

Ethernet Control



Attention:

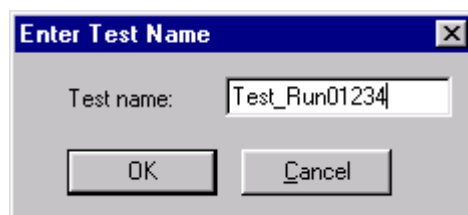
Since eXtra Version 5.00 the document type *Ethernet Control* is no more supported. Use *ImagerControl* instead!



The **Ethernet Control** document type is used to control Ethernet-capable high-speed cameras (=images) Currently Kodak RO and HG 2000 are supported. As soon as the Weinberger Speedcams are Ethernet-capable, it will be possible to control them as well. You can also mix different types of cameras within a test. In addition to control, pictures are also transferred from the cameras and if desired an AVI file can be created.

You can also obtain a version that downloads the cameras in parallel, thus achieving overall shorter download times. The advantages of speed are found **only** with RO images, however, and then only if you are downloading from at least 3 cameras.

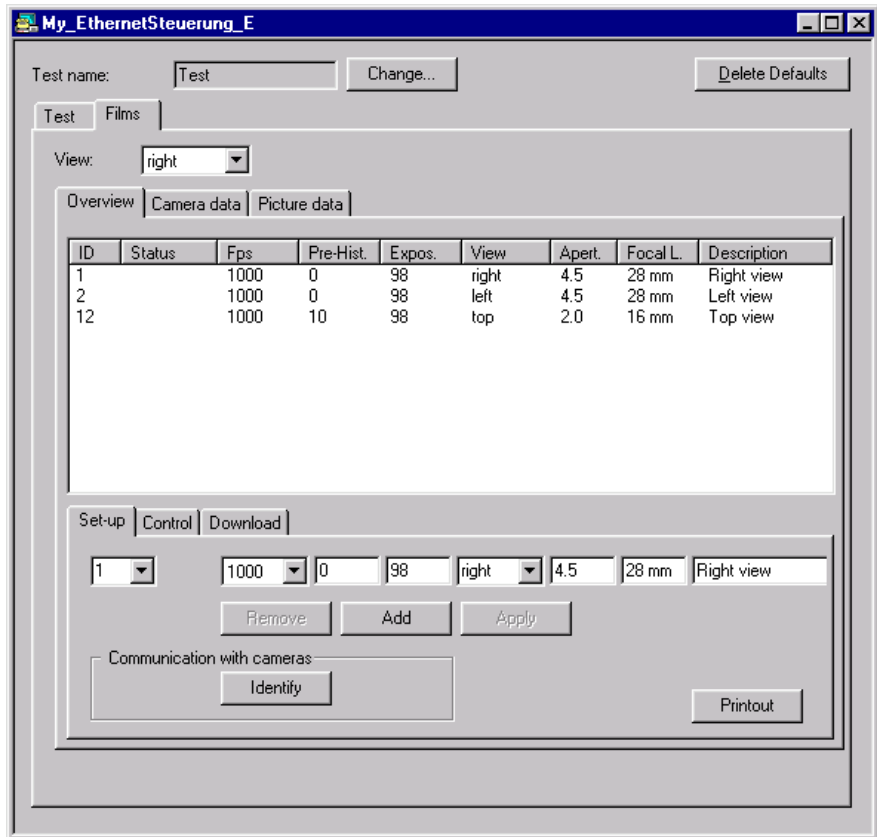
Entering the test name



First you must assign a test name. This name will be used as a prefix for the individual AVI files and sub-directories for the raw data pictures.

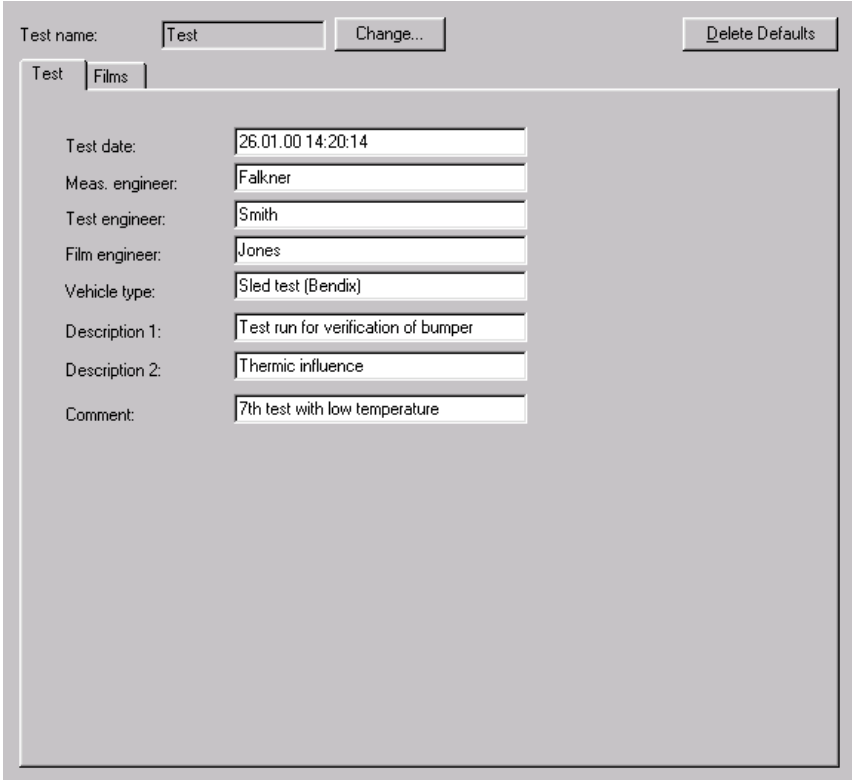
Ethernet Control

You can use this dialog box to control how the test is carried out and/or to modify the test.



The name of the test appears at the upper left of the dialog box. Under the name are the tabs for the individual areas **Test** and **Films**. Select the area you would like to edit.

Ethernet Control - Test



Test name:

Test

Test date:

Meas. engineer:

Test engineer:

Film engineer:

Vehicle type:

Description 1:

Description 2:

Comment:

The fields in this dialog box are informative in nature. They provide additional information, but are not urgently necessary for the program to run.

Test date is a date field. You should enter the current date as its setting.

Measurement engineer is a text field indicating the person responsible for the measurement procedure.

Test engineer is a text field indicating the person responsible for the entire test.

Film engineer is a text field indicating the person responsible for the cameras.

Vehicle type is a text field describing the test object.

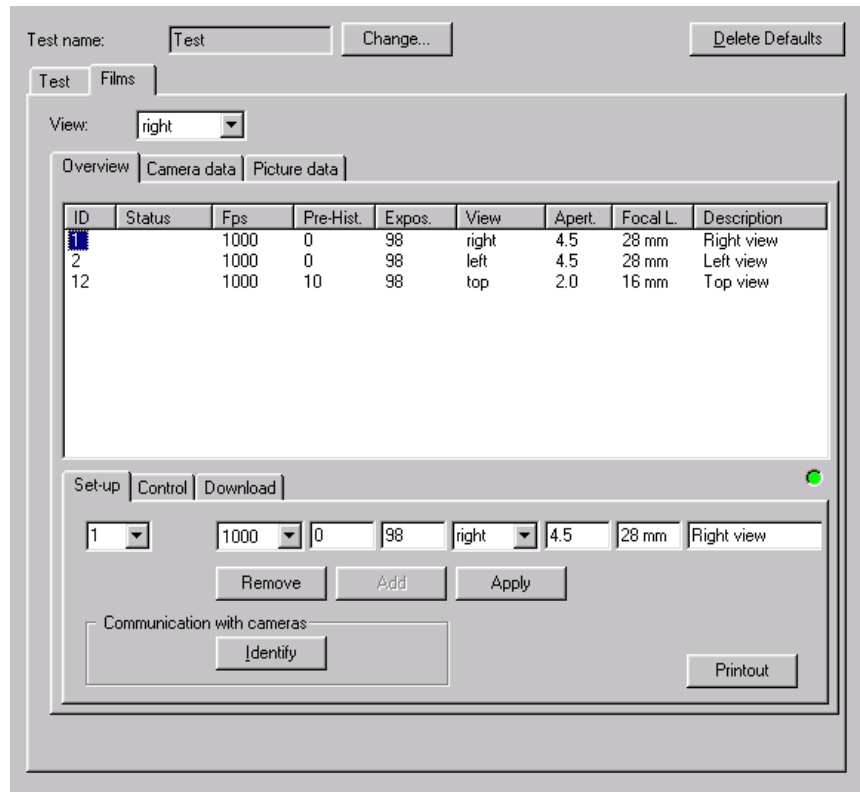
Description 1 is a text field provided for additional description of the test.

Description 2 is a text field provided for additional description of the test.

Comment is a text field provided for additional remarks.

Ethernet Control – Films – Overview – Set-up

You can use this tab to give a quick definition and setting of the cameras. Note that you cannot make film table entries in their entirety with this mask. This means that if you do not make the entries in the other tabs the program will work with the basic settings.



The **list box** in the upper area of this tab shows an overview of the defined camera. A control signal shows the activity of the Ethernet download: **Gray** indicates that communication with the camera is inactive or has been stopped. **Green** is the status during online identification of the camera. The signal flashes **Red** as soon a communication with the individual cameras has taken place. Select the cameras in the list box for which you want to make settings. To select an individual camera click on it with the left mouse button. To select a range, press the "**Shift**" key as soon as you have clicked on the last camera. To (un)select specific additional cameras, press the "**Ctrl**" key while you are clicking on the appropriate camera line.

As soon as cameras have been selected, the **Remove** button for deleting a camera from the test and the **Apply** button for modifying the settings become active. If you have selected multiple cameras and then click on Apply, only the parameters Frames/second, Pre-History, Exposure time, Aperture and Focal length will be applied, but not the camera number, the view or the description, since there is no way these values can always be valid for more than one camera.

*Don't forget to set the camera type!
(Films – picture data)*

If you perform the **Add** function, the program will check to make certain the camera number and also the picture view are not already being used.

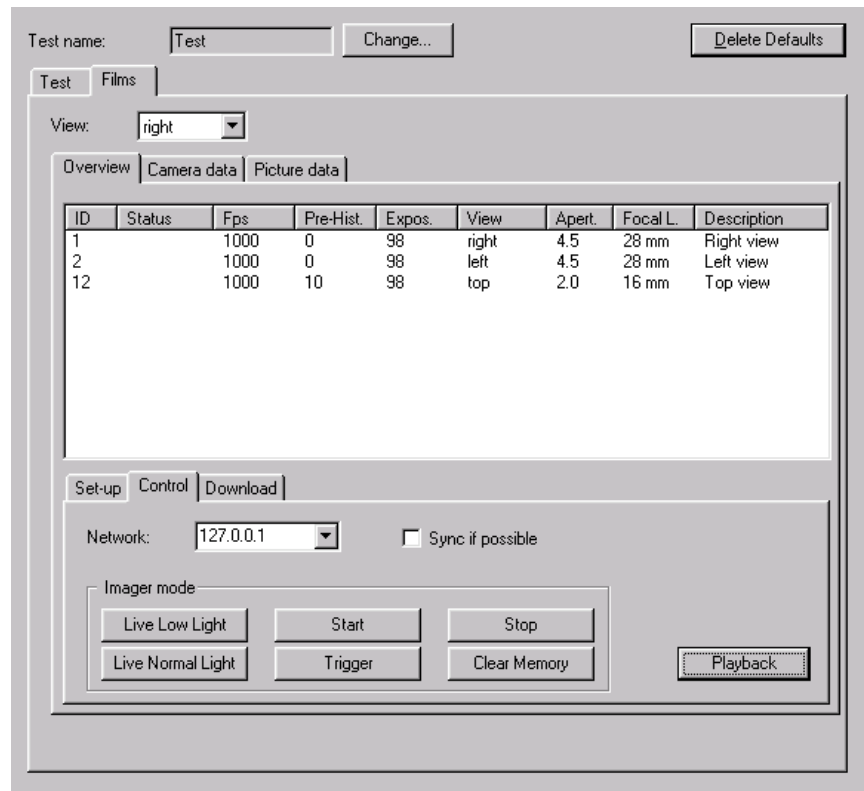
For a description of the remaining parameters, refer to the description of the following tab.

You can use the **Identify** button to verify that the program can access all the cameras, and only exactly the cameras you intended, and also to transfer the settings to the cameras. If the program does not find a camera or finds a camera for which no test is defined, an appropriate message is generated. As soon as the

program has identified the camera, the status of the individual camera is displayed in the list box.

To obtain a **Printout** of the cameras, lenses, focal lengths and apertures in use to pass on to the studio, click on the Printout button. The text file "EthernetSetup.txt" will be generated internally.

Ethernet Control – Films – Overview – Control



In the **Network** selection box you can select which network card the program should use for communication with the cameras. Take care that the network card to be used has the right settings in terms of the TCP/IP address and the subnet mask. For an introduction in these subjects, please consult the manual for the cameras.

Activate **Sync if possible** if you need to synchronize a number of cameras. Only HG 2000 cameras can be synchronized. To do this, all cameras must be running at the same image frequency.

Attention:

Use this setting only with **caution!**

If the cameras are not receiving any hardware sync signal, it will no longer be possible to access them and you will lose your recording! Consult the manual for the cameras on this subject as well.

You can use **Start** to start the recording. Start is only possible if the status of the camera is READY. Make certain that the camera leaves this status again after about 60 seconds if no trigger has been initiated in the intervening time. In general, this function is performed by the measurement technology hardware.

The cameras must go into the RECORDING status. So as not to interfere with the recording, there is no more querying of the camera status after this.

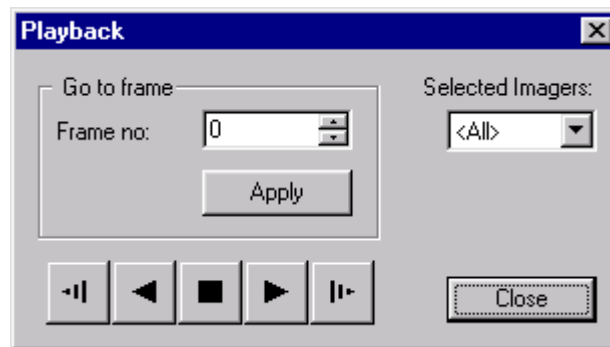
Use **Triggers** to send a command to the cameras that will initiate the trigger. This function is only a test function! During the test, this function must be generated by a TTL signal from the test process control.

Stop is used to terminate the recording mode.

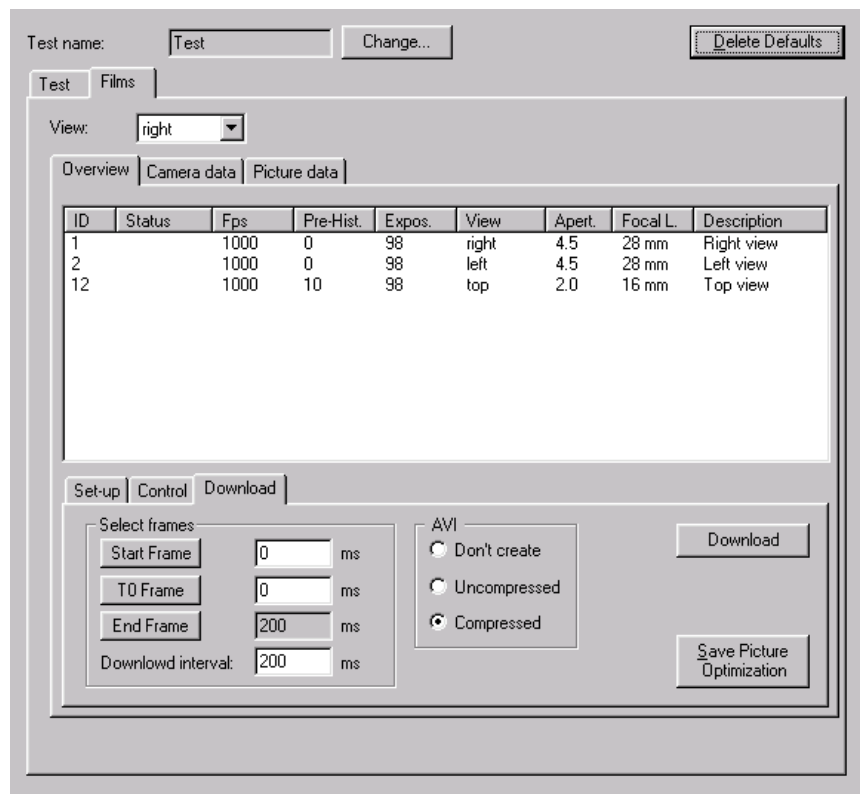
To be able to film an additional test after a recording you must **Clear** the cameras' memory. This brings the cameras to the READY status.

You can use **Live Low Light** and **Normal Light** to switch the cameras into live picture mode (feedback in **Status**). The picture of the selected camera(s) will be displayed on the (optional) TV monitor.

Via the command button **Playback** you may open a pannel for playback of recorded sequences:



Ethernet Control – Films – Overview – Download



Use this tab to download picture data from the cameras, to create AVIs and to compress and display AVIs. Don't forget to select the cameras, since all actions

to be performed here will only be performed for the cameras that are currently selected!

The unit of measure for entries made in this dialog box is ms. Individual millisecond values can only be achieved for cameras that record at 1000 frames per second. If you are using cameras with lower frame rates (500 or 250 frames/s) the time for the start and end frames is therefore rounded off accordingly.

As soon as the test is recorded (this is indicated by the REC DONE camera status), first select the camera that recorded at the highest frame rate. In addition, the T0 time should be clearly discernable in this view if at all possible. Continue changing the value in the T0 frame entry box until you are certain you have identified the T0 frame.

To display the frame, click on the **T0 Frame** button. Then select all cameras and visually inspect the T0 time of all cameras. Usually you will know how much time you need before T0. Enter this value under **Start Frame** and verify it is correct by clicking on the corresponding button and examining the result visually. Proceed in the same manner with the end frame, except that here you will use the unit of measure ms to enter the **Download interval**. As soon as this preparatory work is complete, all you need to do is click on the **Download** button and the program will perform all the necessary steps for you. First of all the picture data is downloaded from the cameras. You can select for this process whether data should be downloaded **simultaneously (option)** from the cameras. Since the ROC imager can only deliver its data very slowly to the Ethernet, running a simultaneous download of several cameras at the same time results in a savings of time for 3 or more cameras. During the download procedure, if desired, the program will simultaneously generate the compressed AVI file which is immediately displayed as soon as the last picture of a camera is transferred to the PC.

The raw picture data is stored upon **Download** in separate sub-directories (= name like AVI file name). In addition, the AVI films can be generated automatically, and if desired can be compressed.

Adjust the picture optimization parameters based on an individual picture. The values can be internally assigned to the selected cameras with the **Save Picture Optimization** button. The parameters can also be selected individually and differently for each camera. Don't forget to save individually, however. Otherwise the AVI will be created with the current default settings. This could result in inadequate processing for colors, brightness, contrast, and sharpening in the results.

Ethernet Control – Films – Camera Data

Test name:

Test **Films**

View:

Overview **Camera data** Picture data

AVI file: = Test name + View

Imager ID:

Frame rate: fps

Pre-History: frames

Exposure: μ s

View:

Aperture:

Focal length: mm

Description:

Start time: ms

T0 time: ms

Download interval: ms

Use this tab to verify the settings of the camera data visually. To change the values, switch to the **Overview** tab and then to the corresponding sub-tab.

AVI file is a filename formed automatically from the “test name” and the “View”. The film is saved under this name.

Imager ID specifies the camera with which the recording will be run or was run. In addition, the program retrieves the address of the camera from this field if it downloads the picture data via Ethernet.

Frame rate specifies how many frames per second should be recorded by the camera.

Pre-History is available only in case of HG2000 cameras. Here you can fix how many images before the trigger may be kept without overwriting.

Exposure indicates the duration of the exposure for each individual picture or frame. The entry is followed by the unit of measure μ s, and the range of your entry depends on the frame rate. The smallest value is always 53 μ s and the largest value is 993 μ s at 1000 frames/s, 1993 μ s at 500 frames/s, or 3993 μ s at 250 frames/s. (frames/s often appears as fps).

View describes the view of the camera = view of picture. This name is used to specify the AVI file name.

Aperture is an optional text field whose value you can pass on to your studio with the printout for the correct setting.

Focal length is an optional text field that may remain empty.

Description is an optional text field in which you can enter a description of the camera view or the test.

Start time is a numeric value that is absolutely required. (Units for times are ms; for meaning see above)

T0 time is a numeric value that is absolutely required.

Download interval is a numeric value that is absolutely required.

Ethernet Control – Films – Picture Data

The screenshot shows the 'Picture data' configuration window. At the top, there is a 'Test name' field containing 'Test' and a 'Change...' button. To the right is a 'Delete Defaults' button. Below this are two tabs: 'Test' and 'Films'. A 'View' dropdown menu is set to 'right'. Underneath are three sub-tabs: 'Overview', 'Camera data', and 'Picture data', with 'Picture data' being the active tab. The 'Picture data' section contains several fields: 'Lens' (text field with 'Pentax XC 16'), 'Comment' (text field with 'C mount'), 'AVI Compression' (dropdown menu with 'Intel Indeo 5.0'), 'AVI Quality' (text field with '75' and a '%' symbol), 'Key frames' (text field with '1'), 'Resolution width' (text field with '512' and 'Pixel' label), 'Resolution height' (text field with '384' and 'Pixel' label), 'Picture file format' (dropdown menu with 'Bayer'), and 'Imager type' (dropdown menu with 'Kodak HG2000' and a 'Split (144x512)' checkbox). An 'Apply' button is located at the bottom right of the window.

The **Picture data** tab contains additional information and a specification of how the AVI film should be generated from the pictures.

Lens is an optional text field. Enter a description or designation of the lens to be used here. May remain empty.

Comment is an optional text field.

AVI Compression is a list box. Here you can set which compression algorithm should be used for the film.

AVI Quality is a numeric field. The entry must fall between 0 and 100%. An entry of 0% results in the replacement value of 0% quality. This field must not remain empty.

Key frames is a numeric field. Key frames determine how jitter-free a film can be projected backwards. A smaller value results in a larger film file, however. See also the section on AVI compression.

Resolution width is a numeric value that is entered automatically by the program. It is used to provide information to the user about the expected resolution.

Resolution height is a numeric value that is entered automatically by the program. It is used to provide information to the user about the expected resolution.

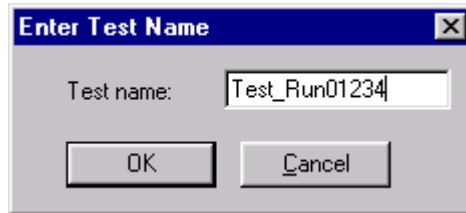
Picture file format is a selection box that is automatically filled in by the program when the film is generated.

Depending on the type of imager you are using, select **Kodak ROC** or **HG 2000**. This setting is very important: If the setting is reversed the cameras will not be installed correctly and it will not be possible to transfer images.

If you are using HG 2000 cameras you can select the **Split mode**. You can use this mode to record multiple pictures – but with reduced resolution. The image frequency of 2000 frames/s is only available in Split mode.

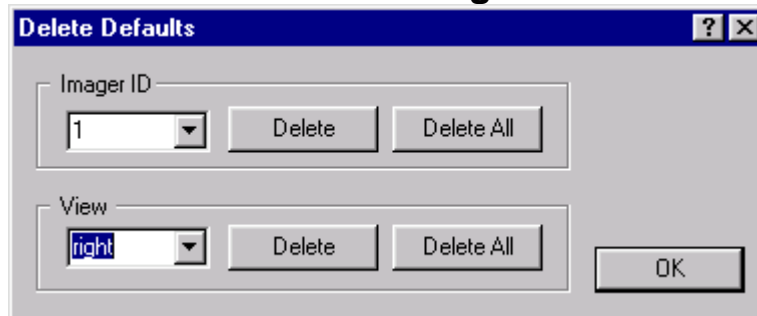
Make certain that only an active **Apply** transfers the values into the film data set.

Ethernet Control – Change...



You can use this dialog box to assign a new test name. This test name will be used as a prefix for AVI files and sub-directories with the raw data.

Ethernet Control – Deleting Defaults



The program records your defaults for camera number and picture view so that they will be available for you again when you create a new Ethernet control document. You can use this dialog box to delete settings you will no longer require in the future. The program can record up to 100 pre-settings.