on disk.
Your task is to decide where on the disk to place the files. This is how to do it:

- Click in the **Capture folder** as shown here

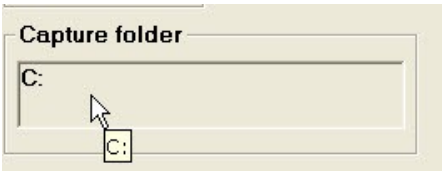


Illustration 4: Initiating selection of Capture folder

- This will bring up a dialogue where you can select or create a suitable folder.
  Once this is done, the Capture folder might look like this:

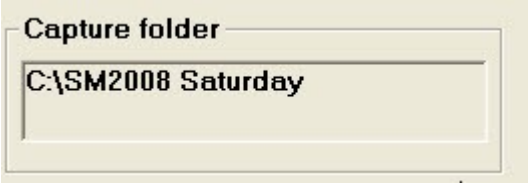


Illustration 5: A capture folder has been selected/created

For a multi day event it is often practical to have a separate folder for each day, but this is of course a matter of individual preferences.

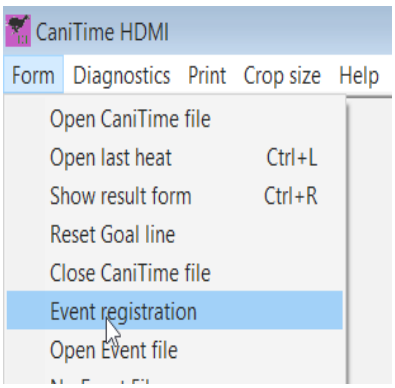
The event file

In order to produce result data, CaniTime needs to know all the necessary facts about the races.

This data is stored in the *Event file*, and normally one file is used for each race day.
(For the technically inclined: The Event file is of a type called XML)
Often the data in the file is entered in advance, perhaps the evening before the race day.

N.B. CaniTime uses a strict heat numbering for each heat during a day counting from 1 upwards. In addition to the heat number, you can also enter a heat name which is a text string allowing any content.

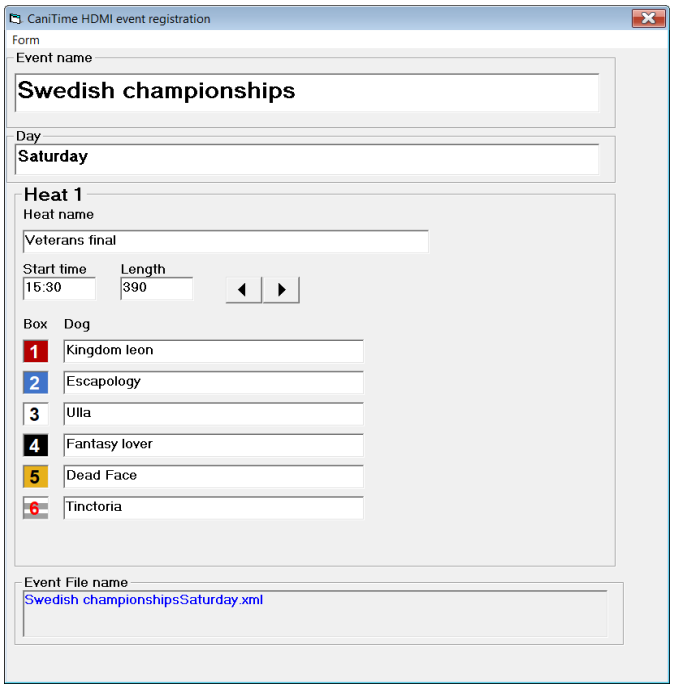
From the main form you select ***Event registration*** on the ***Form*** menu.



You will now see the **Event registration form**.

Note that you can either enter data into an existing event file, or you can create a new event file.

In the ***Event registration*** form you enter data for each heat as shown here:



To switch between heats you click the arrow buttons. There is room for 100 heats in a day.
As can be seen, each heat has a number, but there is also room to enter a text name/description for each heat.

To create a new **Event file** you proceed as follows:

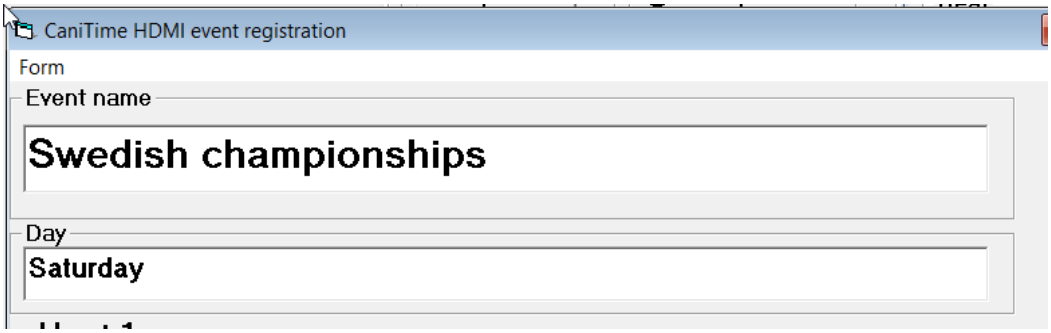
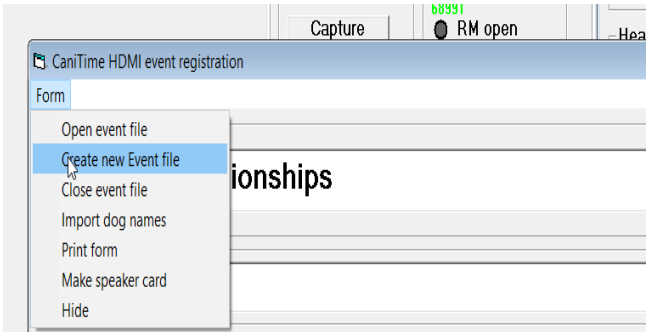


Illustration 6: Entering an new event name

Enter an *event name*, and optionally a text string for the race day

- Select **Create new Event** file

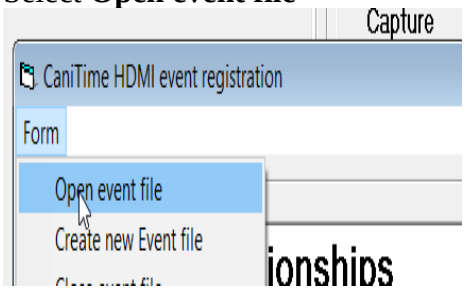


- Now you will see in the field at the bottom of the form that the new file has been created

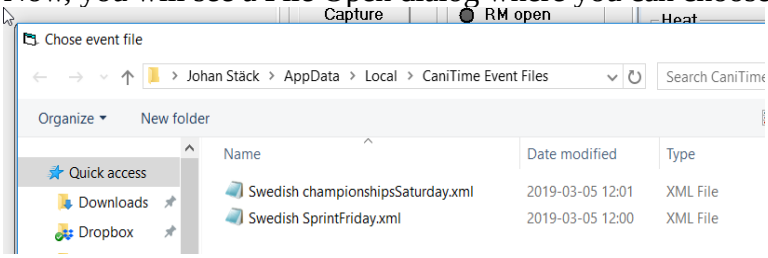
Switching event files

At any time, you can switch from one event file to another

- Select **Open event file**



- Now, you will see a File Open dialog where you can choose from the existing event files



N.B. it is fully possible to operate CaniTime without an active Event file.
This is described in the chapter Using no Event file on page 29.

Preparation for a heat

During a race, CaniTime will store video data from the split- and goal cameras. On the control box there is two (*on older versions*) or one capture button. When such a button is pressed down, the video data on the HDMI input port is captured to disk.

On the main form you will find this frame:

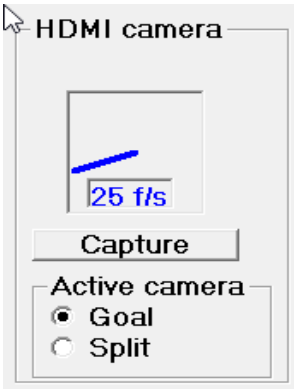


Illustration 7: Video camera status

The blue rotating arm indicates that CaniTime is receiving video. There is also a display of the actual frame rate (in this example 25 f/s). This field should show either 25 f/s or 50 f/s.
This is dependent on if the video camera sends interlaced video frames or not.
CaniTime will receive input from both cameras through the same HDMI input port.
Switching between cameras (if a Split camera is used) is performed using a common HDMI switch

The **Active camera** frame visible below the rotating arm is only used when setting up the goal lines, as desciped on page 37.

Illustration 8: A typical 2 to 1 HDMI switch

Video capture is controlled using the capture button (or rocker switch) on the Control Box.
When using two cameras, the user has to make sure that the correct camera is input through the HDMI switch.

File initiation

For video capture to work CaniTime needs to have a place to write the captured video.
We therefore have to perform the task of *file initiation*.

As a preparation for a heat we perform the following steps:

- Ensure that the correct heat is selected. In the example below it is the first heat of the day.

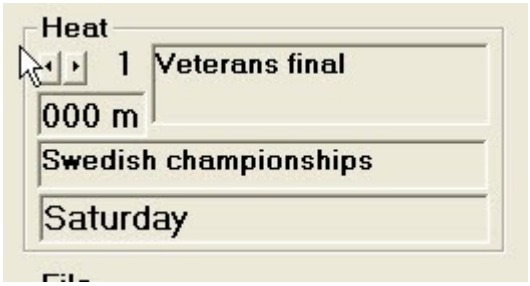


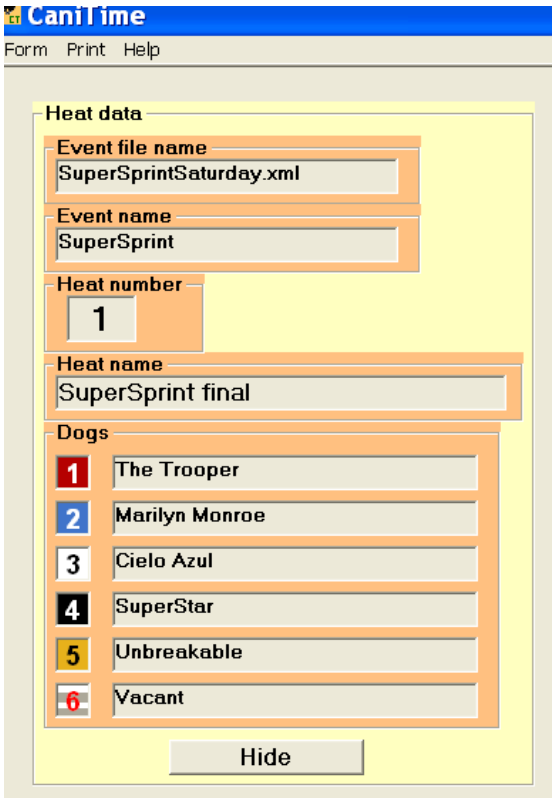
Illustration 9: Selecting the correct heat

The data shown is taken from the Event file that we prepared earlier.

- Now click **Initiate file**.
  This will make a file ready for data capture. The name of the file is shown in as illustrated here:

As you can see, the file has been placed in the designated folder.

In order to ensure that the correct heat is selected (and the correct dog names will be stored in the CaniTime file) a display of the current heat with all the data from the Event file will be displayed as shown below:



This display can be hidden by clicking on the Hide button, but it will also be hidden automatically when the camera(s) are started.

About the File name

The file name is constructed of several parts.

- The *event name*
- The *race day*
- The *current date*
- The current *time of day* (hh_mm_ss)

This ensures that the file name will always be unique. This means that you can always initiate a new file with the same heat number, and it will still be unique.
As you can see, the file size is displayed after initiating. At first, the file only contains the non-video information about the heat, so it is very small.
However, after capturing video data from split- and goal passes, the file has grown.

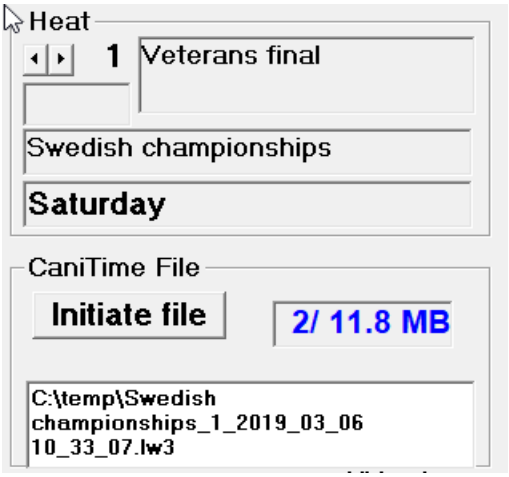


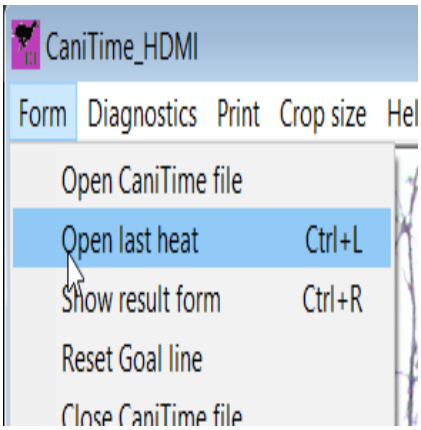
Illustration 10: After capture, the file size has grown

Here we can see that the file has 2 video segments (split & goal) with a total size of 11.8 MB.

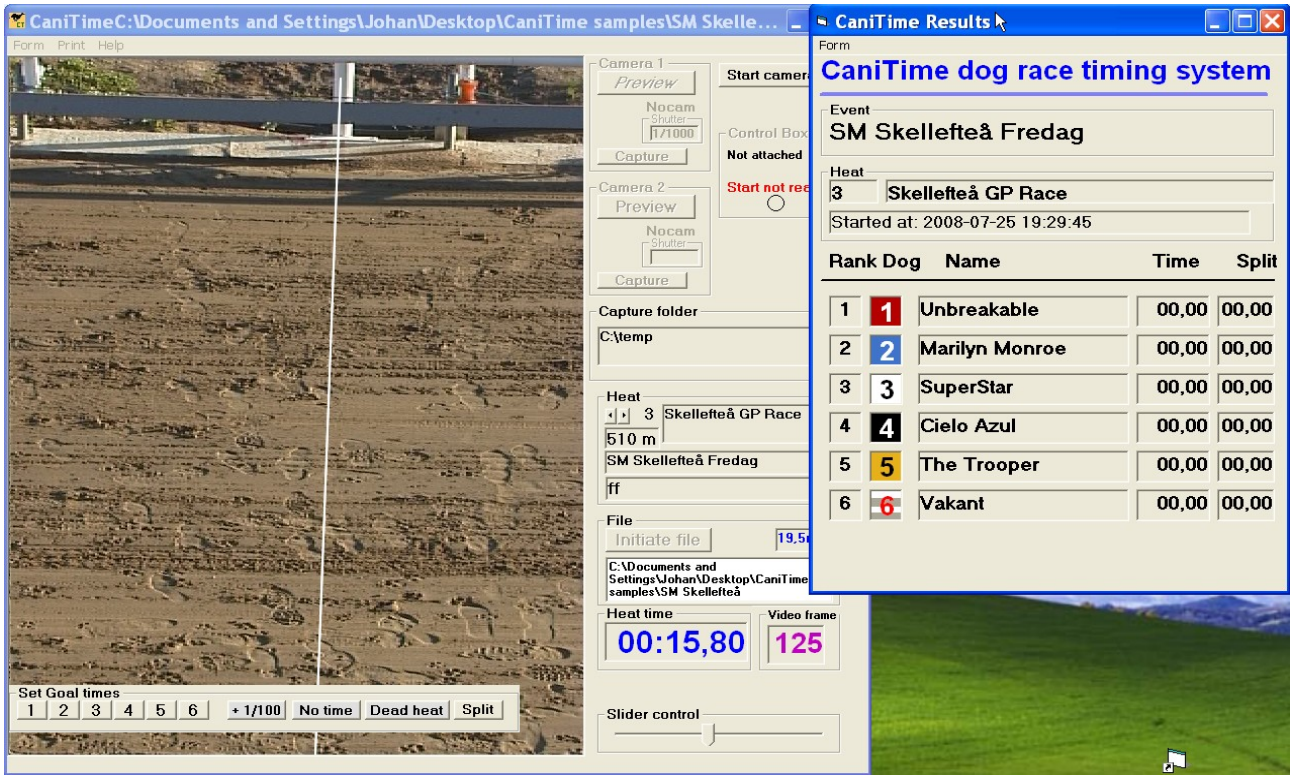
Processing the captured files

As soon as the heat is finished and you have captured the goal passing, you click ***Heat finish***.

This will stop the cameras.
To open the last captured file you can use the ***Open last heat*** item on the ***Form*** menu.



As you can see, this command is also available with the **Ctrl+L** shortcut. After opening the file, you will typically see two forms side-by-side as shown here:



The two forms are

1. The *main form*

2. The *result form*

As you can see, the result form has all the names of the dogs.
This data comes from the **Event file**, and when the file for this heat was initiated, the names were copied from the **Event file** into the **CaniTime file.** The file will be positioned at the beginning of video capture.

On the main form you can see the *slider control*:

Illustration 11: The slider control

Using this control you can easily scroll forward and backward in the file. However, if you want a more exact positioning, it is often better to use the *arrow keys*.

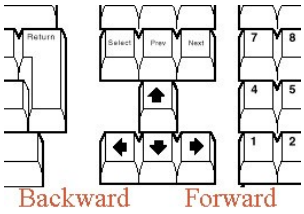


Illustration 12: Arrow keys for easy maneuvering

In order for the arrow keys to work properly, the slider control must have focus as shown above by the dotted *focus rectangle*. If not, simply click on the slider to give it focus.

Assigning times

CaniTime makes it easy to measure race times with an accuracy of 1/100th of a second. When it comes to determine the order of the dogs, the accuracy is much higher. In normal conditions CaniTime can easily separate dogs that are as little as 1/1000th of a second apart.

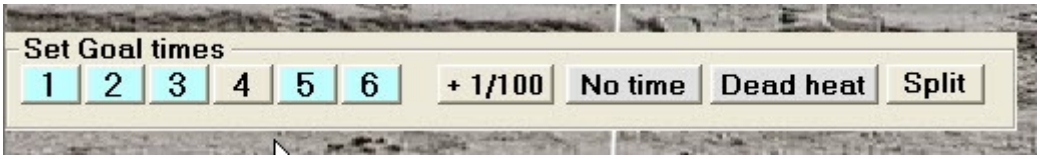
You now press the right arrow key on the keyboard and move through the file until the first dogs is on the goal line. (Or at the Split line)

The following pictures show a dog before/on/after the goal line:

Since our goal is 1/100th of a second accuracy, we can with confidence assign the time of **17,86** to this dog.

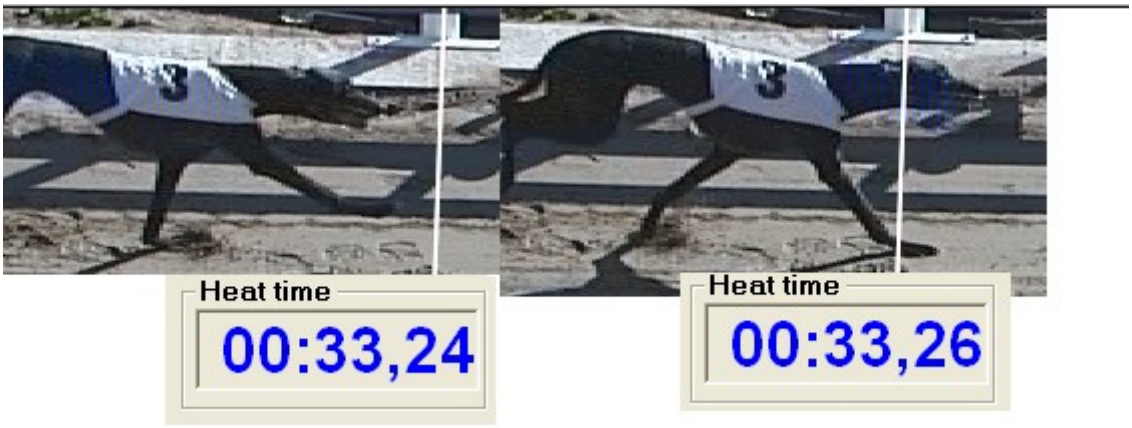
To assign a time you click the button corresponding to the number of the dog in the frame as illustrated below:

Each dog that gets a time assigned has its button turned blue. When all dogs but number 4 are assigned, the frame looks like this:



A stated earlier, the basic timing resolution of CaniTime is 1/50th of a second. This means that for each step through the video file, the heat time advances 0.02 seconds.

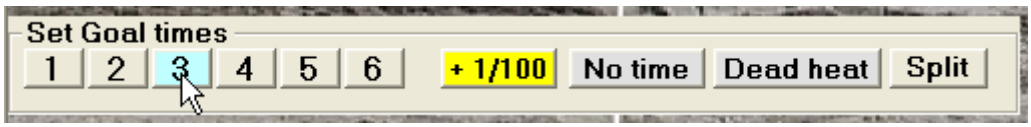
Now, let us study the following goal passing sequence:



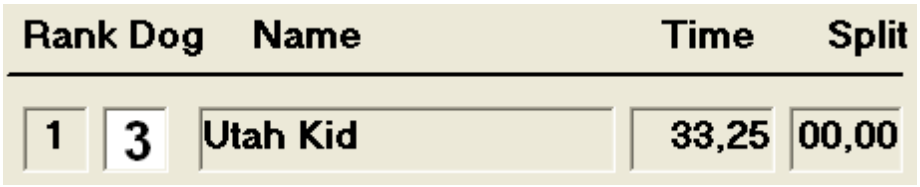
At 33,24 the dog has not yet passed the goal line, but at 33,26 the dog is well passed the line. We can therefore determine that the correct time for this dog should be 33,25.

This situation is handled like this.

- Position the video at 33,24
- Click the +1/100 button (it turns yellow)
- Click the dog number



Now as you can see, the dog will be assigned the time of **33,25**



Often, dogs will be very close over the goal line as shown below.

The two dogs will be assigned the same time, but there is no doubt that dog number 6 is first.
To ascertain that dog number 6 is ranked first, we also assign its time first.

Thus: dogs with the same heat time are ranked in the order that they have their times assigned.

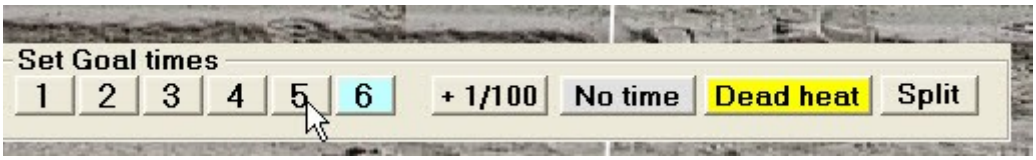
Rank	Box	Name	Time
1	1	Banana Split	32:86
2	3	Utah Kid	33:25
3	6	Jykä	33:77
4	5	Unikum	33:77

Dead heat

In the unlikely but still possible event that we just can't separate two dogs, we have the possibility to declare a *dead heat.* This does not have to be the winners, but dead heat can declared at any rank.

The procedure is as follows.

- Assign time for the any of the dogs in the normal way
- For the other dogs (one or more) click **Dead heat**, and then assign the time



In the following illustration we have assigned two groups of dead heat:

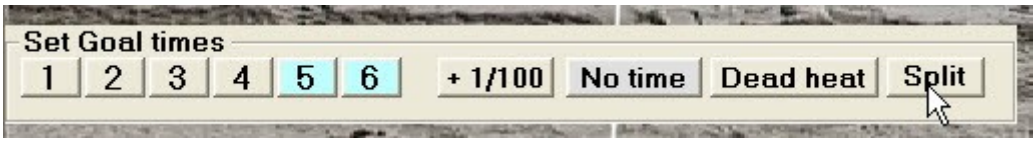
As you can see, the rank is the same for the dogs ruled dead heat, and their times are of course identical. There is also a black circle to denote the fact that we have a dead heat.

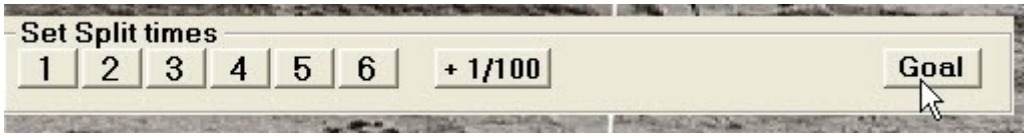
Please note that the data shown is purely fictitious.
In the actual race there was no dead heat!

Assigning split times

Assigning split times is of course very similar to assigning goal times, albeit with a few simplifications.

You switch between goal and split time assigning by clicking the button shown here:





As you can see, the frame undergoes some changes

- The caption changes (between **Set Goal Times** and **Set Split Times)**
- When assigning split times there is no ***No Time*** and no ***Dead heat*** button

You will also note that the goal line changes, since normally the Split line and the goal line will not be positioned exactly the same.

The video for split time will often be from the designated split camera, but for some distances the split camera and the goal camera are actually the same camera.

No time

The No time button is used if you do not want to assign a time to a dog. It is possible to choose from a number of reasons for No time. If you right-click on the No time button, a menu will occur as shown here:

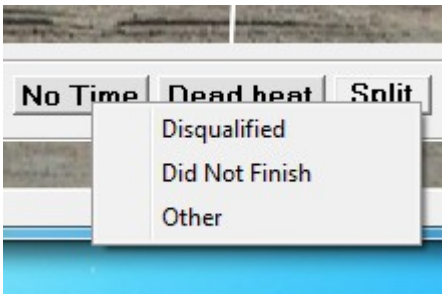


Illustration 13: Selection menu for No Time

If we select Disqualified, the caption of the No Time button changes to this:

Illustration 14: No Time, changed caption

Now, if we want to disqualify a dog we also have to click the button and make it yellow like this:

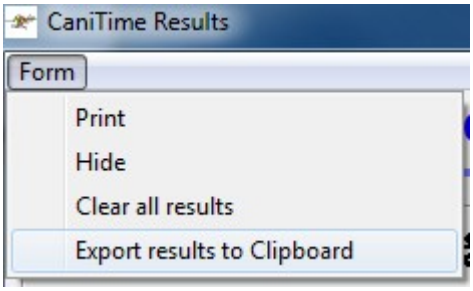
Illustration 15:
Button selected

Now we can disqualify a dog instead of assigning a time, and the result form may look as shown here:

Exporting result data

CaniTime can export result data. This can be useful e.g. if you want to process the results in Excel, or some other separate program. The export is performed in such a way that the result data for the currently open heat is inserted into the *Windows Clipboard*. Once the data is in the clipboard, it can easily be pasted into almost any Windows program.
To export data:

On the result form select **Export results to Clipboard**



This will bring up a message box that shows the current contents of the Clipboard.

The exported data items (dog name, time & split) are all separated by *tabs*. However, they will not always be lined up in the message box. You can now switch to the desired program and paste in the result data.

Below, you can see the exported data pasted into the word processor used for writing this manual (OpenOffice write). You can also see the data pasted into Excel

Heat3		
Harry Belafonte	17,51	4,33
Kerberos Pearl	17,63	4,36
Irish Flirt	17,79	4,33
Zug Bug	17,95	4,45
Bumbity Boo	18,05	4,42
My Little Girl	18,61	4,51

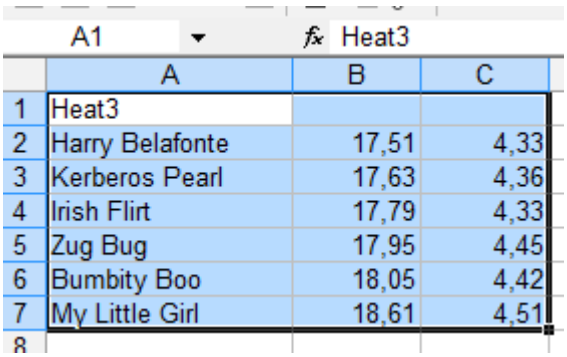


Illustration 16: Result data pasted into Excel

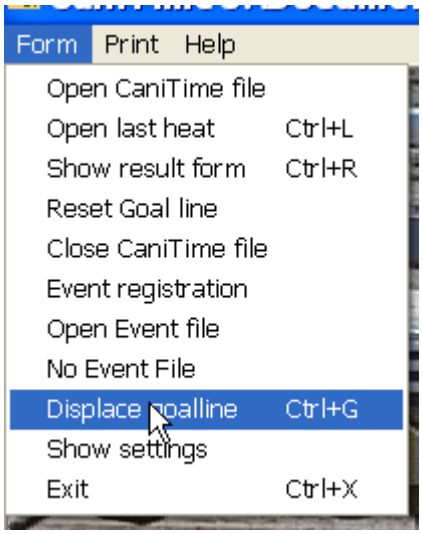
Displacing the goal line

Sometimes it can be difficult to decide the order between dogs.

For these cases, CaniTime has ha function that gives the possibility to displace the goal line.

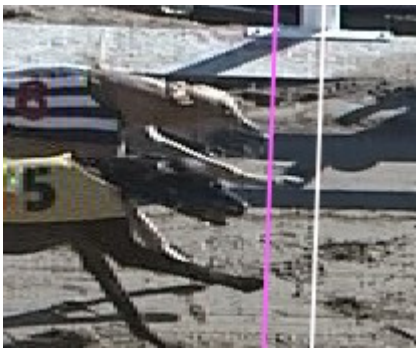
In effect the goal line itself remains static, but a copy of the goal line can be displaced.
This is how to use this feature:

- Select “Displace goal line” from the Form menu



- Now, while keeping the Alt-key pressed down you press the left- or right arrow keys (You can also press the left-right arrows on the numeric key-pad if one is present. In this case the Alt-key is not needed)

- As you will see, a cyan colored “parallel copy” of the goal line will become visible . .You can move it at will using the arrow keys as described above



- Using the displaced goal line both before and after the passing of the actual (white) goal line, it is easy to determine that dog number 6 was ahead of number 5 in this example.
- When finished, just select **Displace goal line** (Ctrl+G) again, and the displaced goal line will be hidden.

More on the CaniTime file

The file format of the file looks like this:

The Race data contains all the non-video information such as

- Heat data
- Dog names
- Goal line positions
- Results

The CaniTime file can have data added in **several increments**:

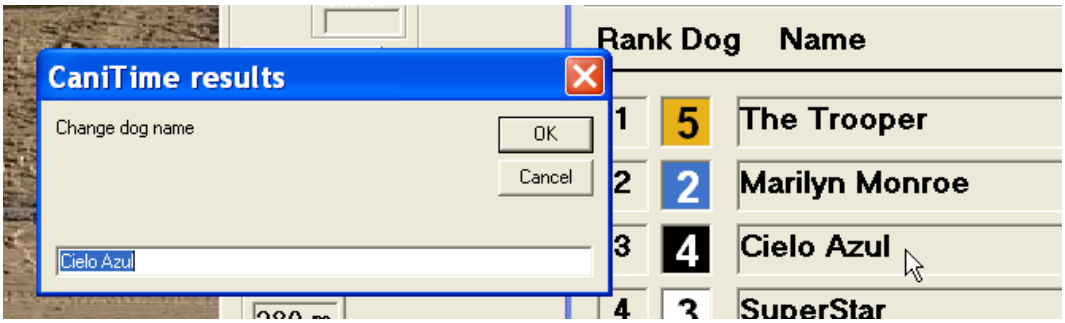
- When the file is *initiated*, heat info and dog names will be taken from the Event file Goal line positions will be taken from program settings
- During *video capture*, video frames from the split and goal cameras will be appended
- During *file processing after the race*, the split and goal times will be added to the race data portion of the file

Altering the CaniTime file

A situation can of course arise where the CaniTime file needs to be altered, e.g. a dog name is in error.

Dog names can be changed in the following way:

- With a CaniTime file open, right-click (click with right mouse-button) in the dog name in the result form



- Type in the correct dog name and click OK
- The name will be changed as shown below

Changing Event & Heat names

Event & Heat names can be changed in a similar fashion as dog names, i.e. right-clicking and entering a new text string.

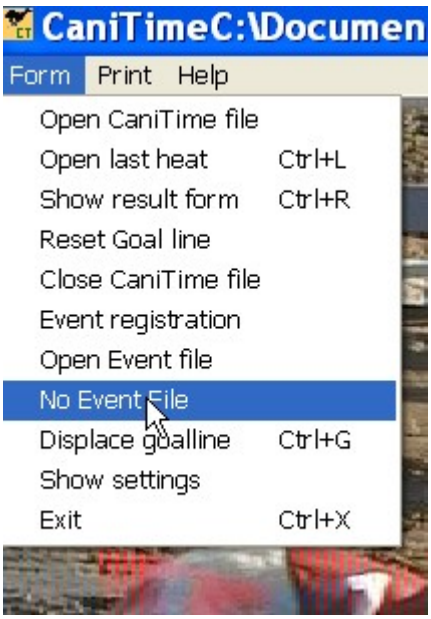
N.B. No changes can be made unless the file is allowed for writing. If the file is read-only, an error message will be given.

Using no Event file

During a normal race, it is normally necessary to use an Event file, since there is not enough time between heats to enter dog names.

However, sometimes you will want to use CaniTime for practice or testing.
If you don't want to use an Event file, do as follows:

- Select **No Event File** from the menu as shown here:



Printouts

CaniTime will print on the printer that is designated as the *Windows Default printer*.

Setting the default printer is done in the **Printers and faxes** folder.
Ink jet and laser printers both produce good results, as do monochrome printers.

Printouts after a heat come in two basic varieties:

1. Goal photo picture series & results
2. Single frame printout

Here you can see the basic layout of these two types of printouts

Goal photo series, Single frame

Illustration 17: Picture series printout

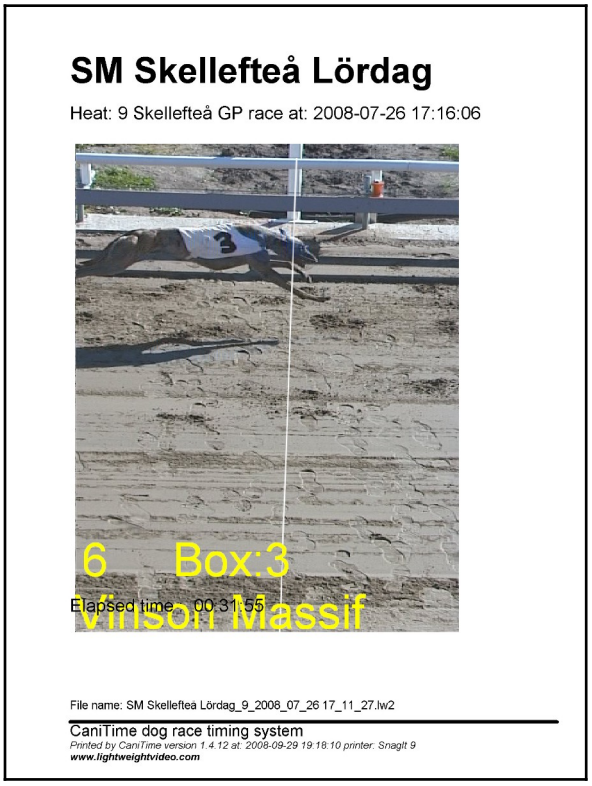


Illustration 18: Single picture printout

Results list

On the Results form there is a Print menu item that will print out a result list as illustrated here:

CaniTime dog race timing system

Event
SM 2008 Skellefteå Onsdag

Heat
5 Svenskt Mästerskap Tikar Semi
Started at: 2008-07-23 19:55:26

Rank	Dog	Name	Time	Split
1	1	Titan Buff	29:75	4:43
2	5	Spirited Away	30:23	4:46
3	4	Wanda Jackson	30:65	4:51
4	3	Toxic Tea Fairy	30:71	4:57
5	6	Playa Negra	30:76	4:45
6	2	Pancake Jaya	30:99	4:46

Printed by CaniTime version 1.5.3 at: 2009-06-26 16:48:48

Illustration 19: Results printout

Speaker cards

Based on the information entered into the Event file, CaniTime can print “Speaker cards”.

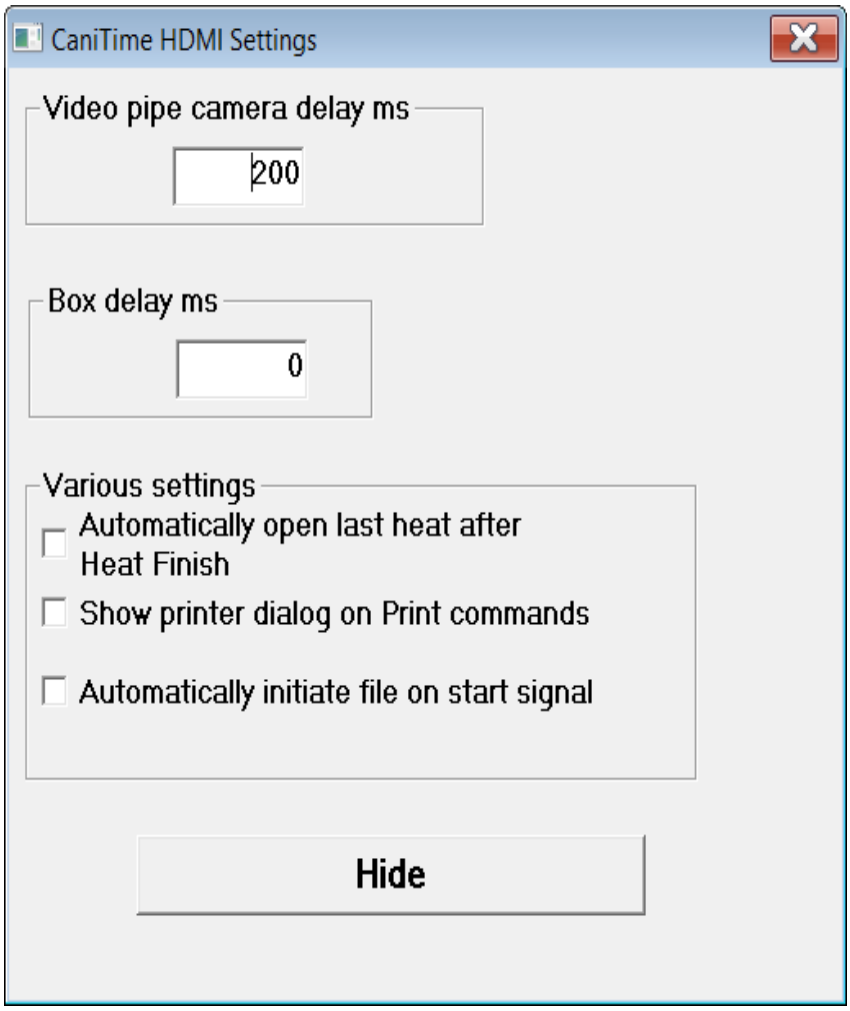
These are simple cards with the name of the dogs for each heat.

Illustration 20: A CaniTime "speaker card"

The dog names are printed in a large font to assist the speaker during the race.

CaniTime settings

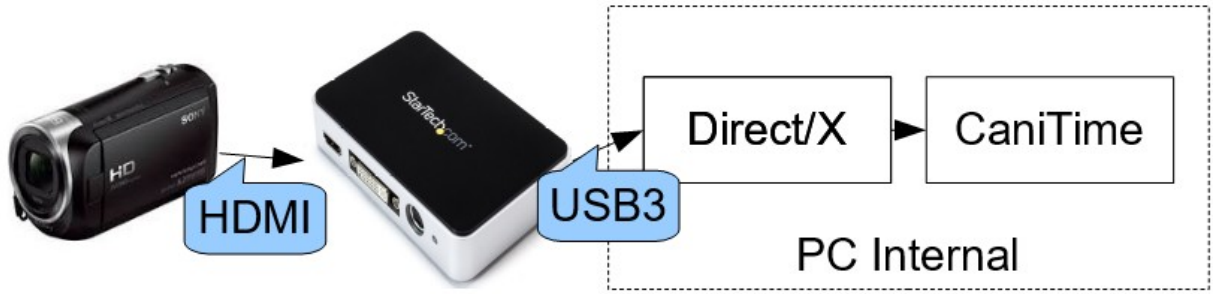
Selecting **Show settings** from the main form will bring up a form as shown here:



Video pipe delay

This field has the following background:

CaniTime derives timing from the flow of video frames from the attached cameras. The flow of video data is illustrated below:



As you can see, each video frame has to pass a number of steps in what constitutes **the video pipe.** Passing the pipe takes a certain amount of time, and we can compensate for this to achieve the most correct timing.
Each video frame arrives in CaniTime (where it is time-stamped) with a certain delay.

The method for calibrating CaniTime and compensate for the delay in the video pipe is quite straightforward.

- Initiate a file and start a heat
- Point the camera at the screen and the heat time field, and capture a few seconds of data.
- Open the captured file and look at the results

With no compensation applied you will likely get a results similar to this:

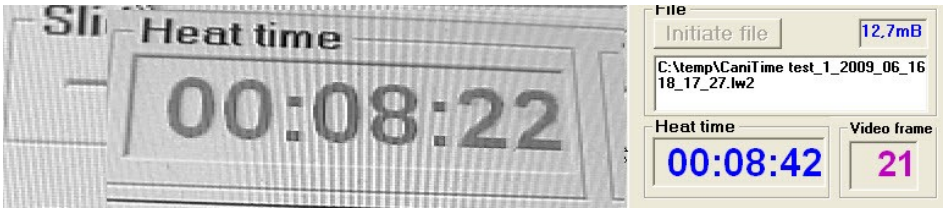


Illustration 21: Heat time fields without Video pipe compensation

As you can see, there is a difference between the **Heat time** fields in the video frame and in the CaniTime form. Since the difference seems to be 200 ms, this is the value that we will enter in the **CaniTime settings** form.
With the compensation applied, we can perform a calibration run again, and compare the results.As shown here, the compensation chosen is correct, and the two Heat time fields correspond well!

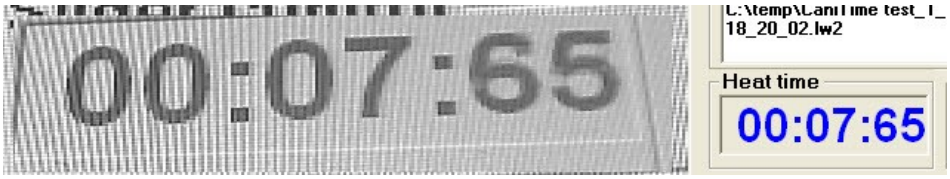


Illustration 22: Heat time fields with Video pipe compensation

Box delay

Normally, CaniTime will receive and react upon an electrical start pulse from a switch in the start box. This switch is also normally calibrated in such a way that it open/closes and the gate position that defines the heat start. E.g: the regulation states that the heat start occurs when the gate has opened 30°, and the switch opens also at the 30° position.
In this case, Box delay should be set to 0.

However the following situation has been known to occur:

The regulation states that heat start is defined as the initial movement of the start gate. The switch however opens not until the gate has moved half way open. This will introduce a systematical error with the effect that the times produced by CaniTime will be to short.
In order to compensate for this error, we can enter a value in the Box delay field.

If a value >0 is entered, all results will be compensated with this amount.

Illustration 23: Results without Box delay

Illustration 24: Results with Box delay

As shown above, if a Box delay is introduced all results incorporate the chosen delay. There is also a clear indication that a Box delay is entered. This is to ensure that a Box delay is not used unknowingly.

Various settings

Automatically open last heat after heat finish.

Hopefully this is self-explanatory. The default action when a heat is finished is to immediately open the resulting video file for analysis. With this option selected, this action will be initiated automatically.

Show printer dialog on Print commands

Earlier version of CaniTime would only print on the printer assigned in Windows as the *default printer*. This option when activated will always give a printer selection menu whenever a **Print** command is given.
N.B! Even if this option is inactive, it is also possible to get a printer selection form by keeping the Alt-key pressed while selecting a Print command.

Automatically initiate file on start signal

In order for CaniTime to be able to store video and timing data, CaniTime needs an initiated file for this. If the operator has forgotten to initiate a file, a heat will be missed.
With this option active, CaniTime will automatically initiate a file if this has not been explicitly done by the operator.

Starting CaniTime for the first time

CaniTime stores various settings between sessions in a file called an *ini-file*.
(CaniTime does not use the registry!).

In order to retain compatibility with present and future versions of Windows, the .ini file is stored in a location on disk that Windows determines to be suitable for this kind of data. This, unfortunately is a somewhat “obscure” location and not so easy to find manually.
CaniTime therefore offers a simple shortcut to find this location, as described in Fel: Det gick inte att hitta referenskällan on page Fel: Det gick inte att hitta referenskällan

The first time that you start CaniTime, the .ini file is empty and you may need to perform some initial set-up.

If you initially only want to use CaniTime to process one of the supplied sample files, you should not need to perform any special actions.

However, if you have a Control Box and want to start capturing race video you need to setup the cameras and position goal lines.

You may also want to create an event file.

Setting up Goal Lines

CaniTime has one or two *goal lines* that you can position in the captured video.
One goal line for an (optional) Split camera, and one line for the Goal camera.

The procedure is as follows:
On the main form, start the camera and select which camera that is active.
This selection is made by clicking the relevant option button in the Actice camera frame.
And, setting up the Split-&Goallines correctly is the only use of this camera selection.
It is not used when capturing or when post-race pocessing!
Using the rectangles you can drag the ends of the goal lines to their wanted positions.
The pictures below shows two goal lines

In case that for some reason the handles of the lines are “outside” of the image, you can select **Reset Goal line**, and you will be able to grab the lines again and position them!
This problem can occur especially if you change from a larger crop size to a smaller one.

CaniTime will store the positions of the lines and they will remain after a program re-start. They will also be shown on video play-back.

Verifying the camera→PC connection

CaniTime works with data coming from the HD camera through HDMI, and *DirectShow* (which is a fundamental component in Windows)

If this video information chain is not working, CaniTime will also not work.

There are a number of ways to verify the needed functionality.

HDMI capture utility program

My experience is that all HDMI capture equipment is delivered with some kind of “utility program” .
This program can be used to capture video from the HDMI input port and store it on disk. These programs also seem to have some kind of “live preview” function which will simply show live on screen the HDMI input (in our case probably live video from the camera…)

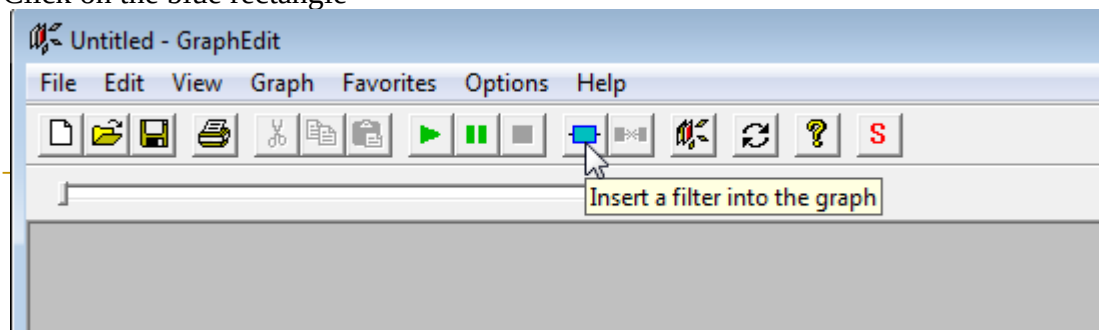
DirectShow/GraphEdit

CaniTime gets its video data from a Windows sub-system called **DirectShow.**
Therefore it is necessary that the HDMI capture equipment that you use has support for DirectShow.
Not all video capture products do....

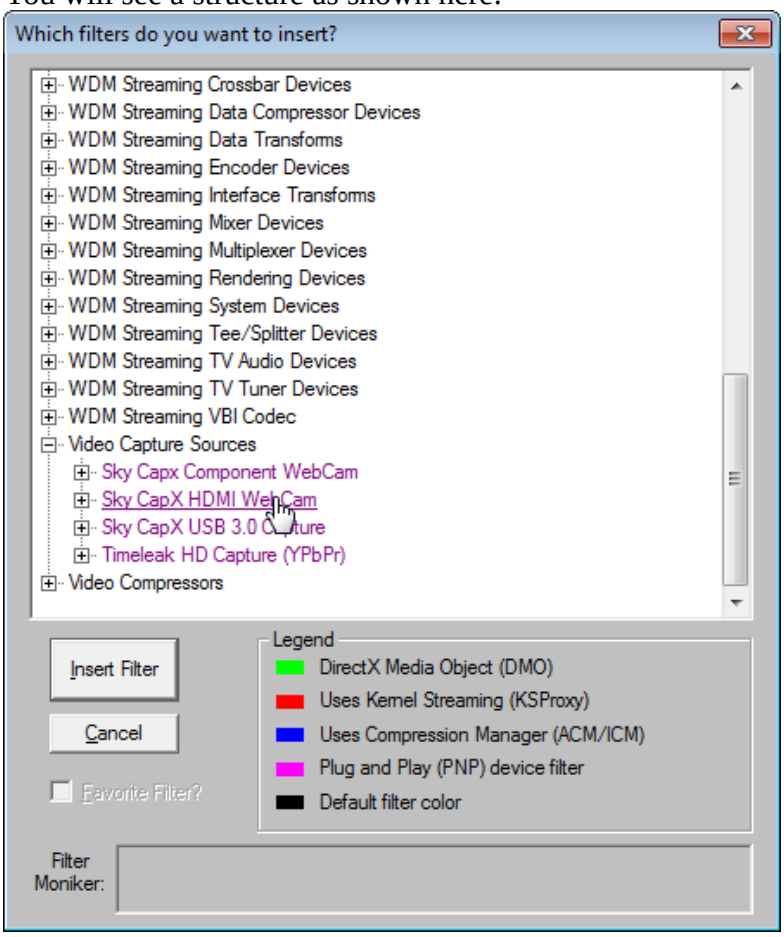
One way to verify this functionality and also perform some basic functionality tests is to use a Microsoft utility called *GraphEdit*.
You can download it from the lightweightvideo web site.

Here is a simple “walk-through”:

- Start GraphEdit
- Click on the blue rectangle

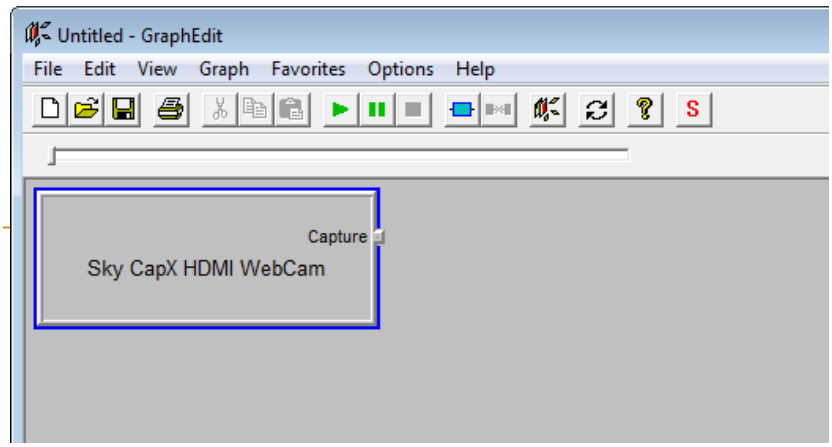


You will see a structure as shown here:

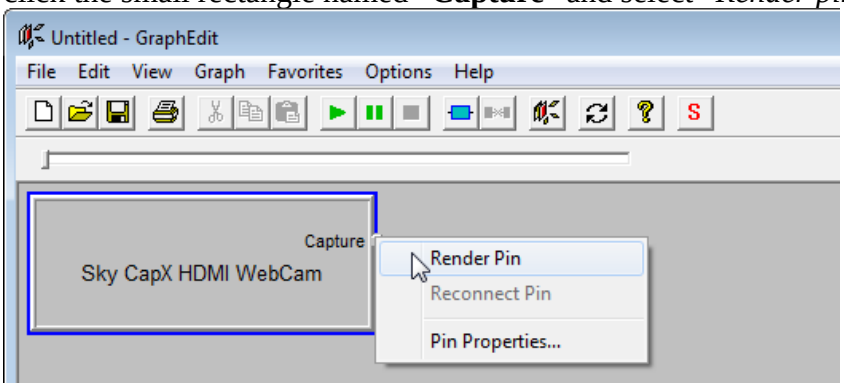


At the bottom you should see one (or more) Video Capture Sources. If you don't, something is wrong. Either the driver routine installation has failed, or there is no support for DirectShow

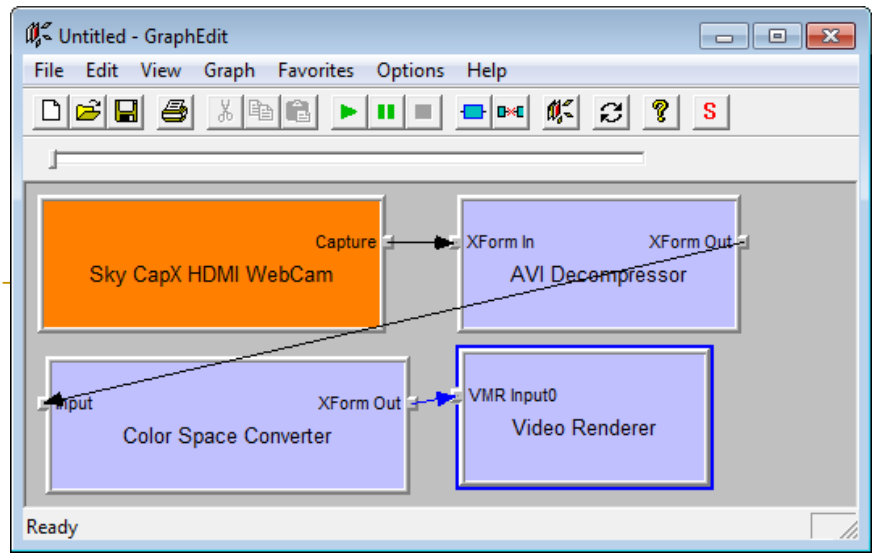
- Given that you have one or more Capture Sources, you select one. In our case, we select the one shown above (Click the **Insert Filter** button)
- Now you should see this: (GraphEdit has inserted the selected *Capture Filter and has started to construct what is called a Capture Graph)*)



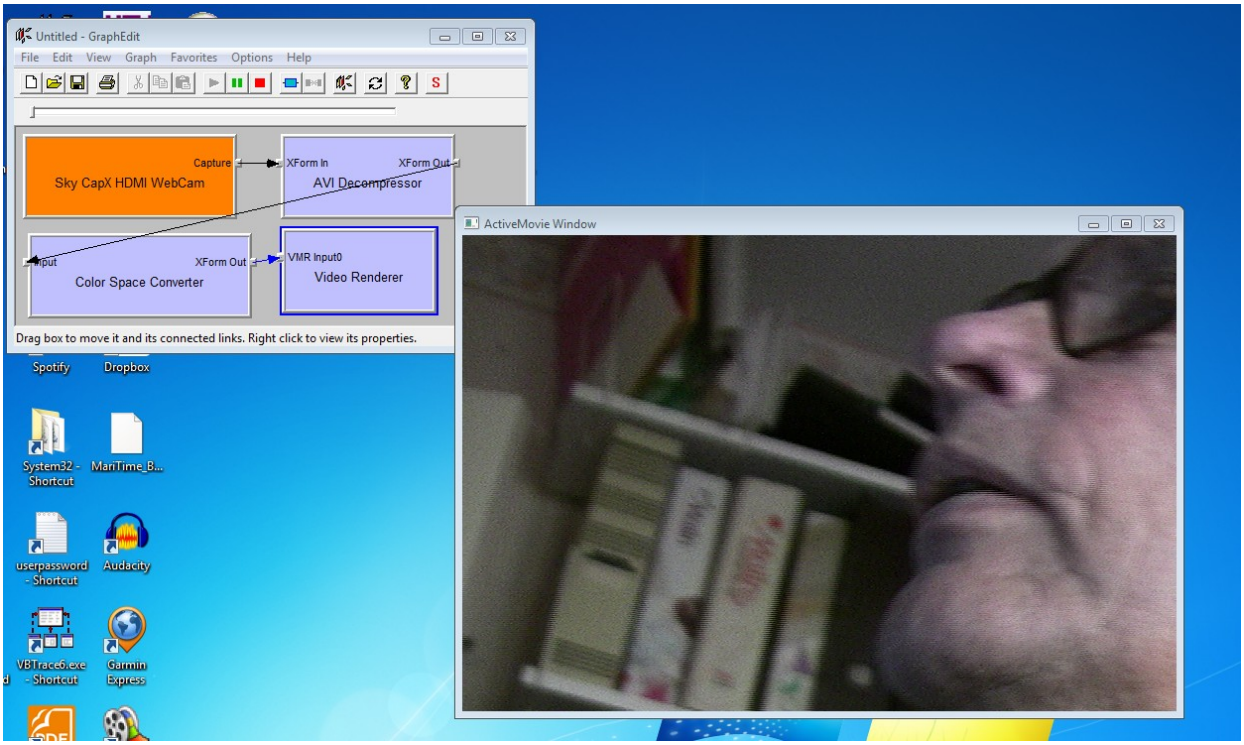
- We shall now continue building this Filter *Graph*. The simplest way in our case is to right-click the small rectangle named "**Capture**" and select "*Render pin*"



- DirectShow should now do its magic, and leave us with this:



- As a matter of fact, the Filter Graph that GraphEdit has built for us can now be test run, simply by pressing the little green arrow. You should see an "Active Movie Window" with a live image from the camera. In this case a view of yours truly...

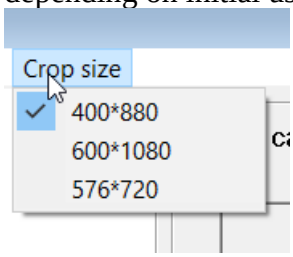


You stop the graph by clicking the red rectangle.

Selecting a Crop size

A modern HD video camera has a pixel count of 1920*1080 pixels.
The video comes un-compressed into our PC at 25 or 50 frames/second.
(Older DV/Firewire cameras on the other hand used 720*576 pixels at 25 frames/s, and the data was compressed already in the camera).
This means that CaniTime needs to perform video compression itself for the video that we use.
Using full HD video frames of data will normally be difficult for most PC:s to handle.

Therefore, the following has been implemented in the first version of CaniTime/HDMI: (*depending on user reactions, this may well change!*)
We use a non-tilted camera.
Every frame that is received from Windows (with the full pixel count of 1920*1080) is immediately cropped (reduced) to a more suitable size.
As you can see in the startup form, I have “hard-coded” some suggestions, these may be changed depending on initial user reactions/comments.



You can select any of these predefines crop sizes.
A larger cropped size will of course give a larger file size. It will also mean a higher CPU load.

DV frames when received are already compressed in the video camera.
HD/HDMI frames come fully un-compressed.
So, in order to have a reasonable file size these frames will be compressed by CaniTime/HDMI down to about 10% in size. The compression method used (Intel JPEG library) seems to do this without serious quality loss.
Especially red areas will have noticeable better quality than the old DV compression method.

Configuring the HD/HDMI camera

CaniTime uses standard “consumer”video cameras of the type called *HD/HDMI*

Illustration 25: Examples of HDcameras

HDMI out is a feature that is mandatory for using a camera with CaniTime!

Almost all HD camcorders have a HDMI port as shown here.

Through this port, the camcorder continually sends out live digital video data.

About HDMI ports:

HDMI ports come in 3 different types

To get the system to work properly, you need to have the proper HDMI cable.

In some cases you may need to use an HDMI adapter that will convert between two different types-

CaniTime is delivered with a special 10 meter with Type A connectors. I also deliver an adapter Type A → Type C adapter

About HDMI cable lengths

There is no nominal limit on the length of an HDMI cable. In practical use 10 meters seems to be problem free with CaniTime. If you want to transmit HDMI video over greater distances there are various types of HDMI extenders availible.

Camera settings

A vast majority of all HD cameras are probably used in the “full auto” mode, since this is the mode that is active if no other active choice is made.

This may be fine for most home video applications, but if you want to use your HDcamera for a special purpose like CaniTime, you can get much better results by setting up some of the camera functions manually.
Please note that these settings are done differently for different cameras.

You will need to consult the manual for your specific camera and learn how to perform these settings!

Running in “full auto” camera mode will lead to *unsatisfactory results* in when using CaniTime.

These are the settings that you need to perform:

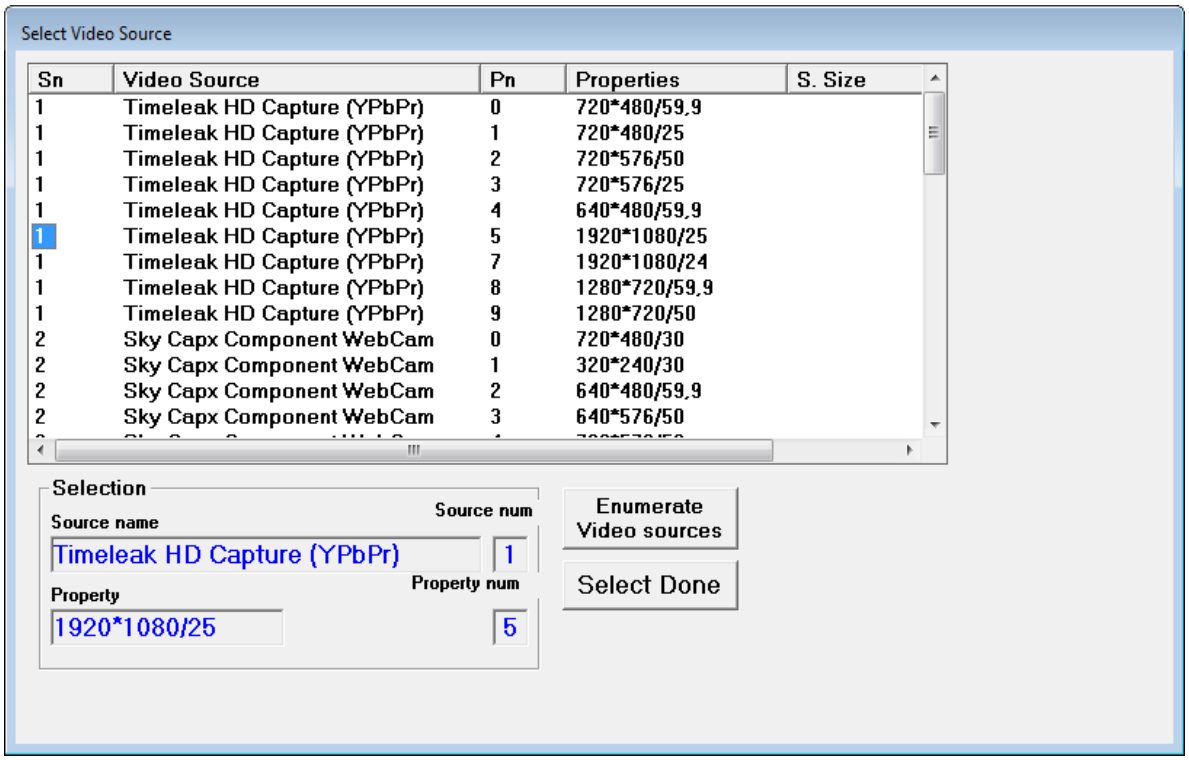
- **Turn off “demo mode”**
  Many HD consumer cameras enter a *demo mode* when left switched on for some time. This may well occur with CaniTime, since the camera will be running for hours . The demo mode can and must be disabled!
- **No auto focus**
  CaniTime works best with *manual focus* selected.
  A drop of water or a dust particle on the lens can otherwise cause the camera to start “hunting” for focus, with the picture repeatedly going in and out of focus.
- **Manual shutter**
  In auto mode, a camcorder will often use a fairly long shutter time, typically 1/25 . CaniTime works best with a short shutter time such as 1/500.
  Outside, in daylight there is normally enough light to allow the camera to use very short shutter times.
  Some cameras have a function to manually set the shutter time within a range of specific values. Other cameras only have various “modes” to chose from.
  If your camera offers different modes, you should set the camera to *sports mode* since this seems to give the shortest shutter time.
  If given a choice, go for a camera with a true function for setting the shutter time. Even some of the cheapest cameras have this feature.
- **Disable “anti shake” (optional)**
  Almost all consumer HD cameras have a function for stabilizing the picture.
  When using the camera for CaniTime it will be fixed on a tripod, and therefore you should disable the stabilizing function. In many cases this will lead to an improvement in picture quality.

Other aspects

- **Use a polarizing filter**
  CaniTime will (hopefully) be used in sunny conditions.
  This can sometimes lead to difficult light reflections.
  Using a polarized filter can remove much of this problem and improve the picture quality.

- **Arrange weather protection**
  If the camera is placed outdoors it needs protection from the elements.
  Moisture is not good for delicate electronic equipment like a video camera. A tempting solution is to wrap the camera in a simple plastic bag. While keeping the rain out, this method has a major drawback in that the camera will not be properly ventilated.
  The camera can get hot enough to cause a malfunction.
  A better method for weather protection is to arrange for a ventilated and weatherproof cover.

Select Video Source



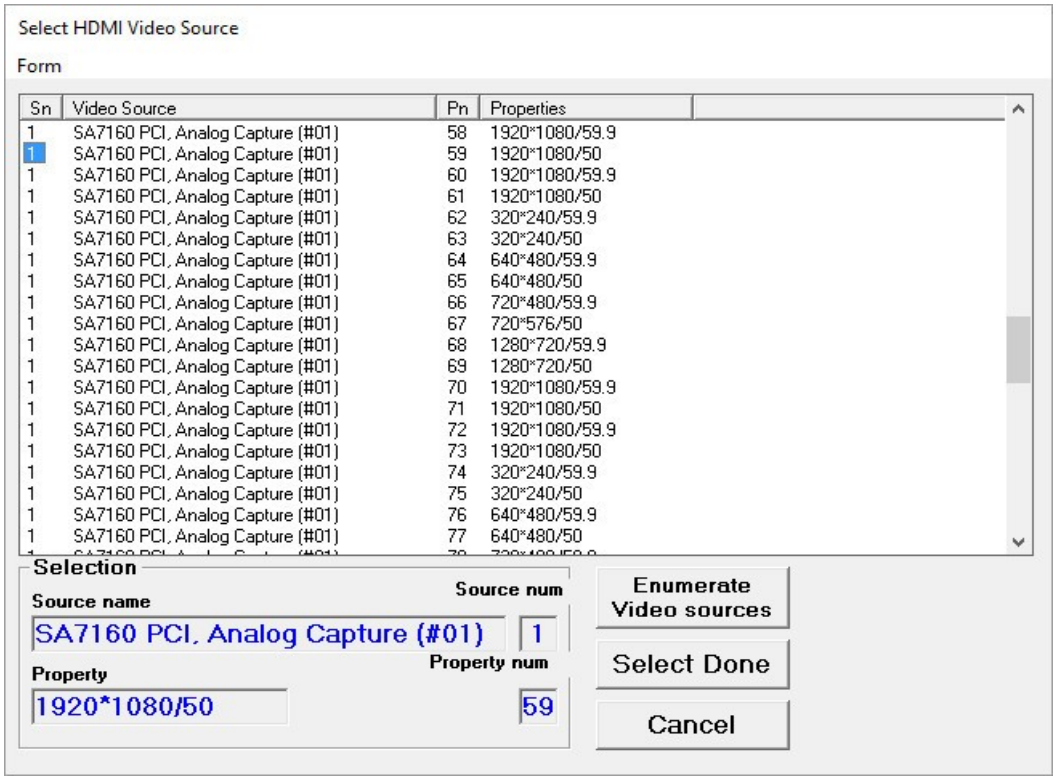
Windows contains a crucial component called ***DirectShow*** (**DS**). CaniTime will "talk" to our HD video camera through DS. Depending on the situation there can be one or more Video Sources to choose from. Perhaps your PC has in integral video camera in addition to the HDMI camera used for CaniTime.
If so, there will be 2 sources.
Each Video Source can expose one or (more often) several *Video Properties*. To make CaniTime function correctly together with you camera you must select the correct combination of source& property.
You do this selection using the form showed here.
Normally, this will only need to be done once since your selection will be stored in the CaniTime .ini-file.
The procedure (at the time of writing) is as follows

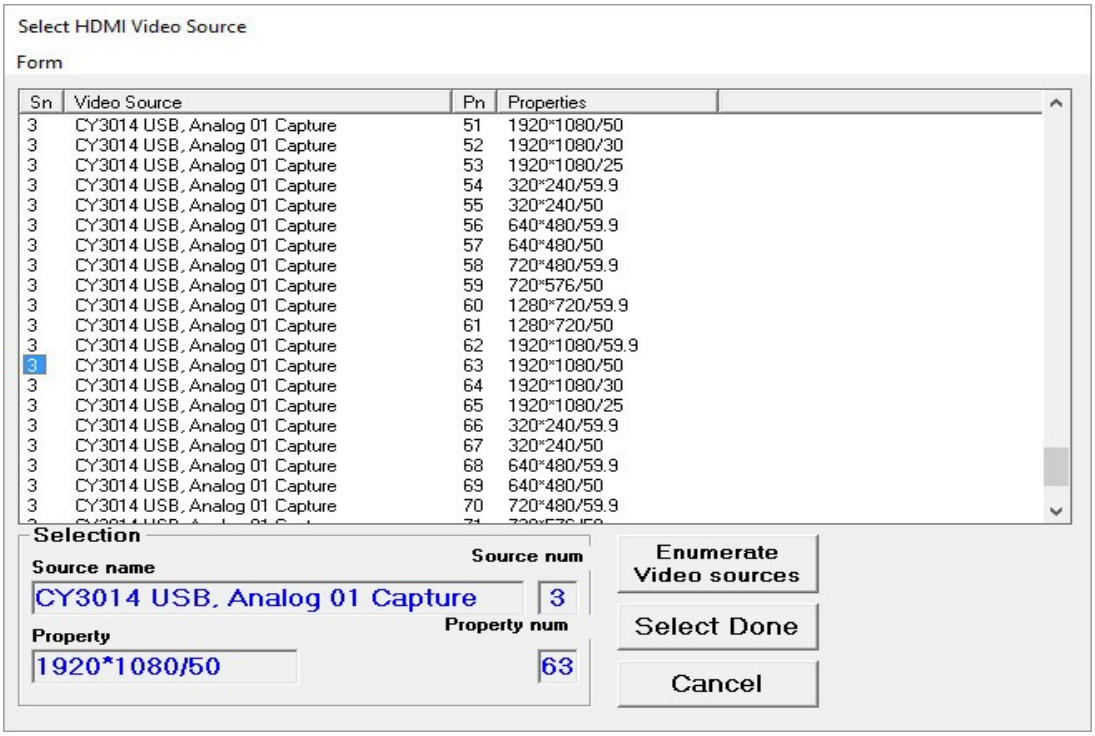
1. Click "Enumerate Video sources" (this should fill the listbox with all sources/properties)
2. Select the source/property combination that you want by clicking in the left column of your choice (see the blue marking!)
3. Click "Select Done"
4. Restart CaniTime

Which property to use?

I recommend that you set your HD camera to output 1920*1080i, and that you also select 1920*1080 as property in CaniTime. In reality it does not seem to be of any significance what

frame rate (24/25/59,9) you select in properties.
It is still the actual frame rate output of the camera that will govern!
Here are some examples of source/properties for equipment that I have tested:



- 

Installing CaniTime

CaniTime is delivered as a single .exe file that functions as a *self-contained installer*.

Just start the .exe file, and if you don't have very specific reason for doing otherwise, accept the default proposals of the installer.

CaniTime updates

Sometimes there is a need for a version update.
Such an update may not be delivered as a complete installation file, but just as a CaniTime .exe file. In such a case you just place the updated .exe in the same folder as the original version. The .exe files will have different file names, so they can “co-exist” peacefully in the same folder!

CaniTime and Windows versions

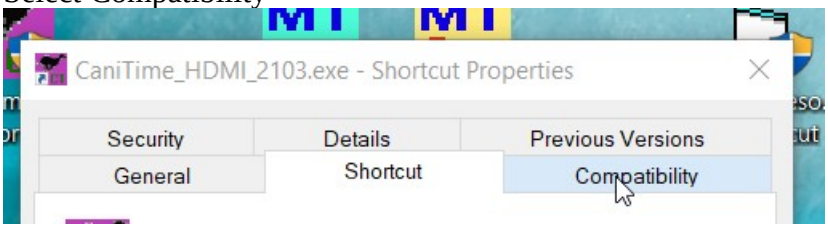
With the newer windows versions (notably Windows 10) a problem has been noticed that manifests itself so that the CaniTime form seems to stretch outside of the physical screen.

This problem is not unknown among Windows developers and has to do with a phenomenon called "*DPI awareness*".

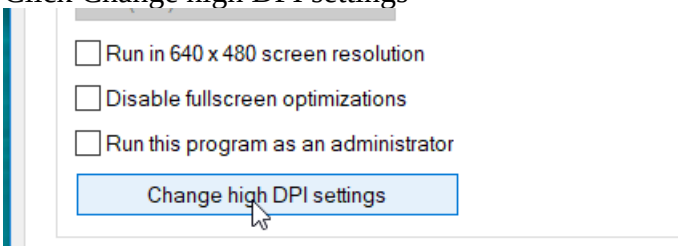
I will not go deeper into expaining the roots of the problem.
Instead, I will skip directly to the solution.

In case you fell that you are subjected to this problem, do the following:

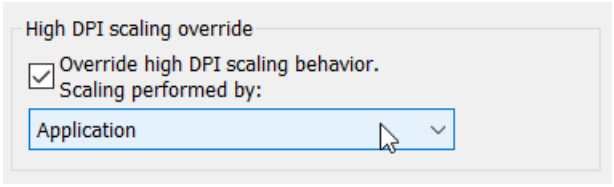
- Right-click on tne icon of the CaniTime .exe and select Properties
- Select Compatibility



- Click Change high DPI settings

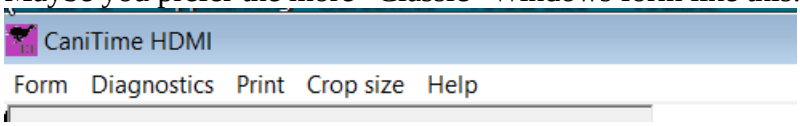


- Select Override by Application as shown below
-

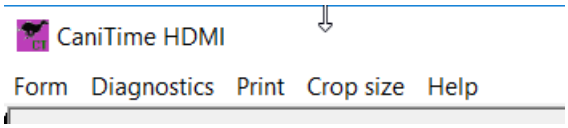


Another issue:

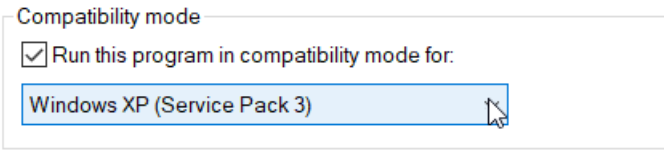
Maybe you prefer the more “Classic” Windows form like this:



Instead of this:



If so, you can select Compatibility like this:



Where is “User Appdata”?

The program stores various data including the .ini file in a folder that Windows calls “***User AppData***”.
Sometimes it can be a little difficult to find this folder.
Therefore there is a shortcut that you can use.
Look at the **Help/About** form as shown here:

At the bottom you can see the actual path to this folder.
And, if you click the blue text , it functions as a link, and the folder will be opened automatically!