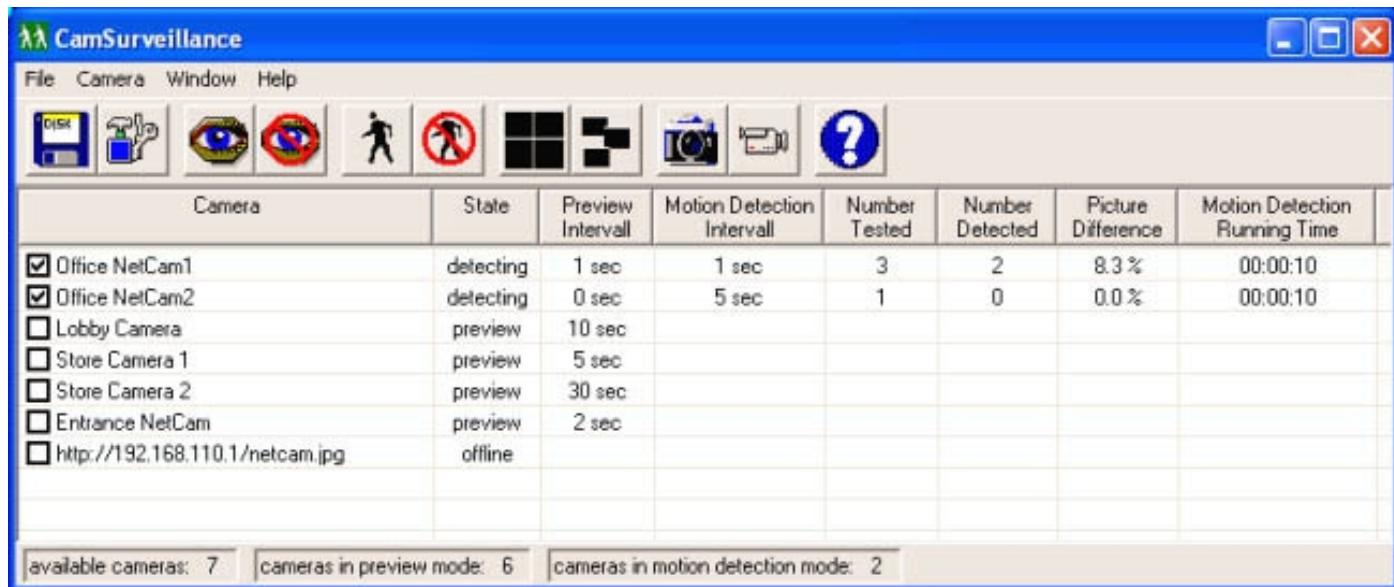


# CamSurveillance

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## Manual



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## Part 1: General Remarks

CamSurveillance needs for the working with the network cameras their IP addresses. From these IP address the program receives the current camera picture. The picture receiving is done by a separate started thread. If a picture was correct received and the motion detection is activated, then a further thread is started for comparing the pictures and determine the difference. If the receiving interval is shorter than the motion detecting interval, the receiving interval is reduced to the motion detecting interval while motion detection is running. This is necessary, because the program needs a new picture before it can start the difference checking. So if the receiving and testing intervals are very short, there are always 2 threads per camera running. Remember this if your PC is using a lot of % CPU for the CamSurveillance.

If you are receiving more pictures as your camera is able to generate ( the receiving interval is 1 sec, but your camera captures pictures only every 3 sec ) you receive often the same picture twice. So it makes no sense to receive more pictures as there are new ones available.

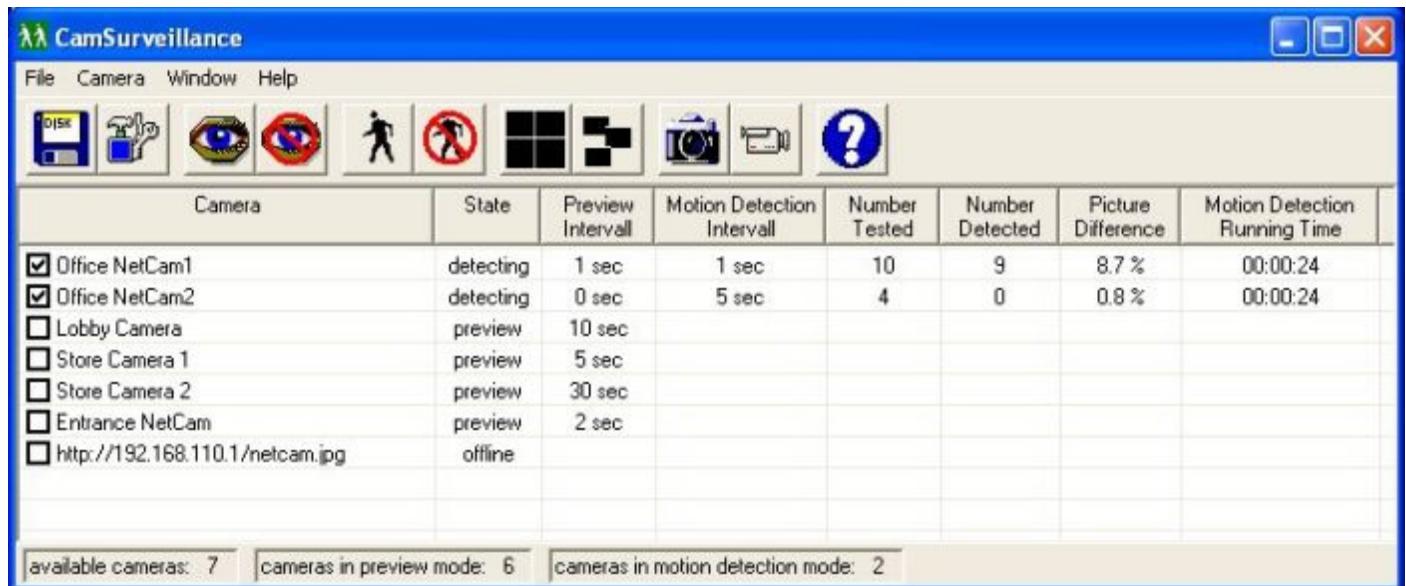
The needed picture format is JPG. So please adjust the camera that it generates only JPG pictures. The resolution is not important, but remember if the program receives a picture which has 640x480 pixels, it must transfer much more pixels as if the picture would have only 320x240 pixels. And the program has to test 4 times the amount of pixels while the intern difference test.

The program can display the video in the video window in different formats. 24 bit color ( only if a colored picture was received ), 8 bit greyscale, 4 bit greyscale, 1 bit greyscale. The intern picture format is always after receiving 24 bit. So it costs no performance to display the video in 24 bit. The reduction into 8,4,1 bit greyscale costs a little bit CPU and is only important for viewing the video in the testing format. While motion detection is running the program can change the received picture format from 24 bit ( which is the default format after receiving ) into 8,4,1 bit greyscale before the intern testing routine starts. The reduction into greyscale costs a little bit CPU, but the testing routine works 3 times faster as if you use 24 bit for the intern format. If you have an up to date CPU it makes no noticeable difference which format you use. The main reason for using a greyscale format for the intern testing routine is, to reduce the influence of brightness in the video picture on the result of the picture difference testing. Try the different intern picture formats and see how the picture differences changes.

All digital cameras generates different pictures from the same situation also if there are no changes. If you align your camera to view on a wall where nothing is moving and let the motion detection run, you get little picture differences, because the generated pictures are different. This happens on the way from the analog world into the digital picture from your camera. To see these differences ( not only these, but all differences ) you can select in the program to show you the different pixels in the video window. This is a good way to see how good or bad your camera works. To reduce this differences which are in reality not existing, you have to adjust the pixel difference value. Try the different intern picture formats with different pixel difference values to find the best solution for your camera and situation.

## Part 2: Application Window

### Application Window



### Buttons



saves all camera settings (CAMERA.DAT) and the program settings (CAMSUR.CFG)



opens the program settings dialog



starts the preview mode for all cameras



stops the preview mode for all cameras



starts the motion detection mode for all cameras, you must have selected the testing picture area first.



stops the motion detection mode for all cameras, if the preview mode was active at motion detection start, the camera returns into the preview mode, if not the camera gets offline



combines the video windows from all cameras which are in preview mode like the settings from the program settings dialog ( also use F5 )



releases the video windows to their positions before the combination ( also use F6 )



takes a picture from the selected camera



record a video from the selected camera



goes to the manual webpage

### Cameralist Columns

Camera	the camera name or the URL, click into the checkbox to start or stop the motion detection
State	<p><i>offline</i> - the camera is not working, no pictures are receiving and no motion detection is running</p> <p><i>preview</i> - the camera receives pictures for the video window</p> <p><i>detecting</i> - the motion detection is running and pictures are receiving</p> <p><i>waiting-offline</i> - the motion detection is waiting ( because the time interval is not valid ). This state becomes active, if you start the motion detection from a camera which is offline and the time interval is not valid. The waiting state costs no CPU and no network bandwidth.</p> <p><i>waiting-preview</i> - the motion detection is waiting and pictures are receiving. This state becomes active, if you start the motion detection from a camera which is in preview mode and the time interval is not valid</p>

Preview Interval	the picture receiving interval
Motion Detection Interval	the motion detecting interval
Number Tested	How often the program has tested for motion since the last motion detection start
Number Detected	how often the program has detected a motion since the last motion detection start
Picture Difference	the last picture difference
Motion Detection Running Time	the motion detection running time, ( d hh:mm:ss )

## Used Keys

F2 - starts the preview mode of the selected camera

F3 - stops the preview mode of the selected camera

F5 - combines the video windows from all cameras which are in preview mode like the settings from the program settings dialog

F6 - releases the video windows to their positions before the combination

F7 - starts recording a video from the selected camera

F8 - stops recording the video from the selected camera

## Mouse Buttons

Click left into the video window to show or hide the window caption.

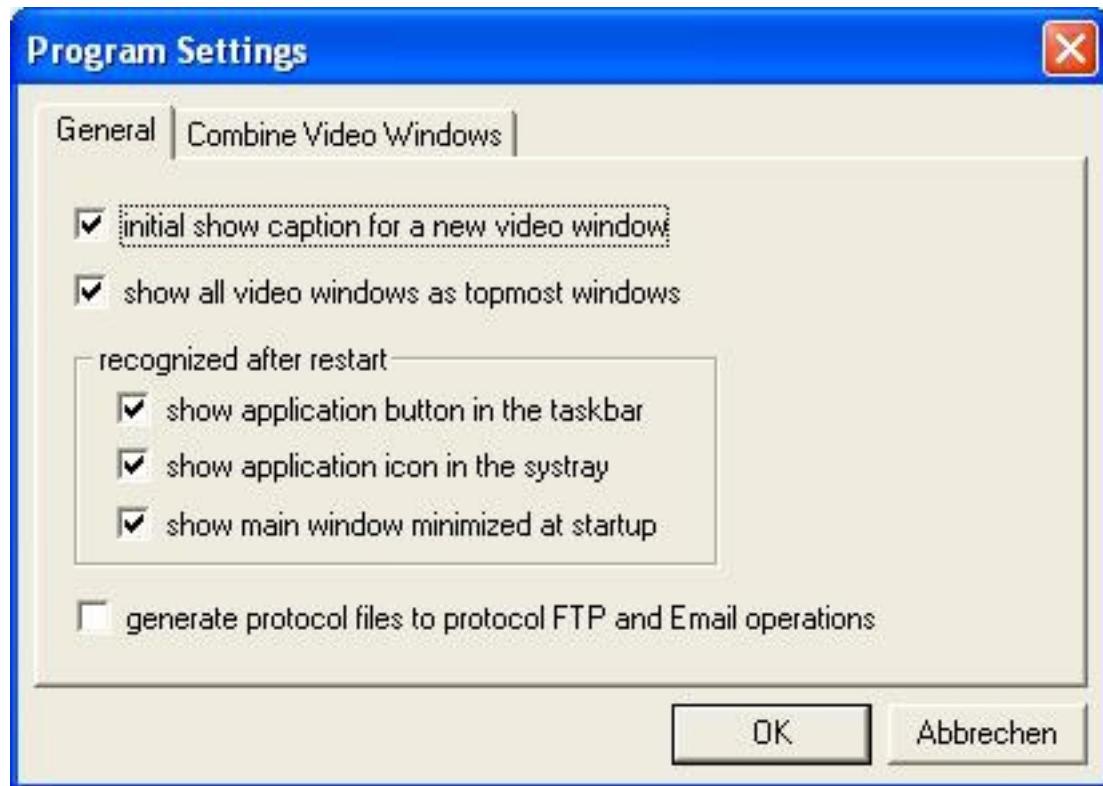
Let the left mousebutton down to move the video window.

Press the right mousebutton down to start drawing a zoom area rectangle.

Release the right mousebutton to zoom into the selected zoom area.

## Part 3: Program Settings

### General



**initial show caption for a new video window** - if you add a new camera, the video window could initial have a caption or not ( you can always show or hide the caption if you left click into the video window )

**show all video windows as topmost windows** - all displayed video windows becomes a topmost window or not

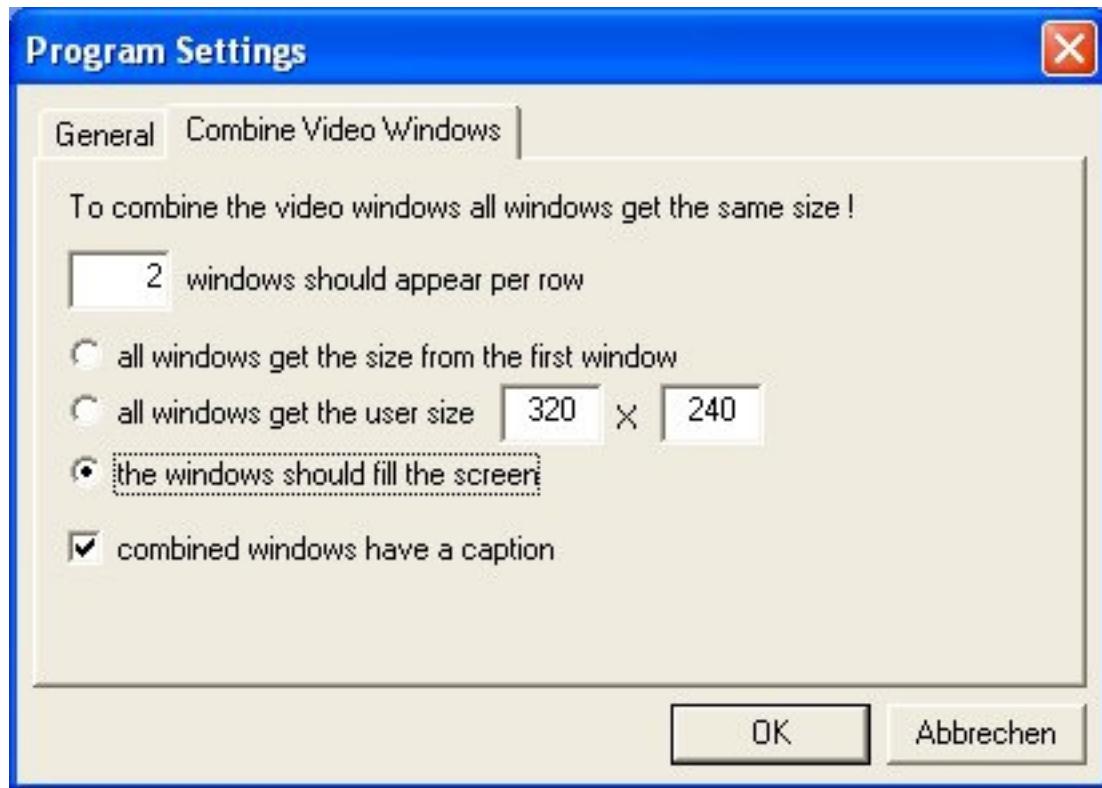
**show application button in the taskbar** - shows or hides the CamSurveillance application window in the taskbar

**show application icon in the systray** - shows or hides the CamSurveillance icon in the systray

**show main window minimized at startup** - minimizes the main window at startup

**generate protocol files to protocol FTP and Email operations** - if you have selected FTP transfer or Email sending at motion detection, you can select if protocol files should be created. While the FTP transfer the file **FTP\_PROTOCOL.TXT** and while the Email sending the file **EMAIL\_PROTOCOL.TXT** are created. Select this option for the first time you use FTP and Email to see if there are problems. If everything works all right you should disable this option.

## Combine Video Windows



While the combination is active, all video windows are positioned beginning from the upper left desktop corner. The previous size and position is saved and restored if you release the combination. You can use F5 to combine the windows and F6 to release them.

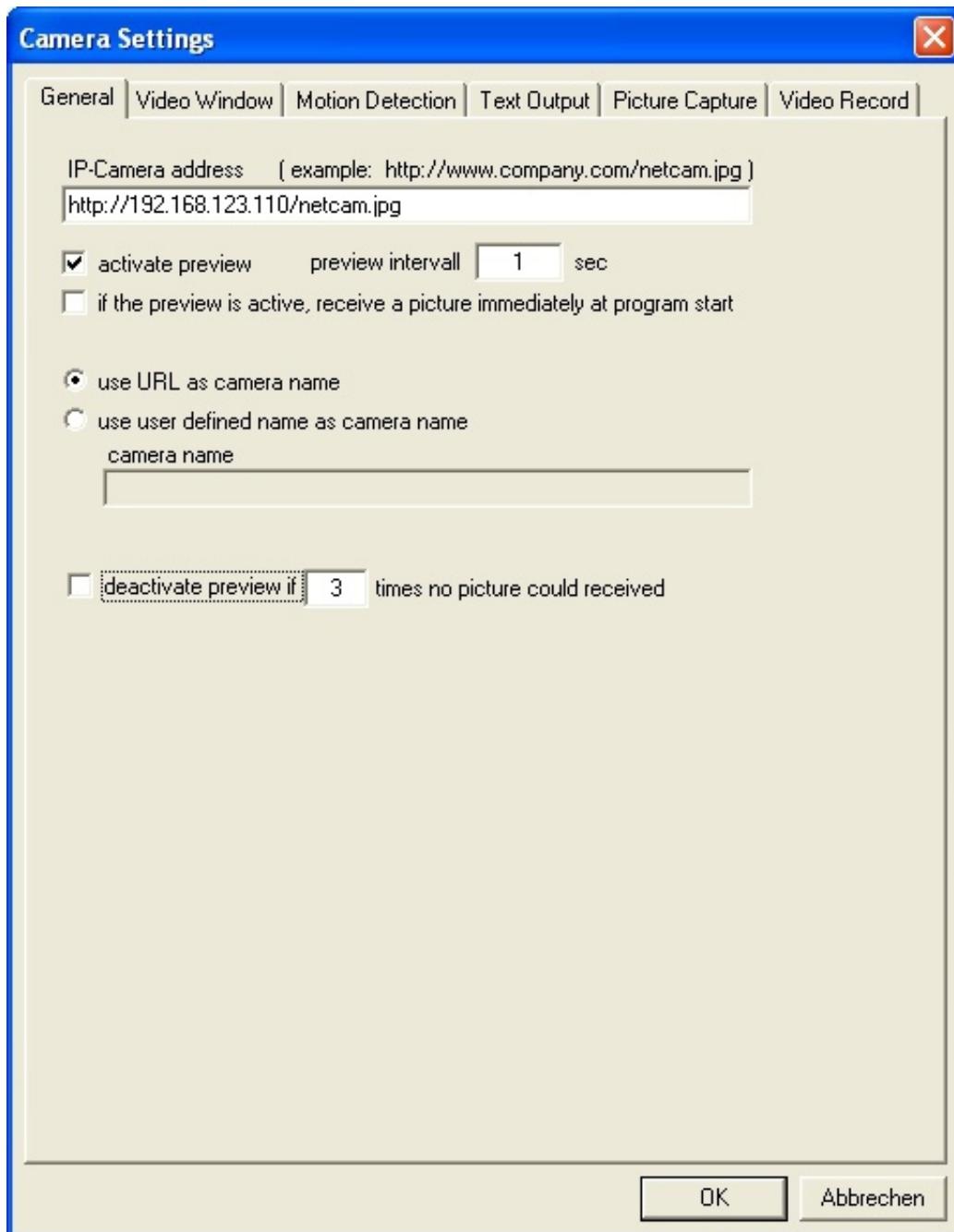
**x windows should appear per row** - how many video windows do you want per row if they are combined  
all windows get the size from the first window - if the windows are combined, the size from the first video window is used for all other windows while combined

**all windows get the user size** - if the windows are combined all windows get the selected user size while combined  
the windows should fill the screen - the windows are resized in such a way, that they fill the screen while combined ( so you have a video monitor from a doorman )

**combined windows have a caption** - while the windows are combined, they could have a caption to see the camera name or not

## Part 4: Camera Settings

### General



**IP-Camera address** - input the IP address of the camera including the picture name (the picture must be in JPG format)

**activate preview** - activate the preview to show the video window on the desktop. If the preview is activated the program receives pictures from the camera address and the state changes from offline into preview. An offline camera costs no CPU. If the camera is offline, it will be activated automatic at motion detection start.

preview interval - select the interval in sec in which the program receives pictures from the camera address. At motion detection start, the preview interval becomes the value from the motion detection interval, if the motion detection interval is shorter.

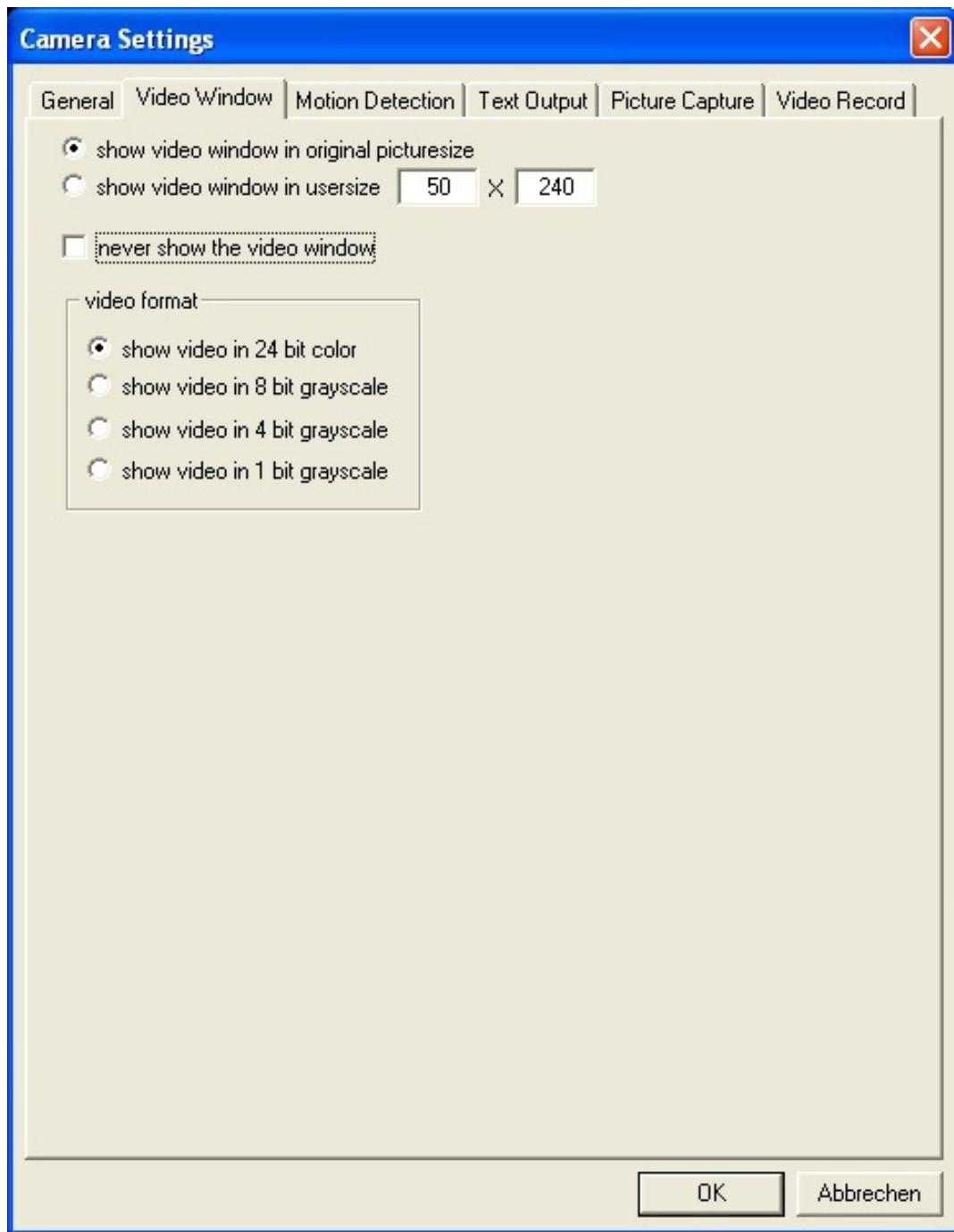
**if the preview is active ...** - select this option to get at program start the first preview picture, no matter which interval you have selected

**use URL as camera name** - displays the URL within the main window camera list as the camera name

**use user defined name as camera name** - displays the usertext as the camera name

**deactivate preview if X times no picture could received** - if X times no picture could be received, the program stops the preview and motion detection mode for this camera. This is useful to save performance by not receiving pictures from an offline LAN or Internet camera.

## Video Window



**show video window in original picturesize** - uses the original camera picture resolution for the video window

**show video window in usersize** - input the width and height for the video window

**never show the video window** - hides the video window all the time, not only if preview is offline

**show video in 24 bit color** - the video picture has a 24 bit pixeldepth. If the camera picture is colored the video picture is colored too.

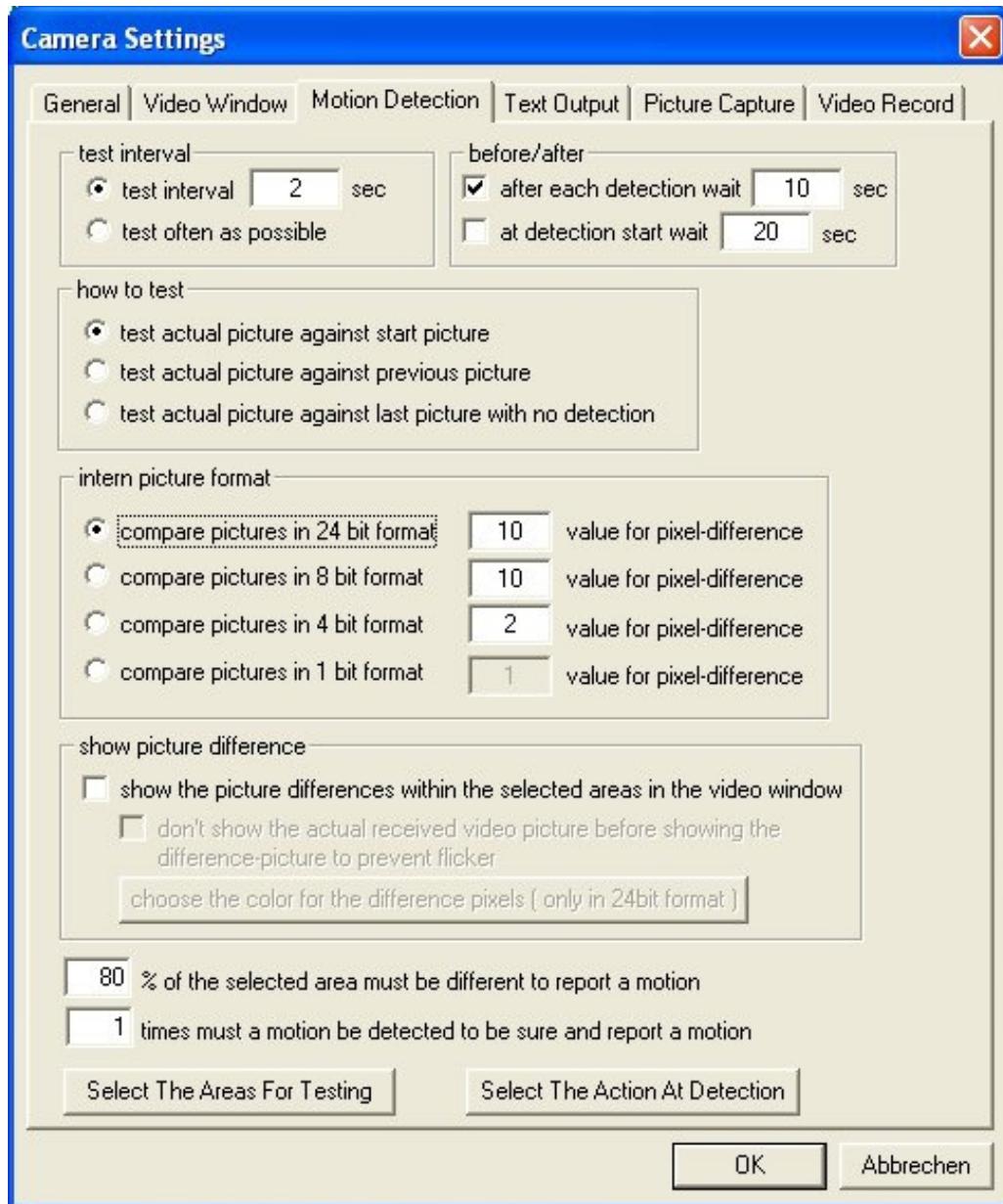
**show video in 8 bit grayscale** - the video picture has a 8 bit pixeldepth. The video picture contains 256 gray scale.

**show video in 4 bit grayscale** - the video picture has a 4 bit pixeldepth. The video picture contains 16 gray scale.

**show video in 1 bit grayscale** - the video picture has a 1 bit pixeldepth. The video picture contains only the colors black and white.

Use these settings if you want to see the video in the format, which you have selected for the intern motion detection test routine.

## Motion Detection



**test interval X sec** - select the interval in which the motion detector tests for motion. If this interval is shorter than the preview interval, the preview interval would be reduced to this value.

**test often as possible** - depending on your hardware, the test for motion happens often as possible

**after each detection wait X sec** - if selected, after a motion was detected the program waits X sec. before it tests again

**at detection start wait** - if selected, at start of the motion detector, X sec. are waited before the first test

**test current picture against start picture** - the current picture would be compared to the picture at motion detection start. This is useful if nothing changes within the observed scene.

**test current picture against previous picture** - the current picture would be compared to the previous picture. This is useful if something changes the observed scene, but this should not result in a detection. By example if the sun is going down or up, the whole scene changes in a room with windows, but in such a slow way, that this should not result in a detection. The picture difference is then always a little value ( maybe 2% ).

**test current picture against last picture with no detection** - the current picture would be compared to the last picture with no detection. This is useful if you only want 1 detection if there comes something into the scene and then leaves the scene. If there is nothing in front of your camera and you step into the picture, you get one detection. If you leave the picture you get no additional detection, because the program tests against the last picture without a detection and this was the picture before you step into the scene. In the mode test current picture against previous picture you get 2 detections in this example.! First for stepping into the picture and second for leaving the picture.

**compare pictures in 24 bit format** - after receiving the pictures are in 24 bit format by default, no matter what format the camera has. So there is no format change before the testing starts. For each pixel, 3 bytes must be compared.

**compare pictures in 8 bit format** - before the testing starts, the picture is transformed into 8 bit gray scale. So the influence of lighting could be reduced and the testing routine runs 3 times faster as in 24 bit format.

**compare pictures in 4 bit format** - before the testing starts, the picture is transformed into 4 bit gray scale. So the influence of lighting could be reduced and the testing routine runs 3 times faster as in 24 bit format.

**compare pictures in 1 bit format** - before the testing starts, the picture is transformed into 1 bit gray scale. So the influence of lighting could be reduced and the testing routine runs 3 times faster as in 24 bit format.

Please try the different intern formate and see what works best for your camera and situation.

For the first 3 intern formate you have to *select a value for the pixel-difference*. This pixel difference value determines if two pixels are different or not. If the 2 compared pixels have a difference of 12 and the difference value is 10, then the pixels are different and counted to the sum of different pixels. If the difference is 8 the pixels are not counted, they are equal. With this value you can adjust the difference for two compared pictures. If your camera creates big differences in captured pictures, even if there are no changes or only little changes resulting from sunlight, you have to increase the difference value. If you increase this value you reduce the % of difference of the two compared pictures. It's important to filter out unimportant things from the pictures which influences the result of the comparsion. Please adjust this value carefully to have a good initial state for the motion detection.

**show the picture differences within the selected areas in the video window** - this is useful to see all different pixels live in the video window. Select this mode to adjust the pixel difference value.

**don't show the current received picture ...** - to avoid that the current received picture is displayed before the picture difference is calculated and displayed, select this option

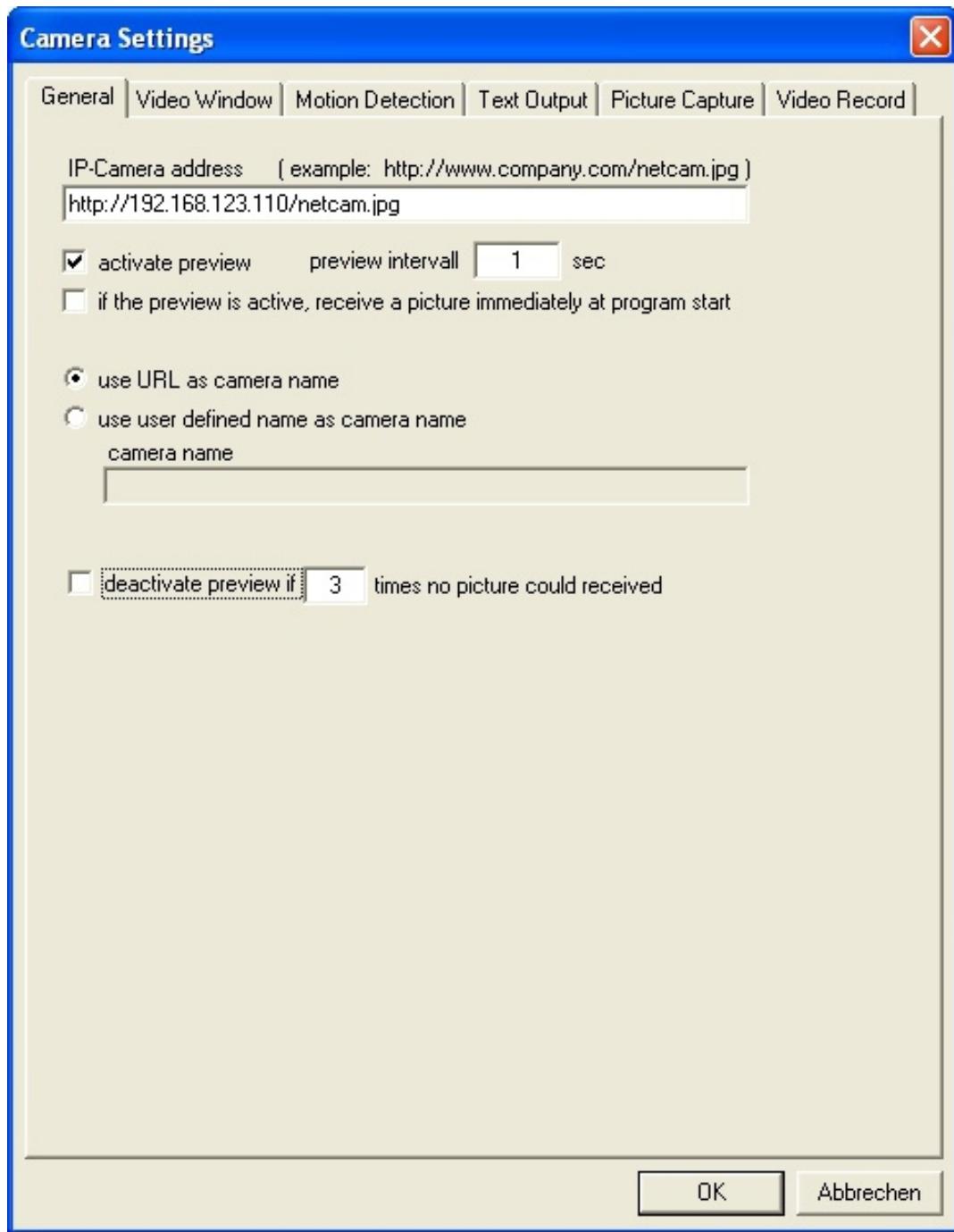
**choose the color for the ...** - select the color in which the different pixels are painted within the video window ( works only in 24 bit mode )

**X % of the selected area must be different to report a motion** - select how many ( in % ) of the selected areas must be different between the two compared pictures to report a motion. You can use this value to get always ( in your motion detection interval ) a motion and the selected action at detection, if you set this value to 0 %. So you have a FTP transfer, email sending or picture taking etc. in intervals, independent if there is a motion in the picture or not.

**X times must a motion be detected to be sure and report a motion** - you can use this setting to get a motion report only if there are some motions direct consecutively.

See [Additional Motion Detection Settings](#)

## Text Output



**output into video window** - select if the text output should be printed into the video window

**output into capture picture** - select if the text output should be printed into the captured picture. This option influences the capture picture selection from the action at detection and the picture capture form the main window by button press.

**user text** - input a text which should be printed

**output text** - select if and where you want the user text be printed

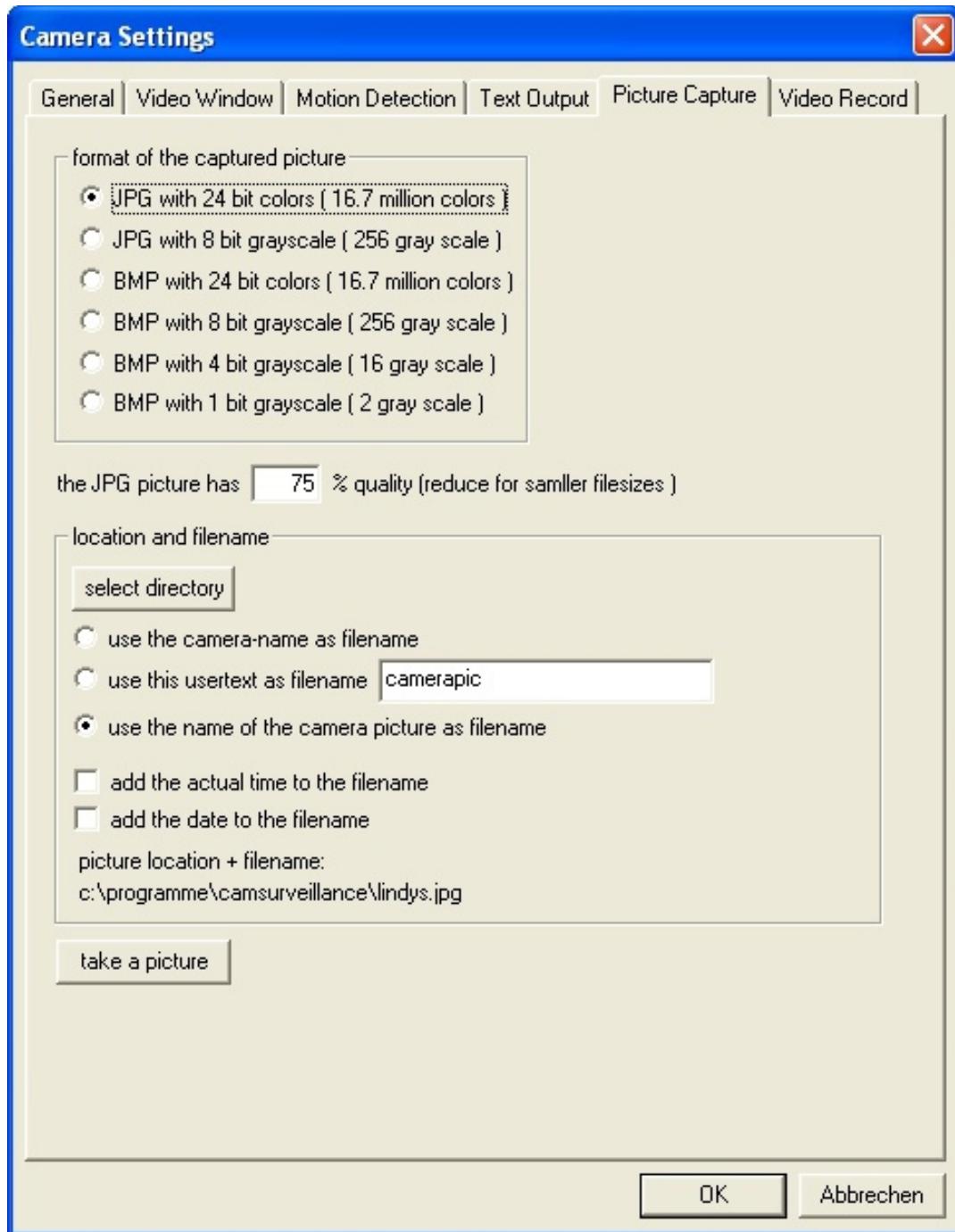
**output time** - select if and where and in which format you want the current time be printed

**output date** - select if and where and in which format you want the current date be printed

Choose the text color and the background color for all text outputs.

**transparent text** - select if you want the text without a background color or not

## Picture Capture



Select the output format for the captured pictures. This option influences the capture picture selection from the action at detection and the picture capture from the main window by button press.

You can choose **JPG** or **BMP** as the output format. For the JPG pictures you have to select the **quality**. 10% quality results in small filesizes and bad picture qualities.

The following settings are only for the picture capture from the main window by button press.!

**select directory** - choose the directory in which the pictures should be stored

**use the camera-name as filename** - the name of the camera ( URL or a real name from the General settings ) is used for the picturefilename

**use this usertext as filename** - input a picturefilename

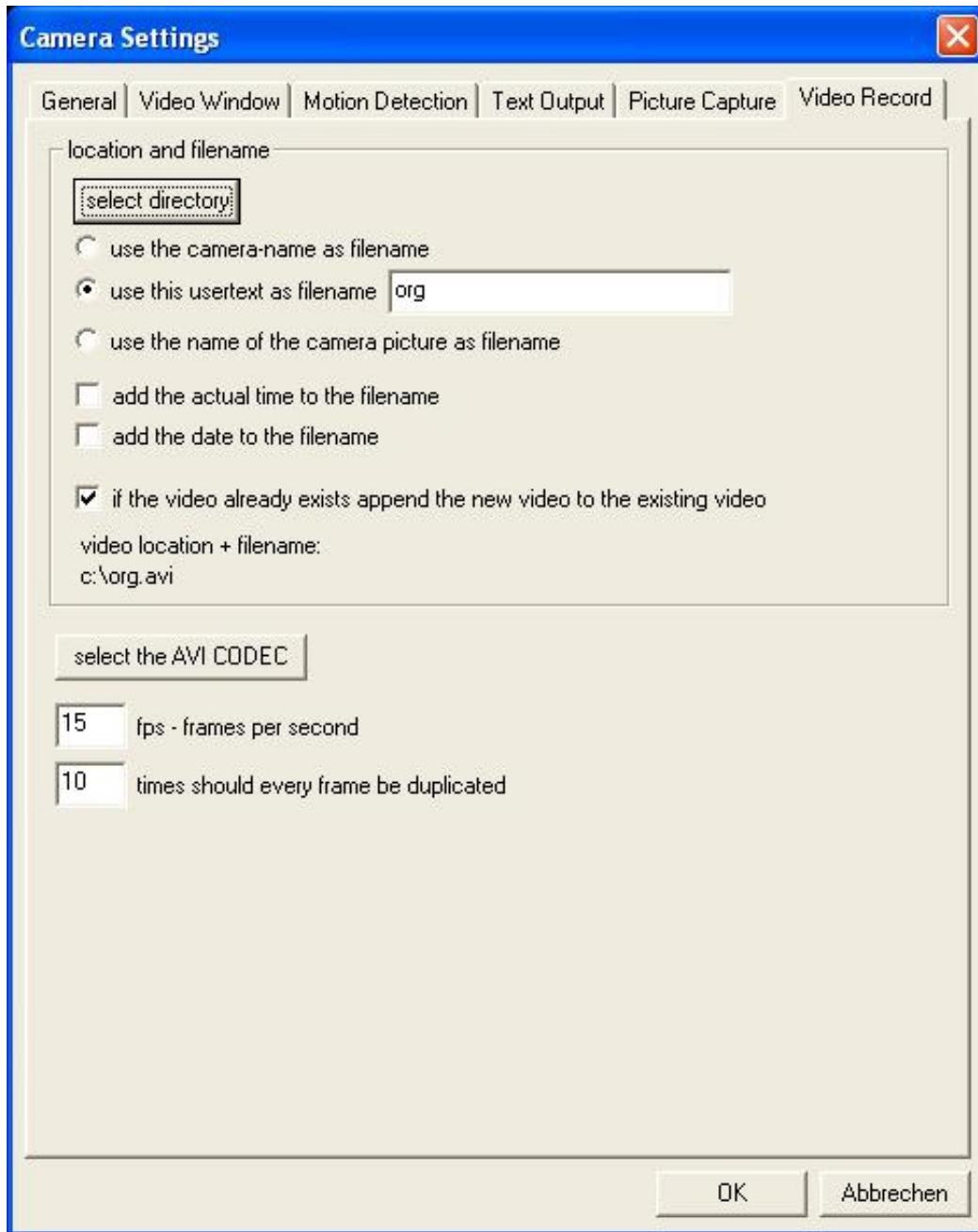
**use the name of the camera picture as filename** - the picture name from the netcam is used for the picturefilename

**add the current time to the filename** - adds the current time to the picturefilename

**add the current date to the filename** - adds the current date to the picturefilename

With **take a picture** you can create a picture ( only if preview is running and a picture is received ) on your harddisk to verify the settings

## Video Record



Select the output format for the recorded videos.

The following settings are only for the video recording from the main window by button press.!

**select directory** - choose the directory in which the videos should be stored

**use the camera-name as filename** - the name of the camera ( URL or a real name from the General settings ) is used for the videofilename

**use this usertext as filename** - input a videofilename

**use the name of the camera picture as filename** - the picture name from the netcam is used for the videofilename  
**add the current time to the filename** - adds the current time to the videofilename  
**add the current date to the filename** - adds the current date to the videofilename

**if the video already exists append the new video ...-** select if you want to append the new recorded video to an already existing video. So you get only one video for several recordings. You can let several NetCams to record into the same video file, but only one NetCam has the focus at one time. If one camera starts recording, the next camera could only record into the same video file, if the first camera has finished recording. So you can select if you want several videos for each NetCam, one video for each NetCam, or one video for all NetCams.

**Please** try the append functionality first. We have tested with several codecs, where some doesn't work well. If you use the append option, there are two different ways the program works. 1. You select no codec, just record the uncompressed video. This has the advantage, that the video record starts immediately, the frames could be appended directly and you get the best quality. The disadvantage is a huge video file. 2. You select a codec. Appending frames to an existing compressed video is not possible. To append additional frames to an existing compressed video, the whole video is read and written again to append the new frames. The existing frames are compressed again. The advantage is a small video file. The disadvantages are, that the record starts not immediately, because all frames must be read and written before and that the quality is reduced. Please try some different codecs to see where you get the best quality after recompressing. Some codecs like DIVX reduces the quality very much after recompression.

The following options influences the videos which are recorded while motion detection works and the videos which are recorded from the main window by button press.

**select the AVI CODEC** - before you record the first video you should select the used codec.

The selectable codecs are the ones which you have installed into your Windows system. The selected codec is used for all recorded videos for ALL cameras.!

**fps - frames per second** - select of how many frames per second your AVI should exist.

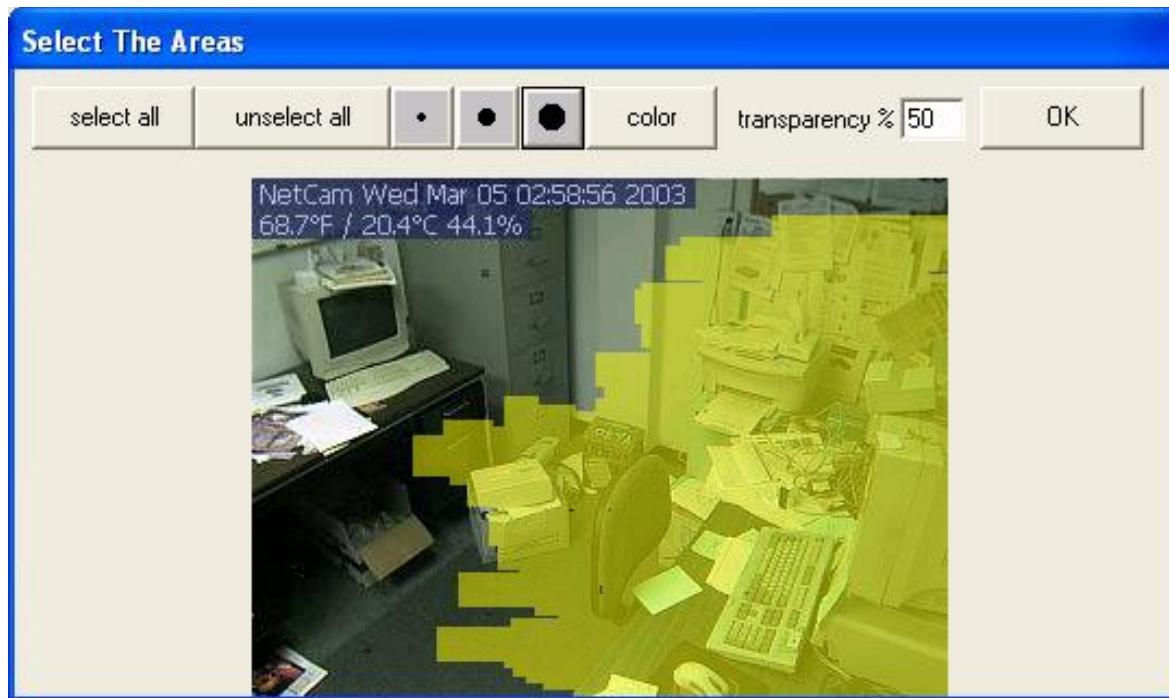
**times should every frame be duplicated** - select how often a recorded picture should be shown while watching the video

#### **Remarks:**

In general you can't receive 15 or more pictures per second from your netcam. Let us assume you could receive 15 pictures per second, you could select 15 for the fps setting and 1 for the duplicated setting. Then you have an AVI with 15 frames per second where each frame is a different picture. The AVI runs as fast as it was recorded. It runs in realtime. But if you can't receive so many pictures you have to select a duplicated value, that the AVI is not running very very fast. Let's assume that you receive every second a picture. 1 picture per second and you select 15 for the fps setting and 1 for the duplicated setting. Then you have an AVI with 15 frames per second where every picture is different. The AVI plays with 15 frames per second, so it shows in 1 second, what you have received within 15 seconds.! It's runs 15 times faster as realtime. So you have to select a duplicated value of 15 to show every frame for a longer time (or you can say, every picture is shown several times). Play a bit around with these two values to find the best for your netcam and AVI.

## Part 5: Motion Detection Settings

### Select The Areas For Testing



Select the areas from the picture which should be compared. Only the pixels within these areas are compared. If you get a picture difference of 50 %, then 50 % of these areas are different, not 50 % of the whole picture ( only if you have selected all ).

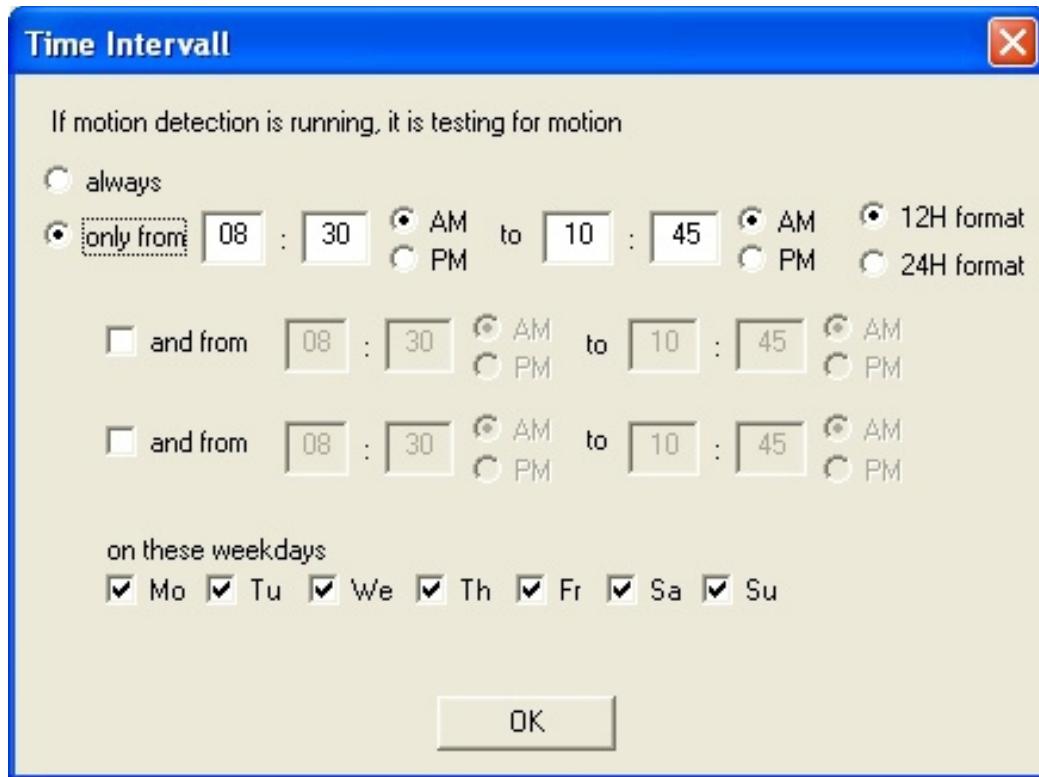
**select all** - select the whole picture as testing area

**unselect all** - unselect the whole picture

**color** - select the brush color for painting

**transparency** - select the transparency value of the brush

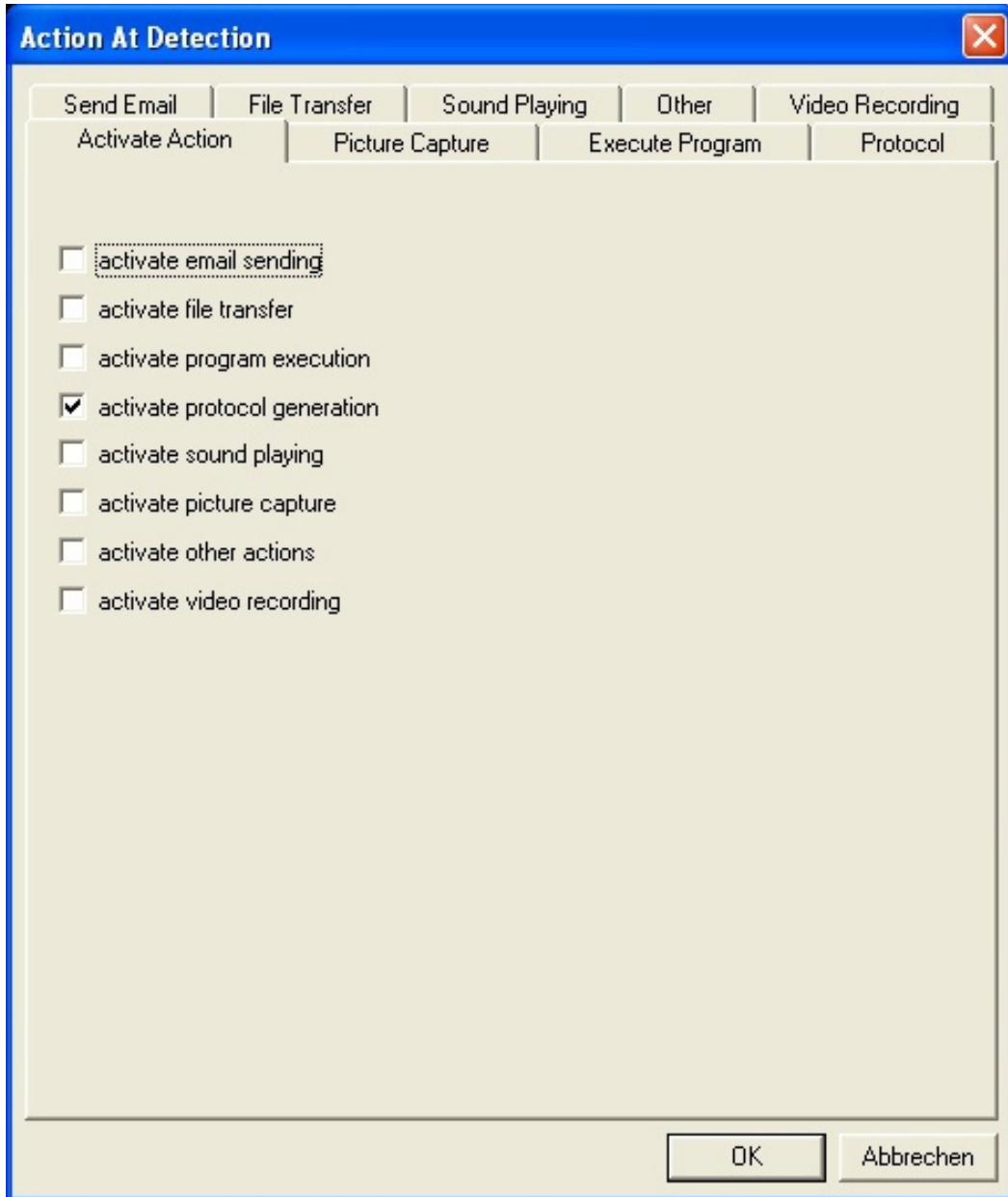
### Set The Active Time Interval



If motion detection is running, the program tests for motion only within this selected time interval. You can select 3 time zones and the weekday or always.

If you select from 08:30 to 10:45 the valid time interval goes from 08:30:00 to 10:45:59.!

## Select The Action At Detection



### Activate Action

**activate email sending** - select if an email should be sended at detection of motion

**activate file transfer** - select if files should be transferred to a FTP server at detection of motion

**activate program executing** - select if a program should be executed at detection of motion

**activate protocol generation** - select if a protocol file should be created at detection of motion

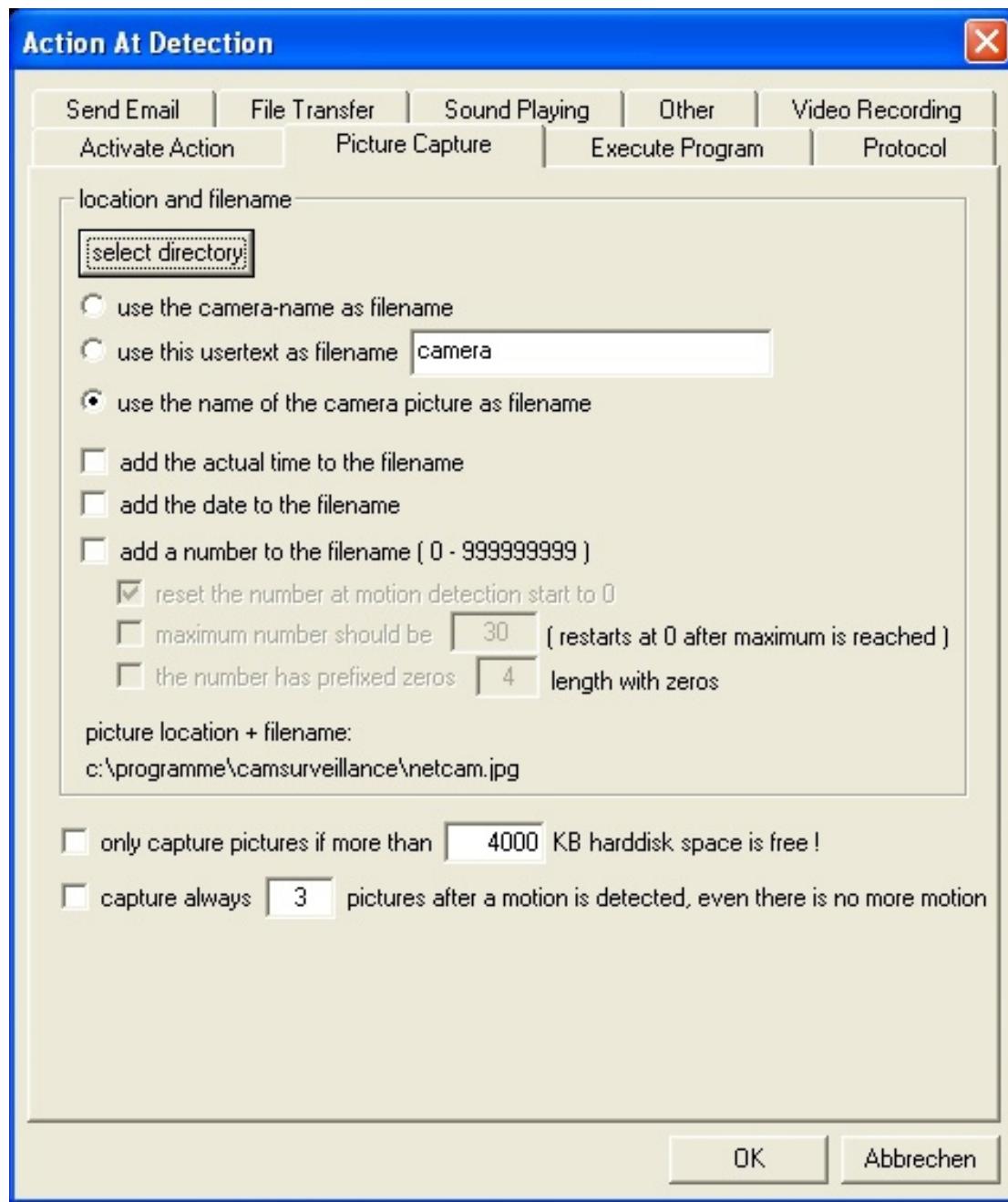
**activate sound playing** - select if a sound should be played at detection of motion

**activate picture capture** - select if a picture should be captured at detection of motion

**activate other actions** - select if one of the other actions should be happens at detection of motion

**activate video recording** - select if a video should be recorded at detection of motion

### Picture Capture



The picture fileformat ( JPG, BMP, bits per pixel ) for all captured pictures while motion detection, is the format, which you have selected within the camera Picture Capture dialog.

**select directory** - choose the directory in which the pictures should be stored

**use the camera-name as filename** - the name of the camera ( URL or a real name from the General settings ) is used for the picturefilename

**use this usertext as filename** - input a picturefilename

**use the name of the camera picture as filename** - the picture name from the netcam is used for the picturefilename

**add the current time to the filename** - adds the current time to the picturefilename

**add the current date to the filename** - adds the current date to the picturefilename

**add a number to the filename** - adds a counter number to the picturefilename

**reset the number at motion detection start to 0** - the counter starts with 0 at each motion detection start

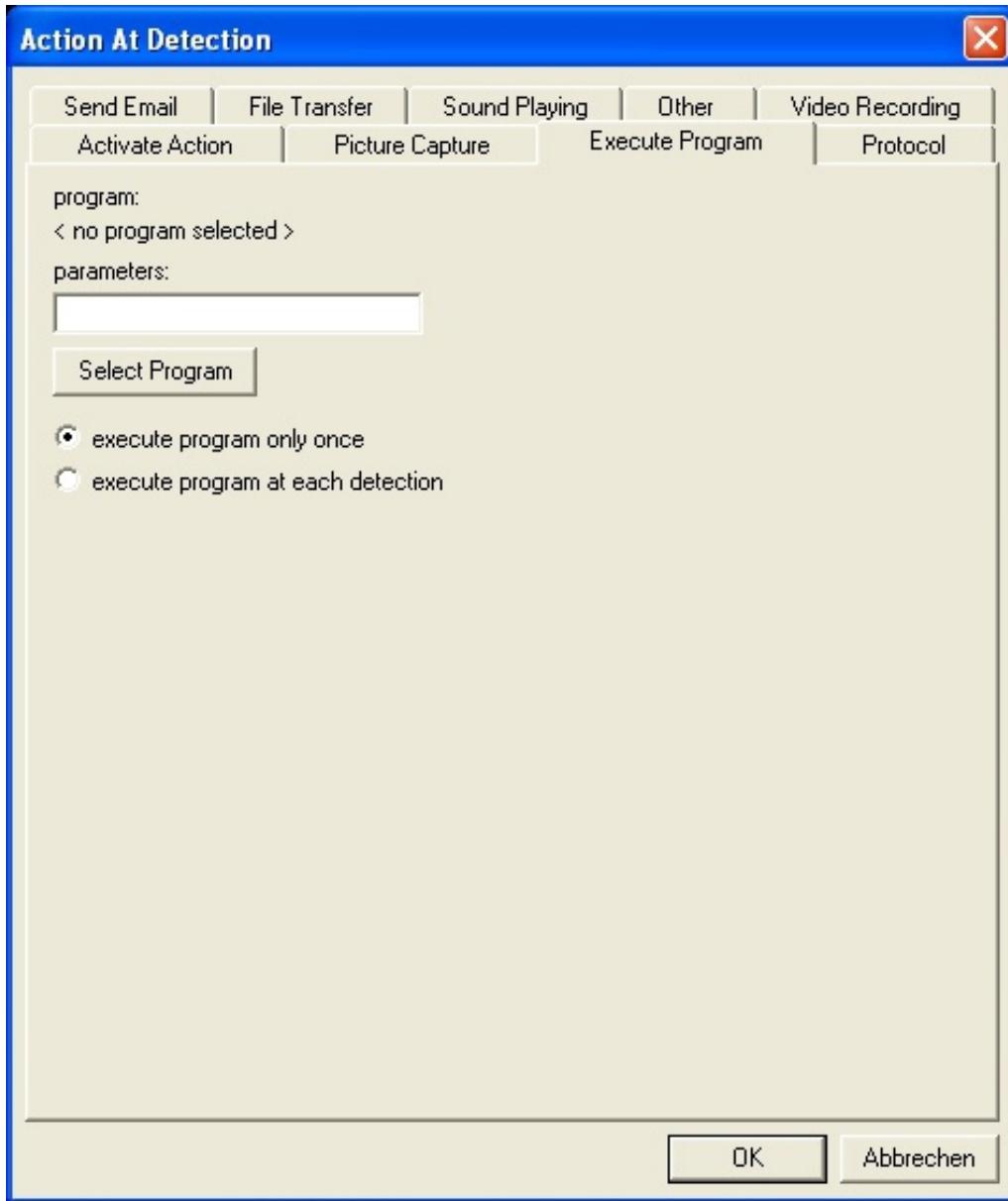
**maximum number should be** - the number counts until the maximum number is reached and then restarts with 0. If you don't select this option the maximum number is (2<sup>32</sup>)-1.

**the number has prefixed zeros** - if you select this option with 4 zeros, the number is printed as 0099 instead of 99.

**only capture pictures if more than X KB harddisk space is free** - tests the harddisk space before a picture is captured

**capture always X pictures after a motion is detected ...** - select this option if you want always several pictures after a motion is detected, not only the picture at the moment of the motion.

## Execute Program



**program:** - displays the path and name of the program

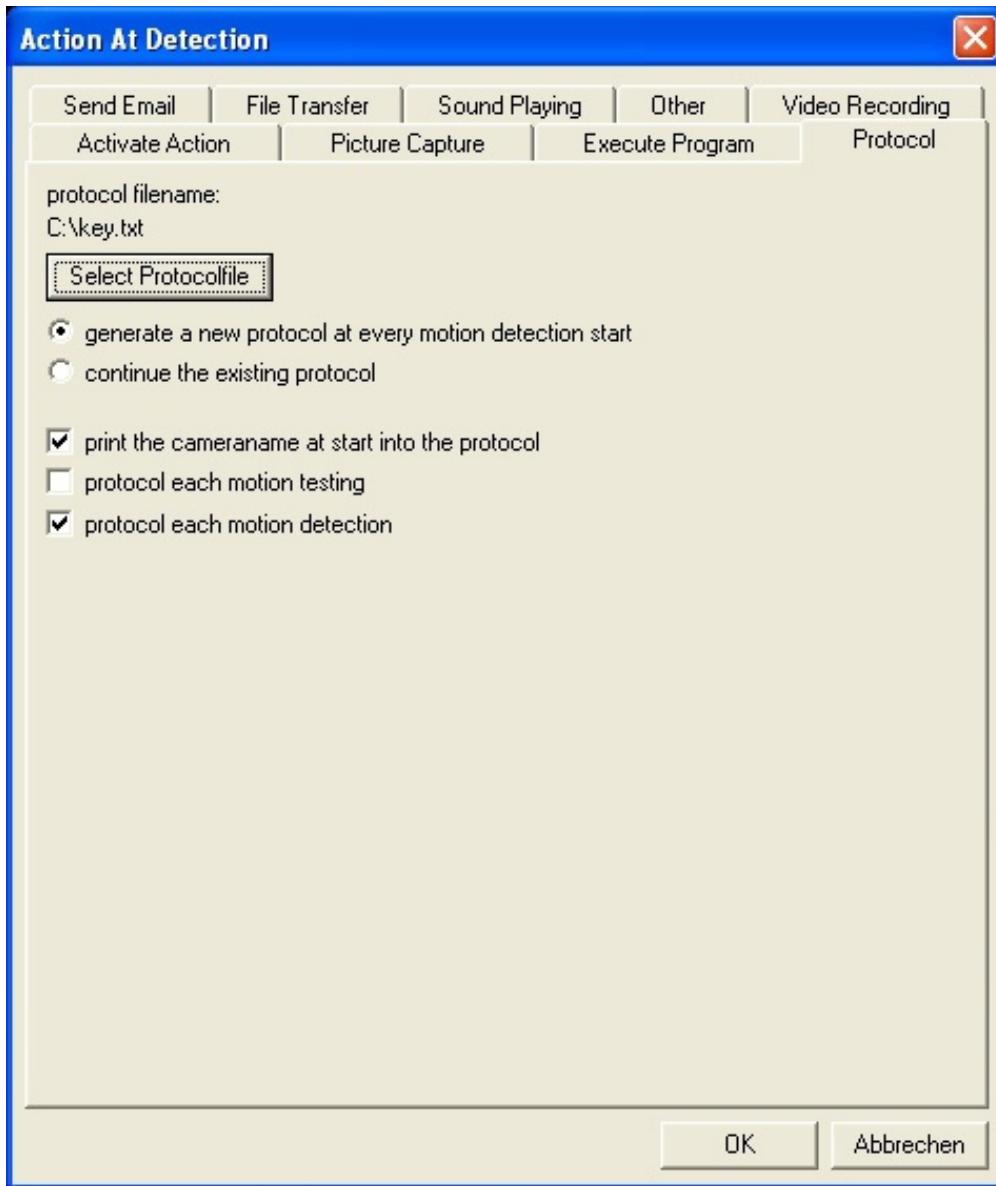
**parameters:** - if the program has parameters, input here

**select program** - select the program from your harddrive

**execute program only once** - the program will be executed only at the first detection of motion

**execute program at each detection** - the program will be executed at each detection of motion. Be sure that several instances of the program are possible.

## Protocol



**protocol filename** - displays the path and name of the protocol file

**select protocolfile** - choose the filename and location for the protocol file. The content of this file is in ASCII format.

**generate a new protocol at every motion detection start** - if you select this option, the old existing protocolfile is erased at motion detection start

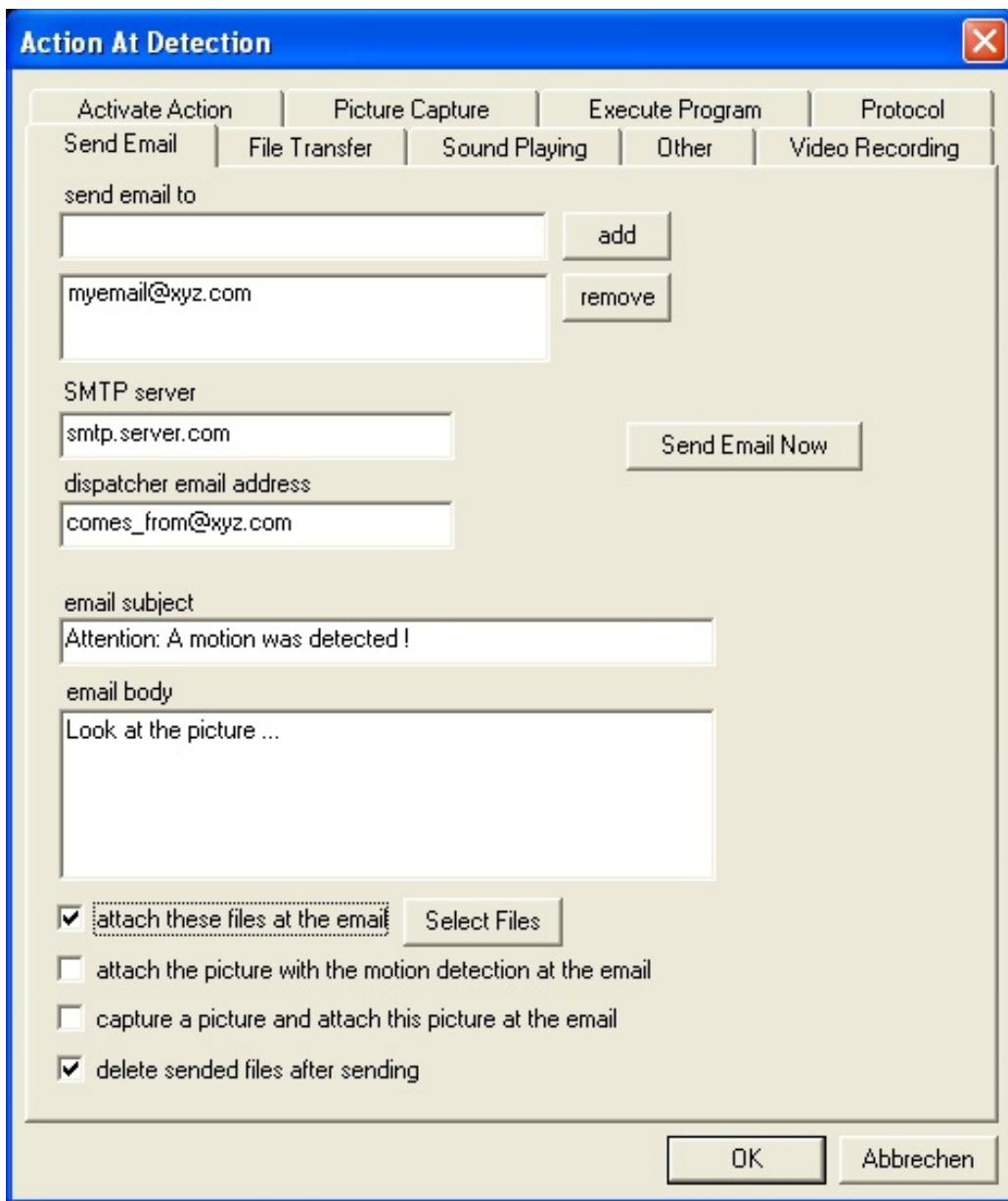
**continue the existing protocol** - if you select this option, the new informations are added to the existing protocol

**print the cameraname at start into the protocol** - at motion detection start, the cameraname is printed into the protocol

**protocol each motion testing** - at each test for motion, the current time/date/testing number/picture difference is printed into the protocol

**protocol each motion detection** - at each detection of motion, the current time/date/detection number/picture difference is printed into the protocol.

## Send Email



**send email to** - input the receiver email address and press the 'add' button

**SMTP server** - input your SMTP servername

**dispatcher email address** - input your email address or let the field blank

**email subject** - input an email headline

**email body** - input the text for the email body

**attach these files at the email** - you can select several files from your harddisk which you want to attach at the email

**attach the picture with the motion detection at the email** - select if you want to attach the picture which includes the motion at the email

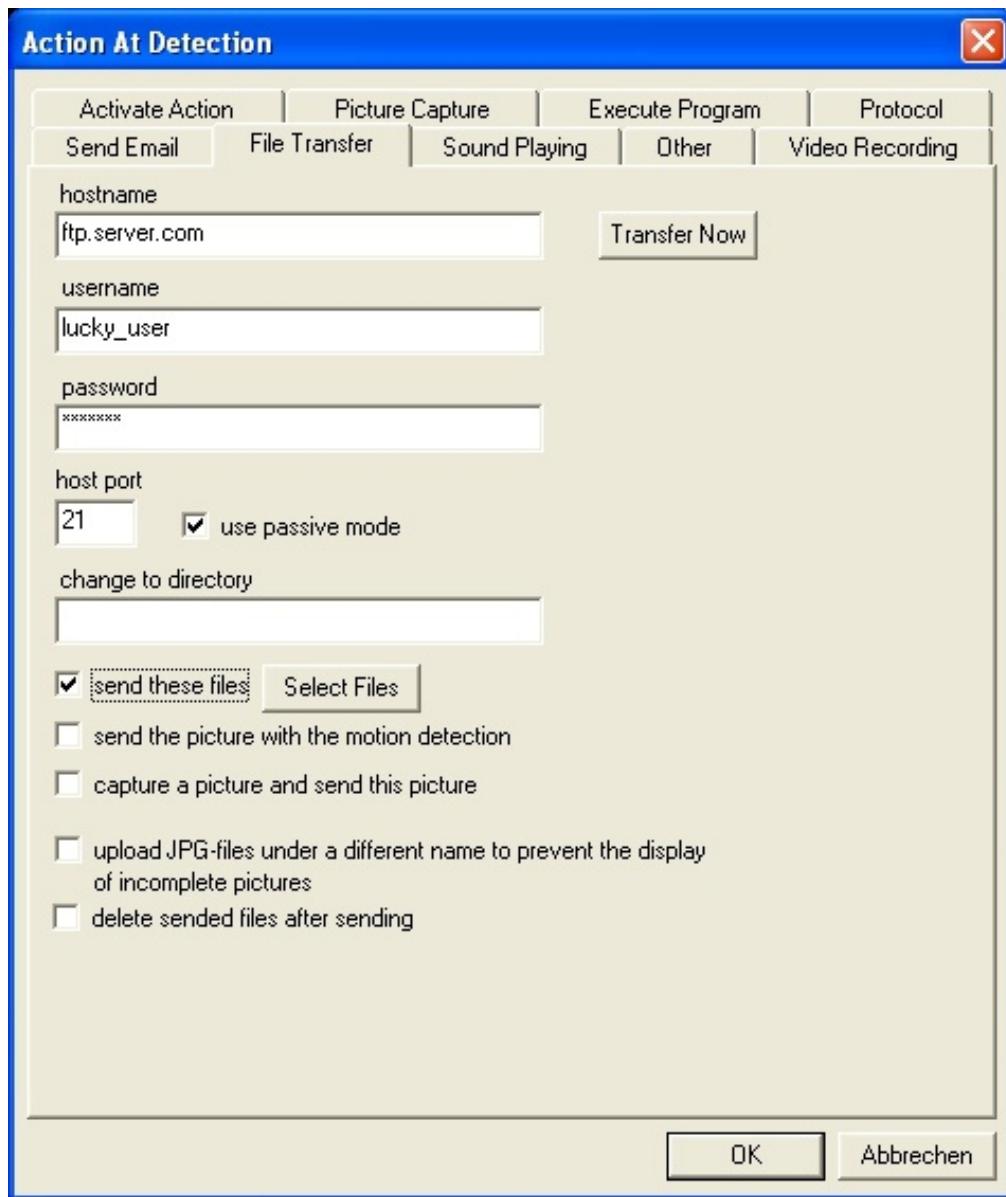
**capture a picture and attach this picture at the email** - a picture is captured and attached at the email. The picture settings for this picture comes from the camera dialog and not from the motion detection dialog. It's the same picture if you would press the capture button from the main window.

In most cases this picture would be the same as the picture which includes the motion. Only if the program has received a new picture within the time the motion testing routine is running ( if there are several cameras in motion detecting mode and all of them use a lot of CPU ), this picture is newer than the picture with the motion.

**delete sended files after sending** - select if you want to delete the sended files from your harddisk after sending to frees the used space

**send email now** - use this button to test if your settings are ok.

## File Transfer



**hostname** - input the FTP host servername

**username** - input your username for the FTP connection

**password** - input your password for the FTP connection

**host port** - host port number, default is 21

**use passive mode** - passive mode or not, depends on your firewall, default is on

**change to directory** - input the directory in which the files should be transferred, leave it blank if the files goes in the root

**send these files** - you can select several files from your harddisk which you want to transfer

**send the picture with the motion detection** - select if you want to send the picture which includes the motion

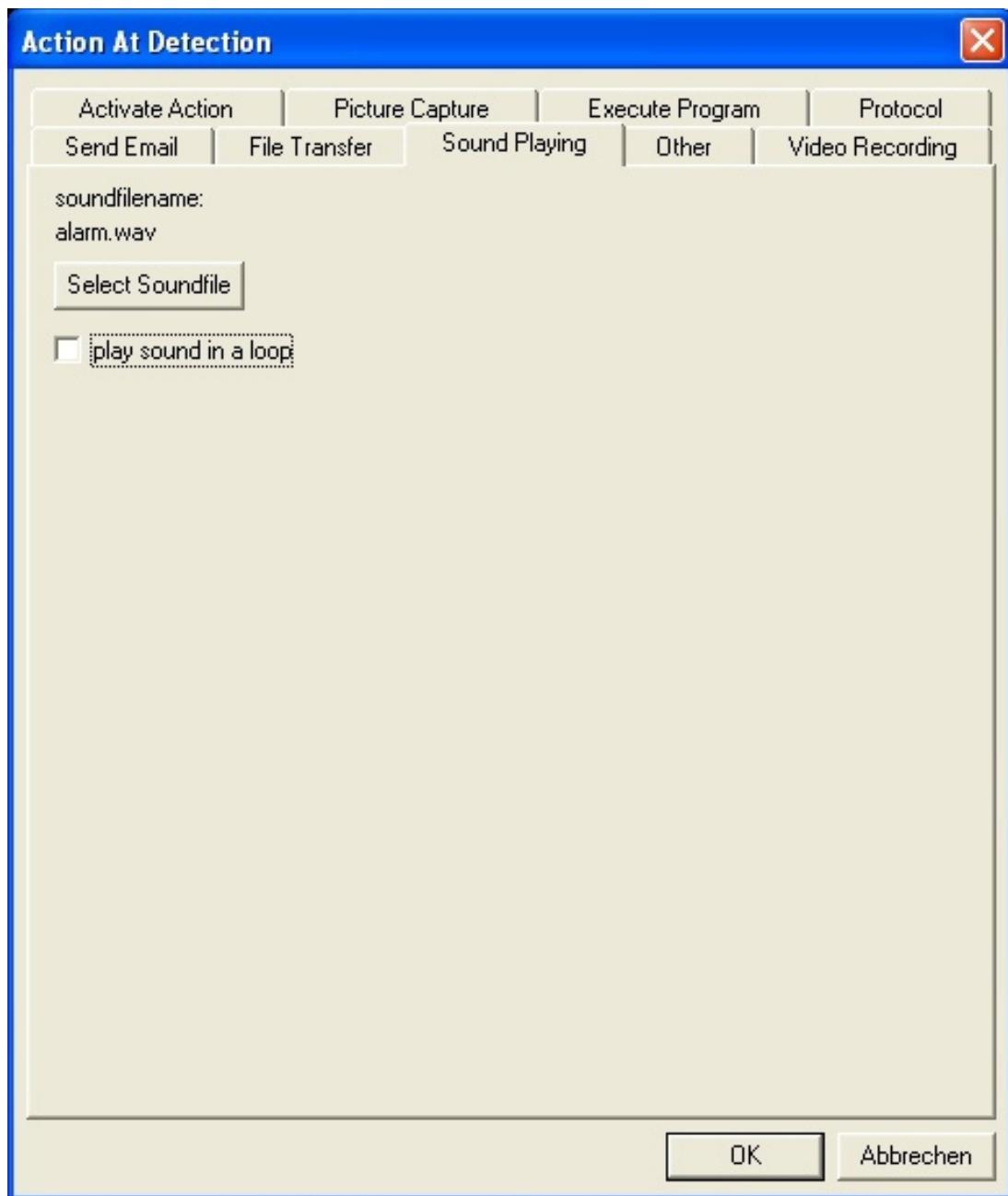
**capture a picture and send this picture** - a picture is captured and sended. The picture settings for this picture comes from the camera dialog and not from the motion detection dialog. It's the same picture if you would press the capture button from the main window.

In most cases this picture would be the same as the picture which includes the motion. Only if the program has received a new picture within the time the motion testing routine is running ( if there are several cameras in motion detecting mode and all of them use a lot of CPU ), this picture is newer than the picture with the motion.

**delete sended files after sending** - select if you want to delete the sended files from your harddisk after sending to frees the used space

**transfer now** - use this button to test if your settings are ok.

## Sound Playing

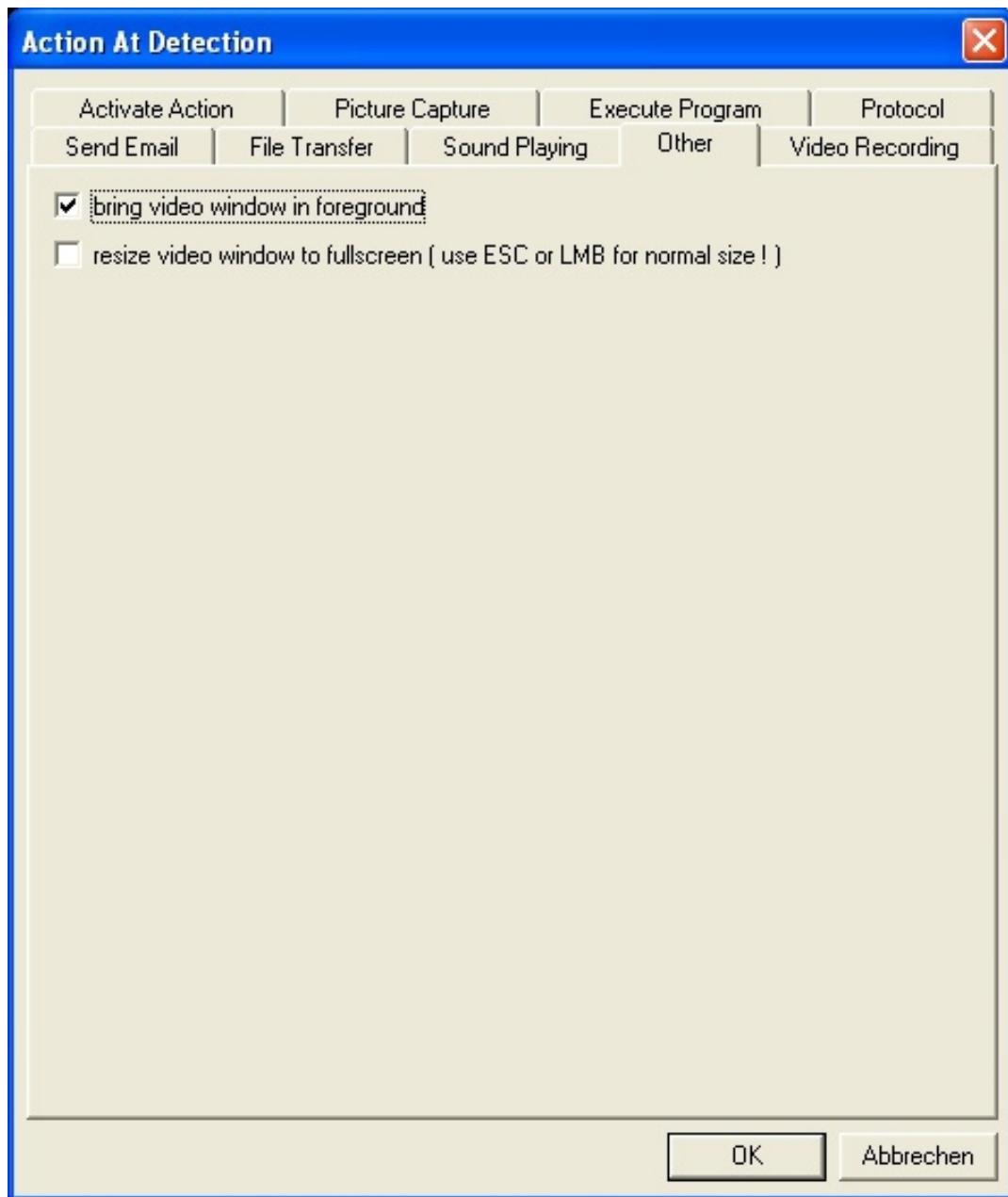


**soundfilename:** - displays the path and name of the soundfile

**select soundfile** - select the sound from your harddrive

**play sound in a loop** - select if the sound should play in a loop

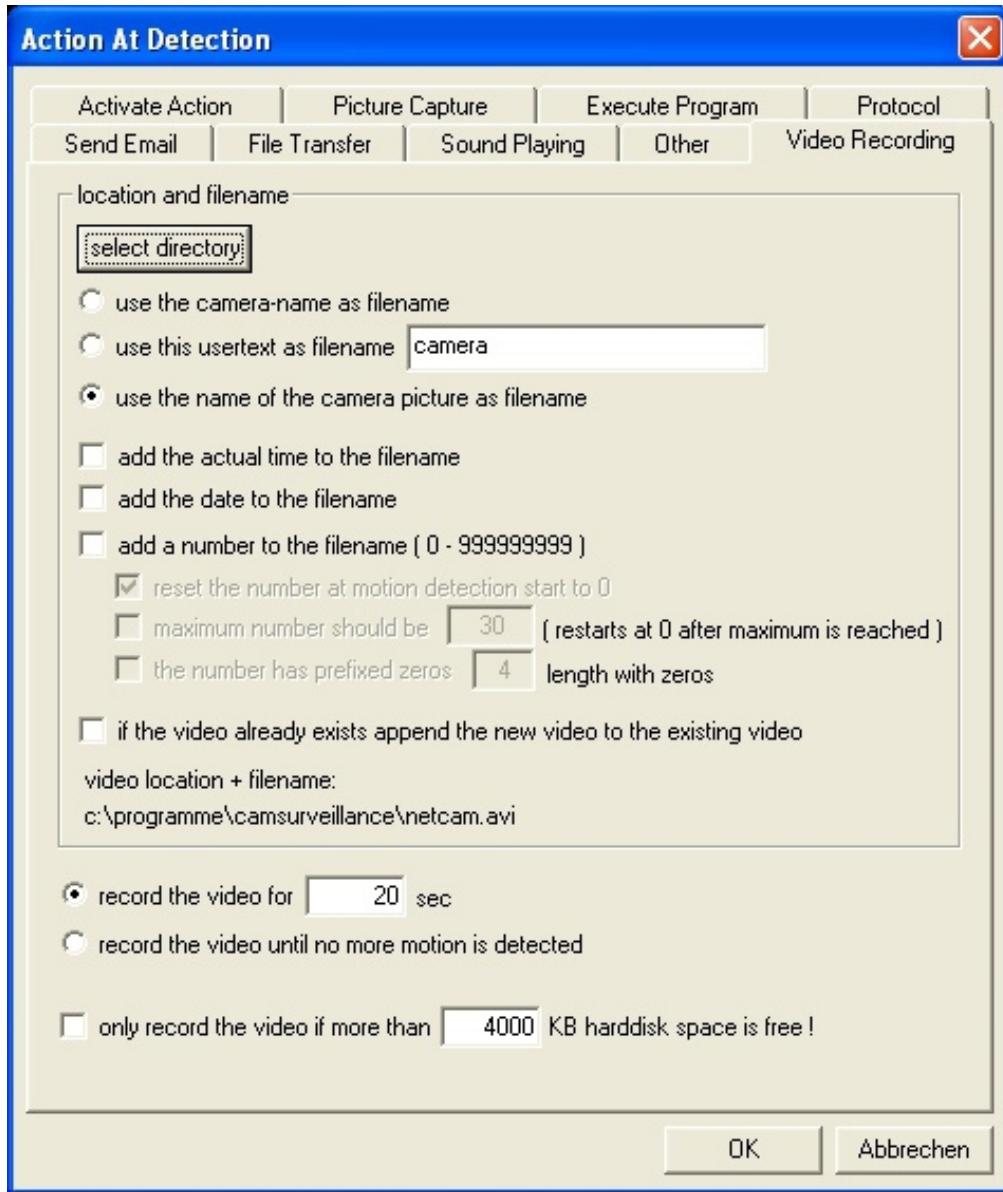
## Other



**bring video window in foreground** - the video window comes in the foreground at detection of motion

**resize video window to fullscreen** - the video window comes in the foreground and is resized to fullscreen at detection of motion

## Video Recording



The video format for all recorded videos while motion detection, is the format, which you have selected within the camera Video Recording dialog.

**select directory** - choose the directory in which the videos should be stored

**use the camera-name as filename** - the name of the camera ( URL or a real name from the General settings ) is used for the videofilename

**use this usertext as filename** - input a videofilename

**use the name of the camera picture as filename** - the picture name from the netcam is used for the videofilename

**add the current time to the filename** - adds the current time to the videofilename

**add the current date to the filename** - adds the current date to the videofilename

**if the video already exists append the new video ...-** select if you want to append the new recorded video to an already existing video. So you get only one video for several recordings. You can let several NetCams to record into the same video file, but only one NetCam has the focus at one time. If one camera starts recording, the next camera could only record into the same video file, if the first camera has finished recording. So you can select if you want several videos for each NetCam, one video for each NetCam, or one video for all NetCams.

**Please** try the append functionality first. We have tested with several codecs, where some doesn't work well. If you use the append option, there are two different ways the program works. 1. You select no codec, just record the uncompressed video. This has the advantage, that the video record starts immediately, the frames could be appended directly and you get the best quality. The disadvantage is a huge video file. 2. You select a codec. Appending frames to an existing compressed video is not possible. To append additional frames to an existing compressed video, the whole video is read and write again to append the new frames. The existing frames are compressed again. The advantage is a small video file. The disadvantages are, that the record starts not immediately, because all frames must be read and write before and that the quality is reduced. Please try some different codecs to see where you get the best quality after recompressing. Some codecs like DIVX reduces the quality very much after recompression.

**add a number to the filename** - adds a counter number to the videofilename

**reset the number at motion detection start to 0** - the counter starts with 0 at each motion detection start

**maximum number should be** - the number counts until the maximum number is reached and then restarts with 0. If you don't select this option the maximum number is (2<sup>32</sup>)-1.

**the number has prefixed zeros** - if you select this option with 4 zeros, the number is printed as 0099 instead of 99.

**record the video for x sec** - if a motion is detected a video is recorded with a selected length

**record the video until no more motion is detected** - if a motion is detected the video recording starts and stops only if there is no more motion

**only record the video if more than X KB harddisk space is free** - tests the harddisk space before a video is recorded.

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