

## TECH NOTE : Integration of Video Signals in catman Easy / AP

Version: 2015-01-30

Author: Dr. Karl-Michael Nigge

Status: public

### Abstract

The catman Easy add-on module EasyVideocam, which is also included in the catman AP package, allows for the integration of up to 4 video cameras. This Tech Note describes the related workflow from the configuration of the video cameras to the post processing of the recorded measurement and video data.

### Specifications

For the integration of video signals into the data acquisition with catman Easy, the add-on module EasyVideocam is required. The package catman AP includes the EasyVideocam functionality.

EasyVideocam allows for the integration of up to 4 video cameras. The cameras must be supported by the Windows DirectShow media streaming architecture. This is the case for the following cameras:

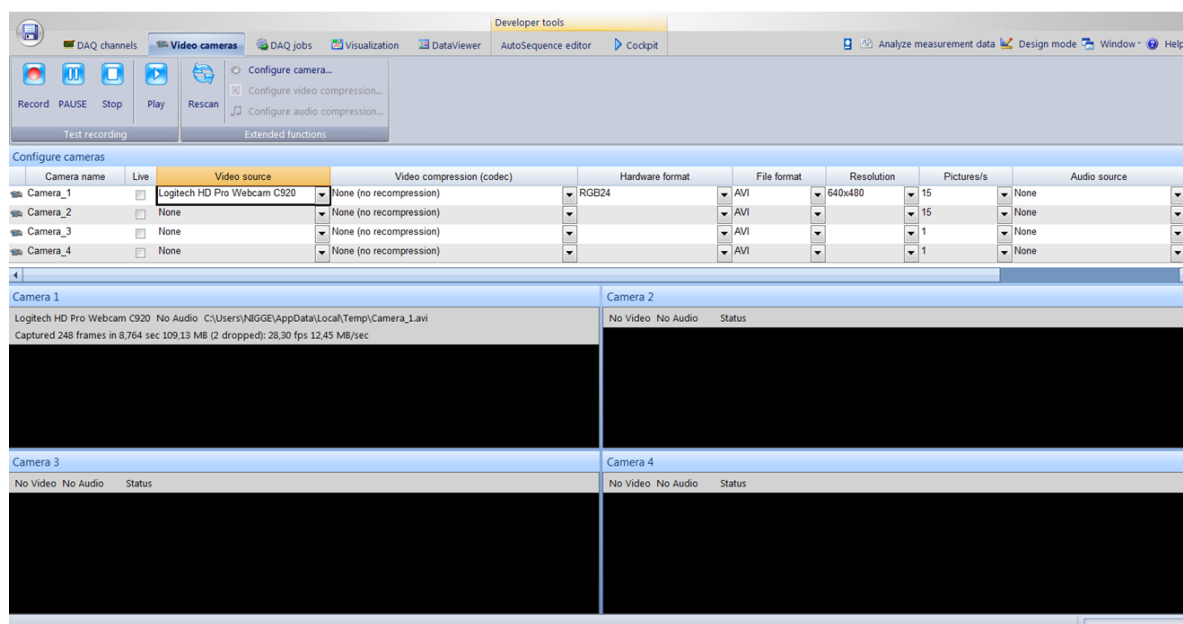
- (1) Most USB webcams
- (2) All Axis Ethernet cameras together with the Axis Streaming Assistant running on the PC
- (3) the Allied Vision Stingray F-033B/C Firewire camera

As for USB webcams, the Logitech models C910 and C920 are recommended.

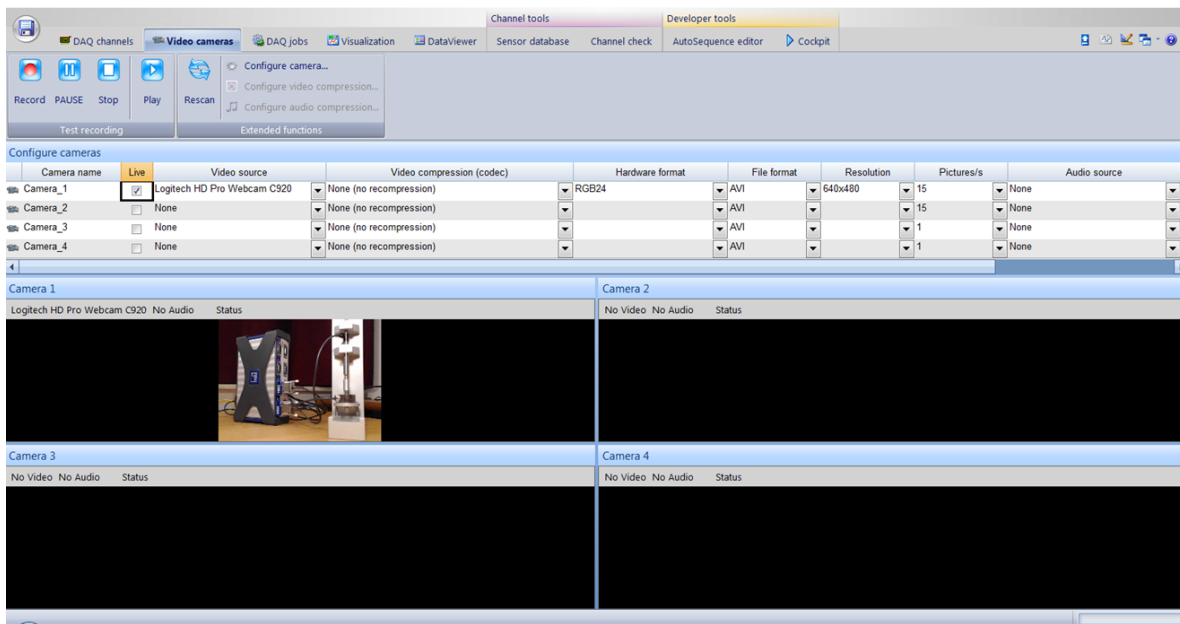
Data recording and video recording are initiated simultaneously by catman in good approximation. However, depending on the number and sample rate of the DAQ and video channels, the recorded video frames can lag behind the recorded data by an offset of up to around 150 ms. This offset can be corrected in post processing as described in the chapter "Data Review and Analysis".

### Setup of the Video Camera(s)

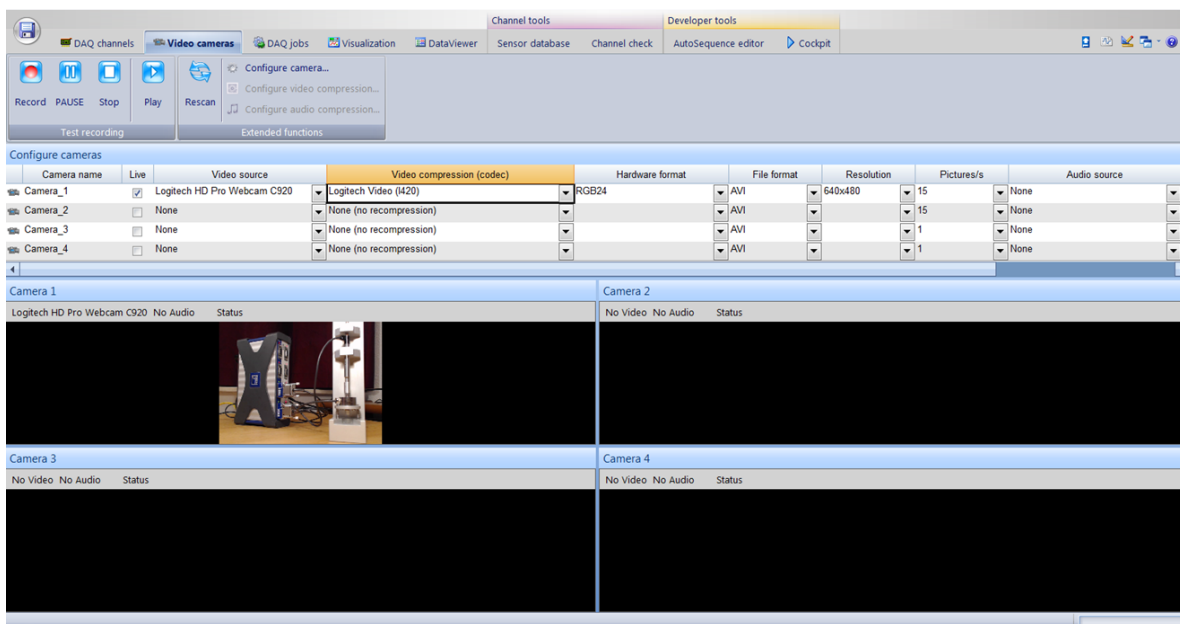
Select the video camera from the dropdown list of video cameras connected to the computer:



Activate the live display of the camera:

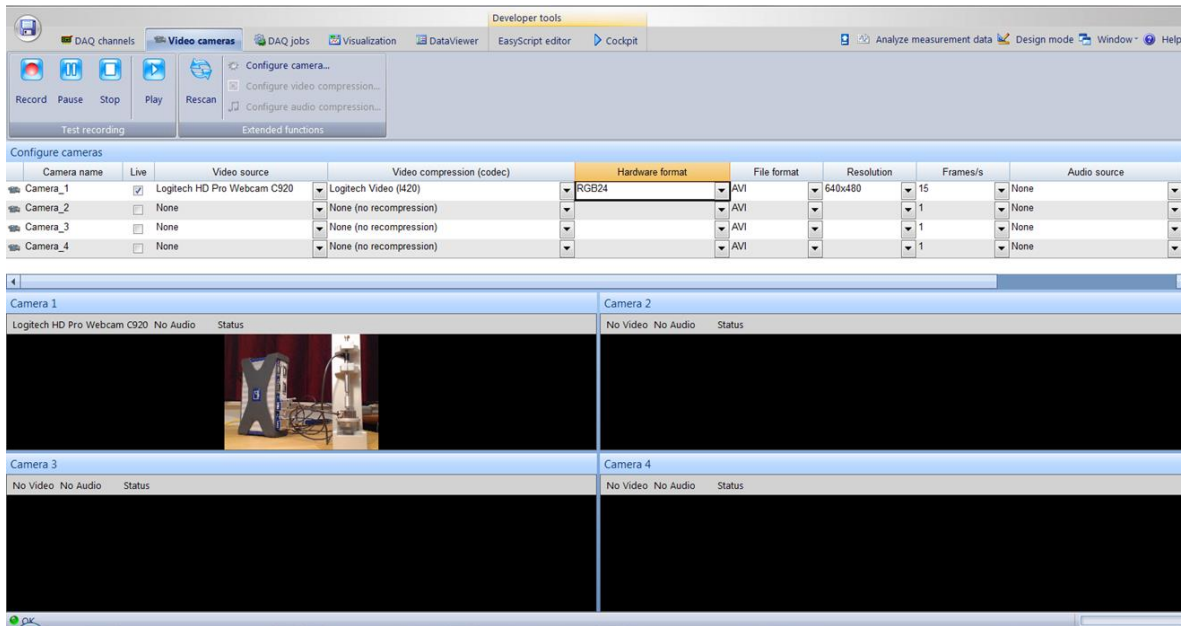


Select a video compression from the dropdown list of all codecs installed on the PC (recommended to reduce the video file size):



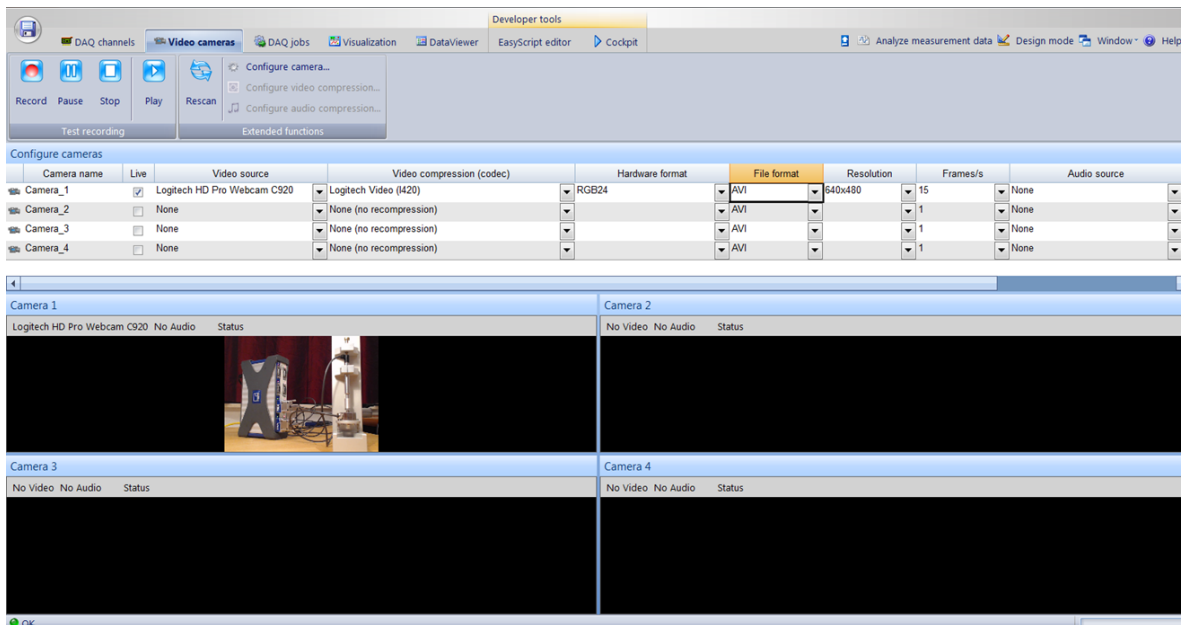
Not all codecs can be combined with all video cameras. If the live display disappears, select a different video compression. General recommendation: Windows Media Video 9 VCM (can be downloaded from <http://www.microsoft.com/en-us/download/details.aspx?id=6191>). In this example: Logitech Video (I420) provided by the camera manufacturer

The hardware format (i.e. the format in which the camera supplies the video data) does not need to be changed in general:

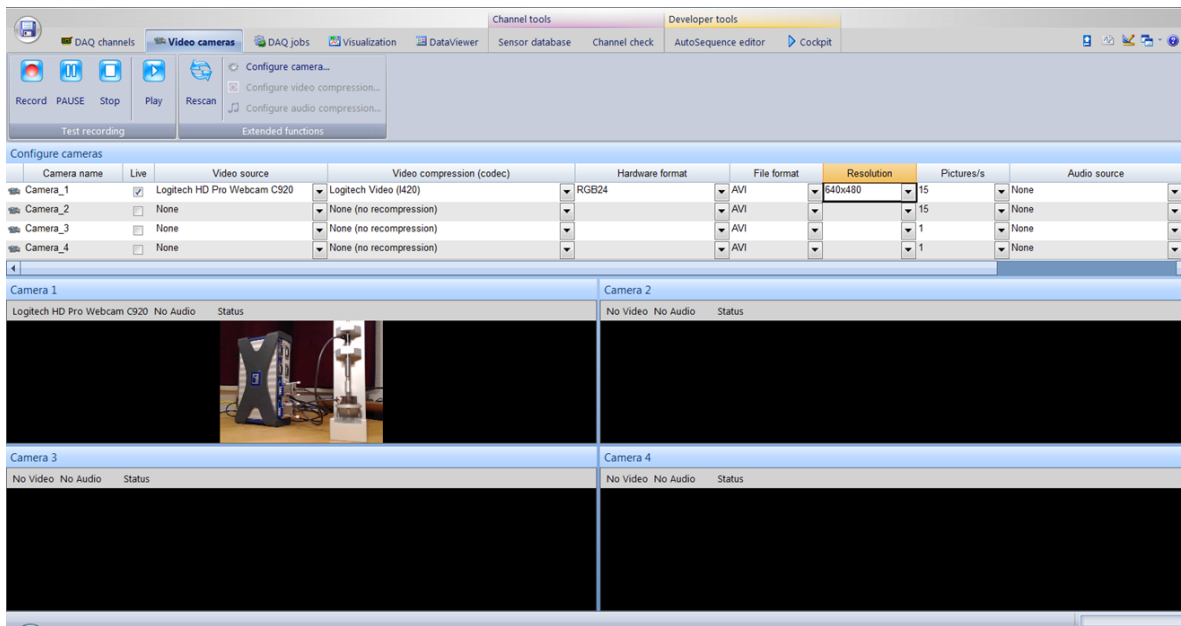


When a codec is being used, it may only need to be changed if no preview picture is visible. When no codec is being used, the hardware format determines the format in which the video data are stored. Compressed hardware formats cannot be used.

The file format (i.e. the format of the container file that contains the video file) is set to .avi per default by catman and does not need to be changed in general. .avi is a container file format that is compatible with most video file formats:

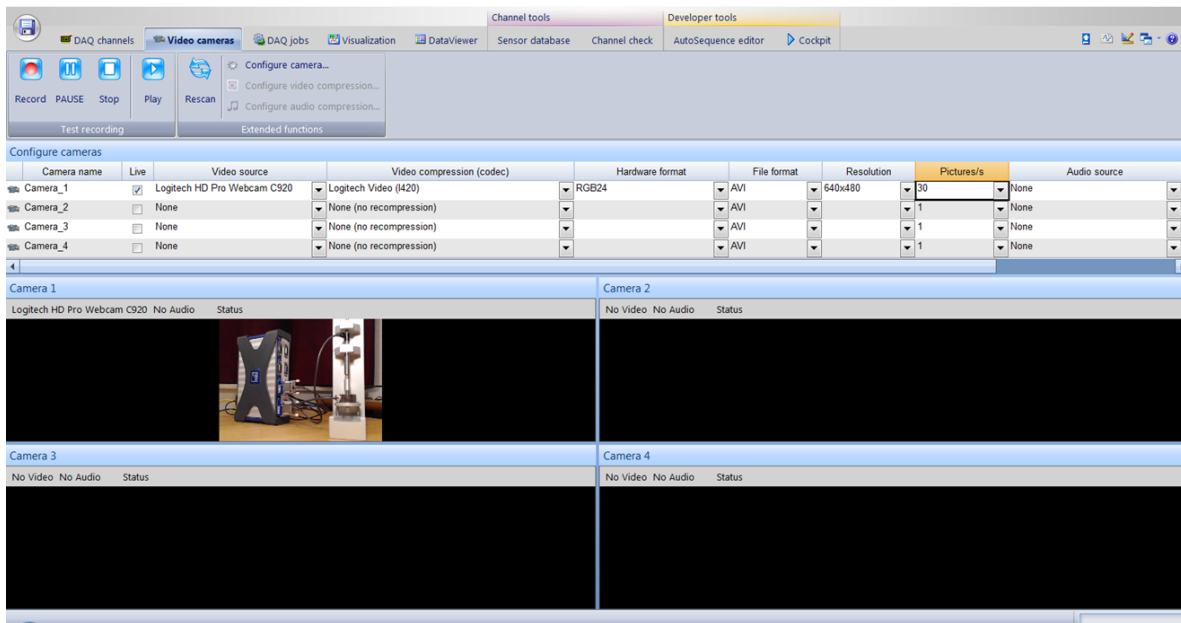


If necessary, select a resolution different from the default value:



The options in the dropdown list are provided by the camera. Be aware that high resolutions may slow down the computer.

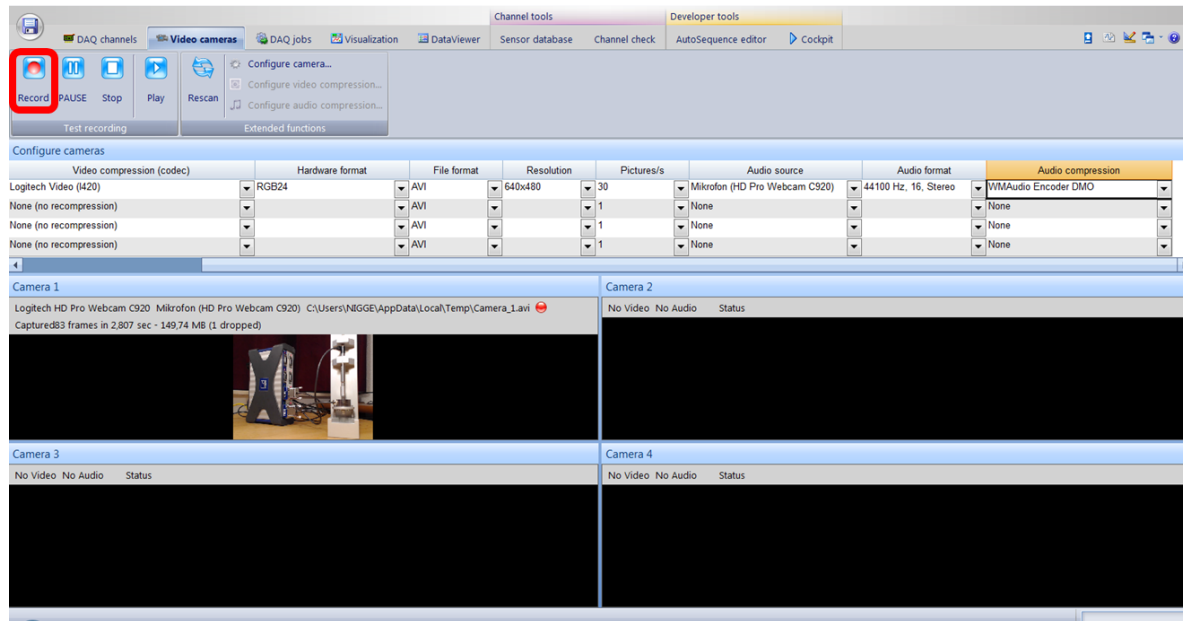
If necessary, select a frame recording rate different from the default value of 15 frames per second:



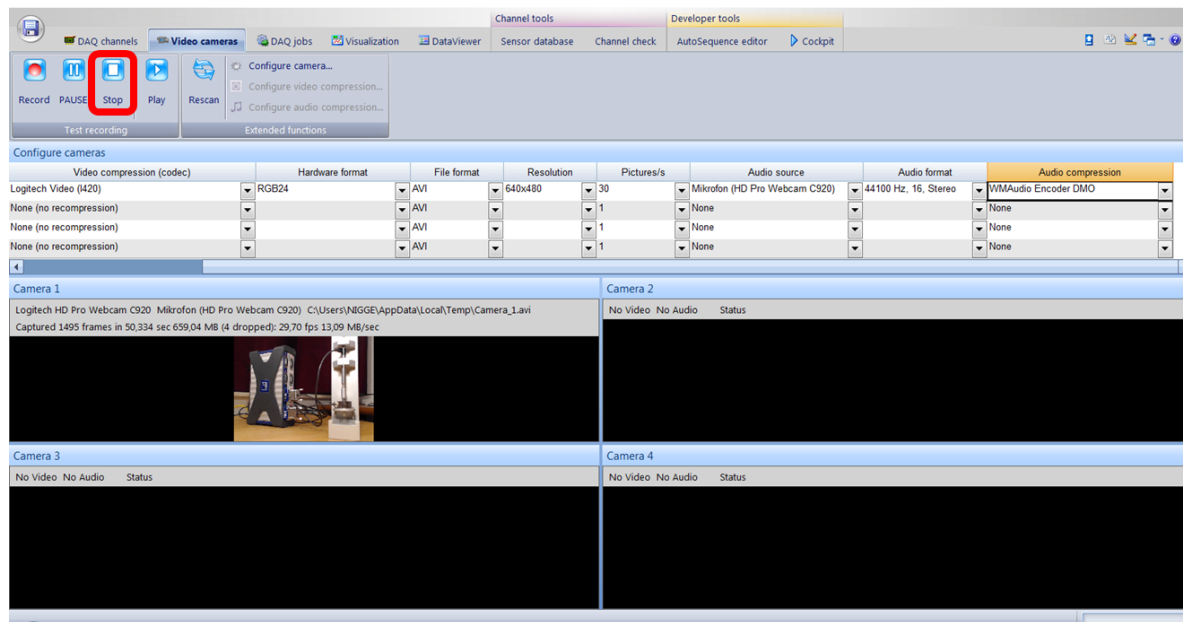
The options in the dropdown list are provided by the catman. Most USB cameras are limited to 20 or 30 fps. The fps actually provided by the camera can be determined during the following test recording. Be aware that high sample rates may slow down the computer.

## Test Recording

Push Record to start a test recording:

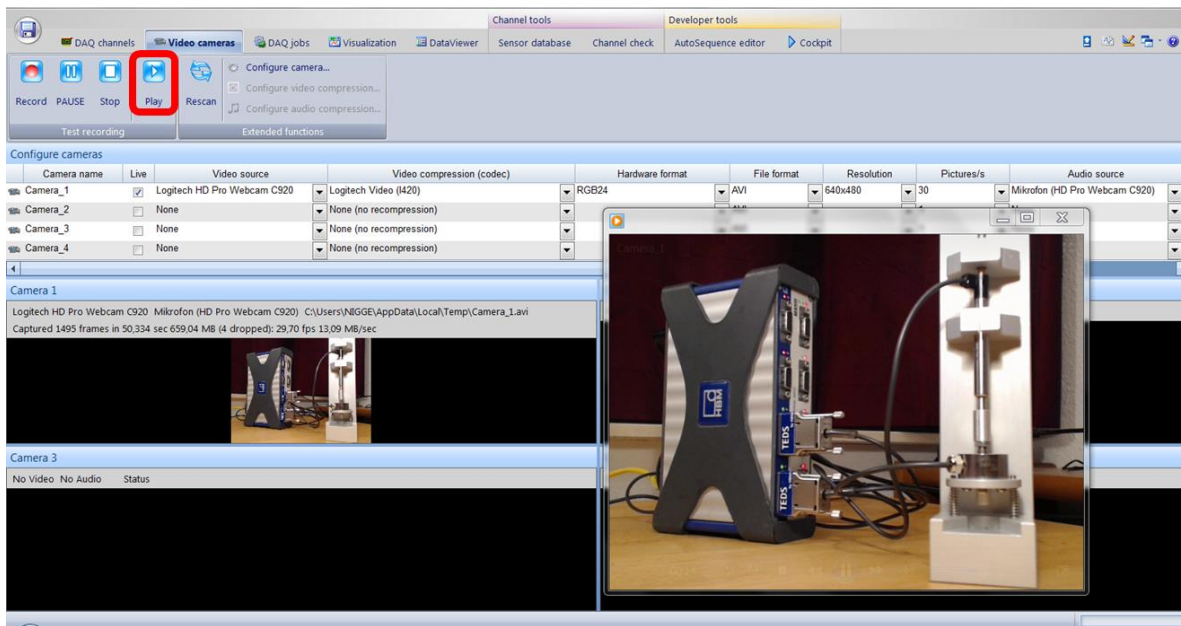


Push Stop to end the test recording:



The text in the live display shows the number of frames per second actually recorded. If this rate is much lower than the selected rate (which is also indicated by a high number of frames dropped), a lower rate should be selected for performance reasons.

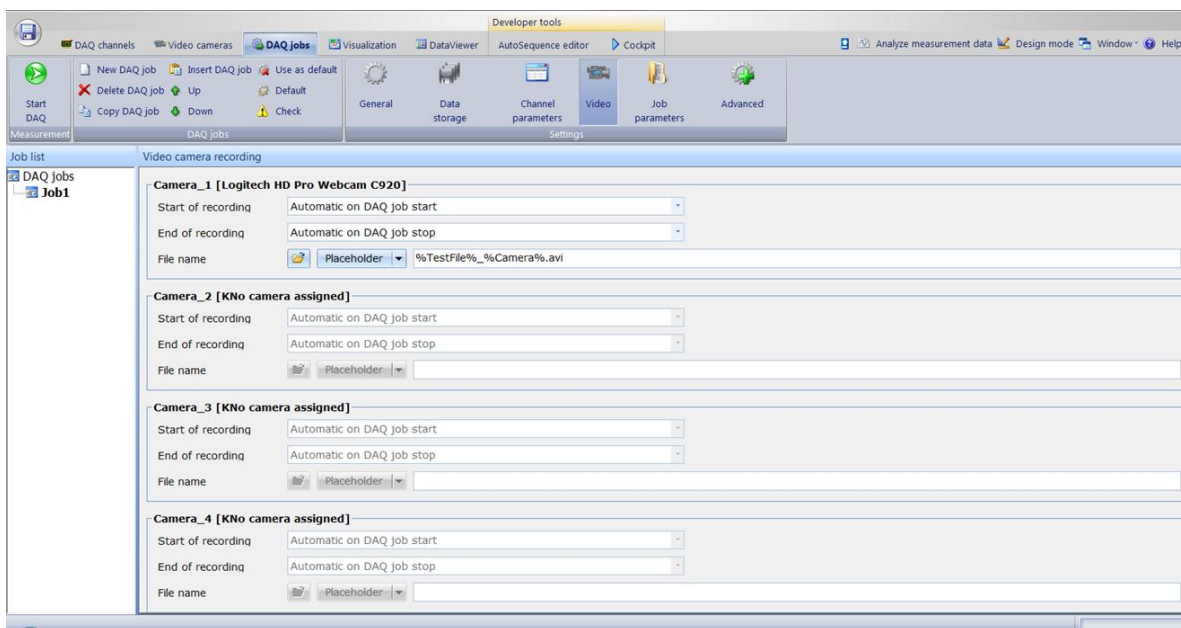
Push Play to review the test recording with the preferred media player installed on your computer:



If no test recording is shown, a different codec must be selected.

## DAQ Job Configuration

Select the start mode and the stop mode of the video recording for each active video camera:

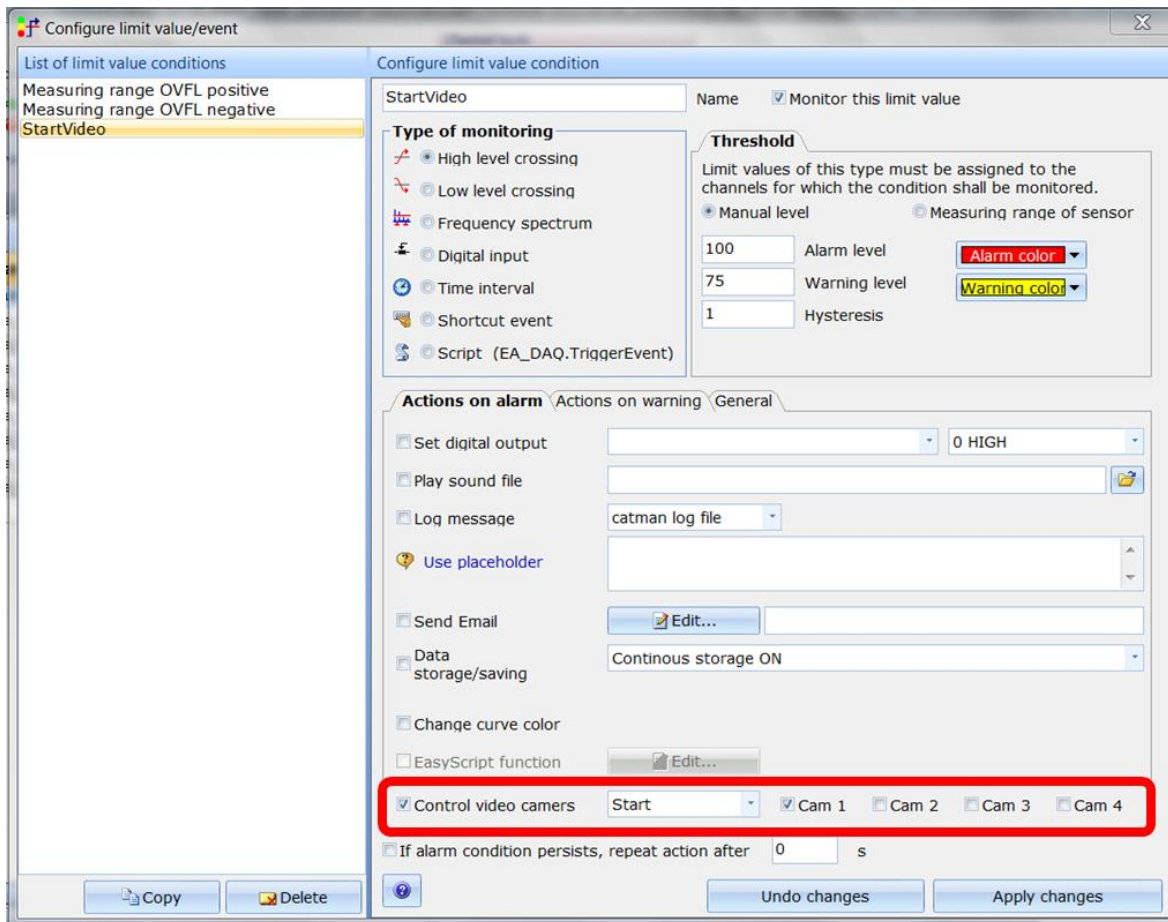


The following start modes are available:

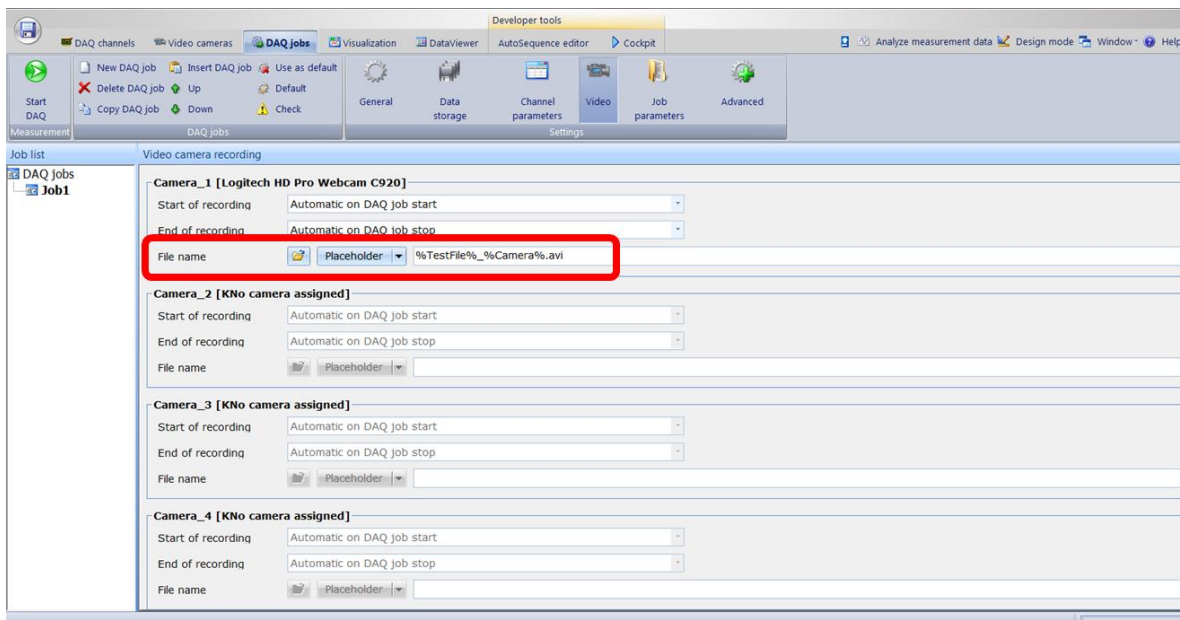
- (1) Automatic on DAQ job start
- (2) Automatic on start trigger: video recording starts together with triggered data recording
- (3) By event monitoring or script: video recording starts based on its own event condition or based on a script command

The analogous modes are also available to stop the video recording. If the start or stop mode by event monitoring is used, the definition of the corresponding event needs to include the action to start or stop the video recording:



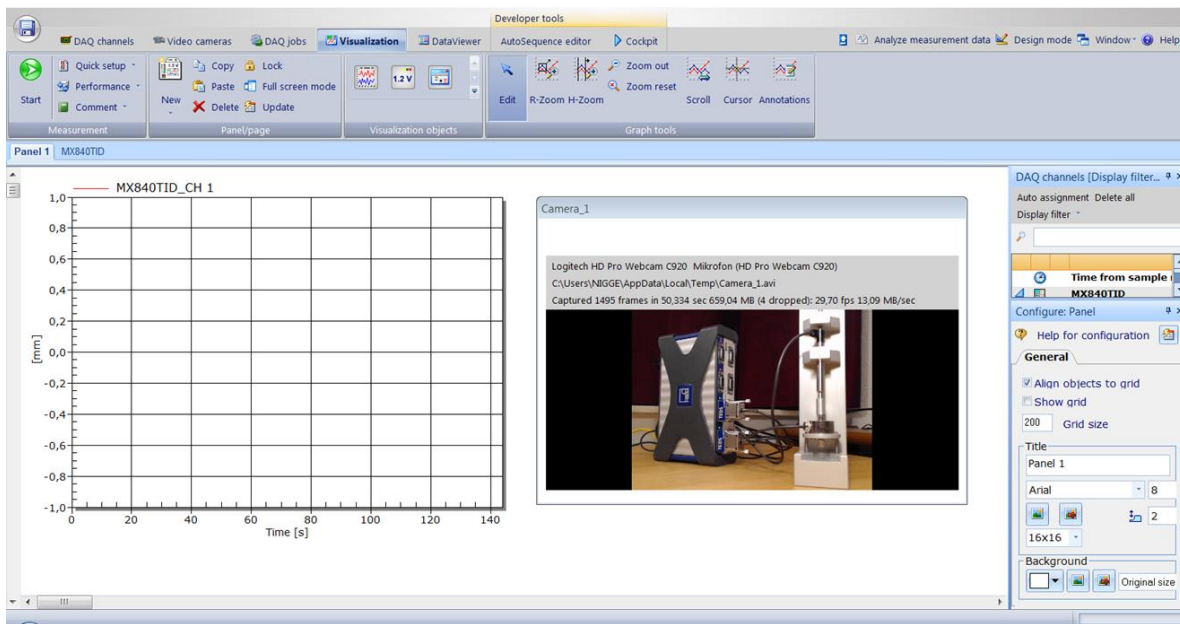


If necessary, modify the default name of the video file:



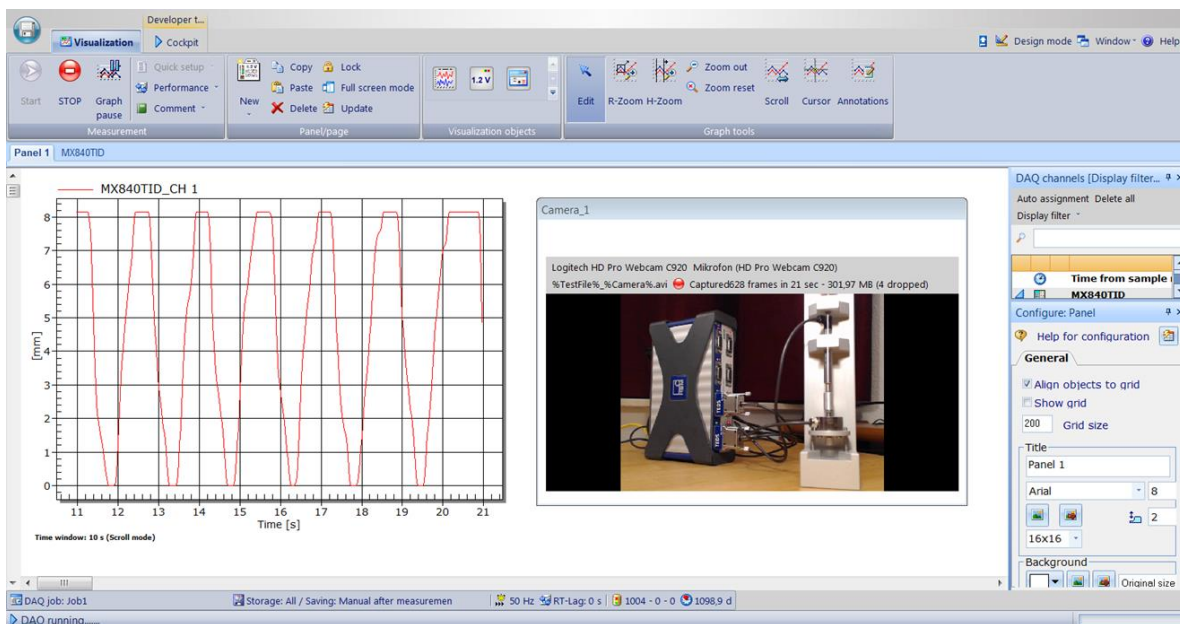
By default, the video file is stored in the same folder as the measurement data. Also, the file name is identical, except for an additional suffix “\_Camera\_1” and a different file extension (.avi).

Add a Video Camera Display (one per camera) to your real-time visualization:



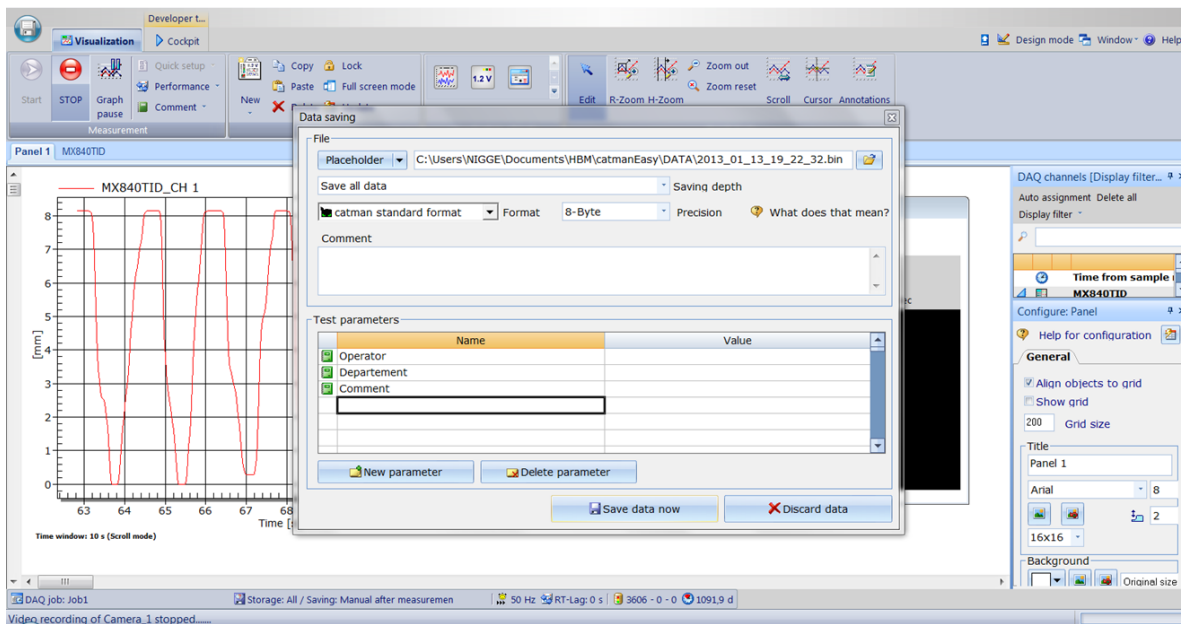
## Data Acquisition

Start the data acquisition



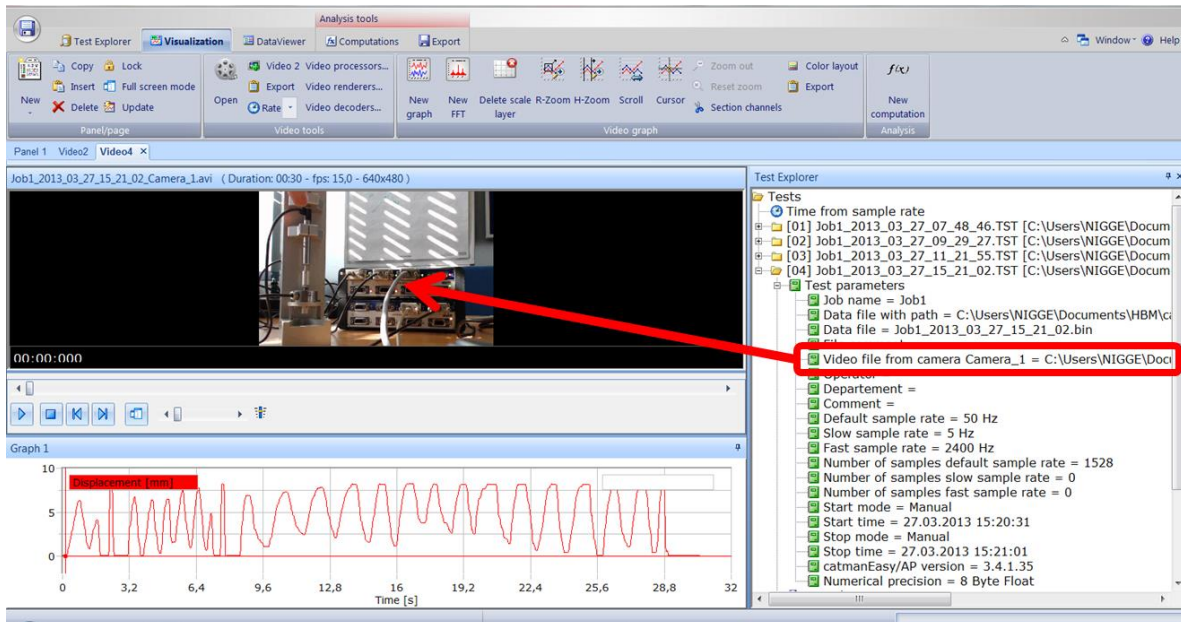


Stop the data acquisition and save the measurement data. The video data are then also saved automatically:

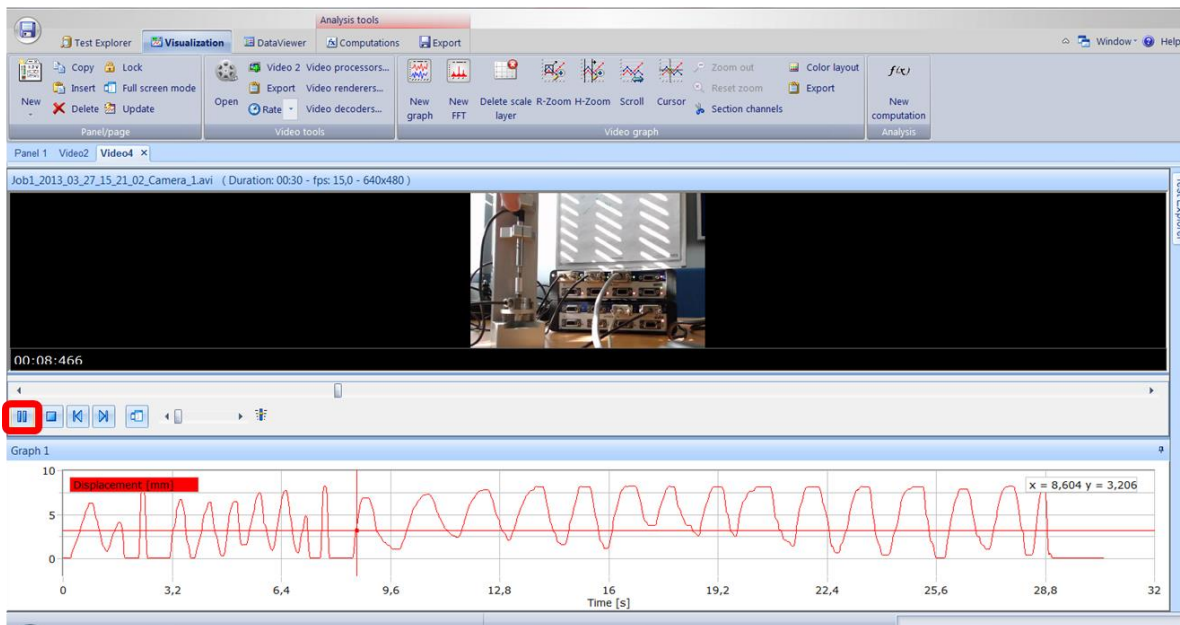


## Data Review and Analysis

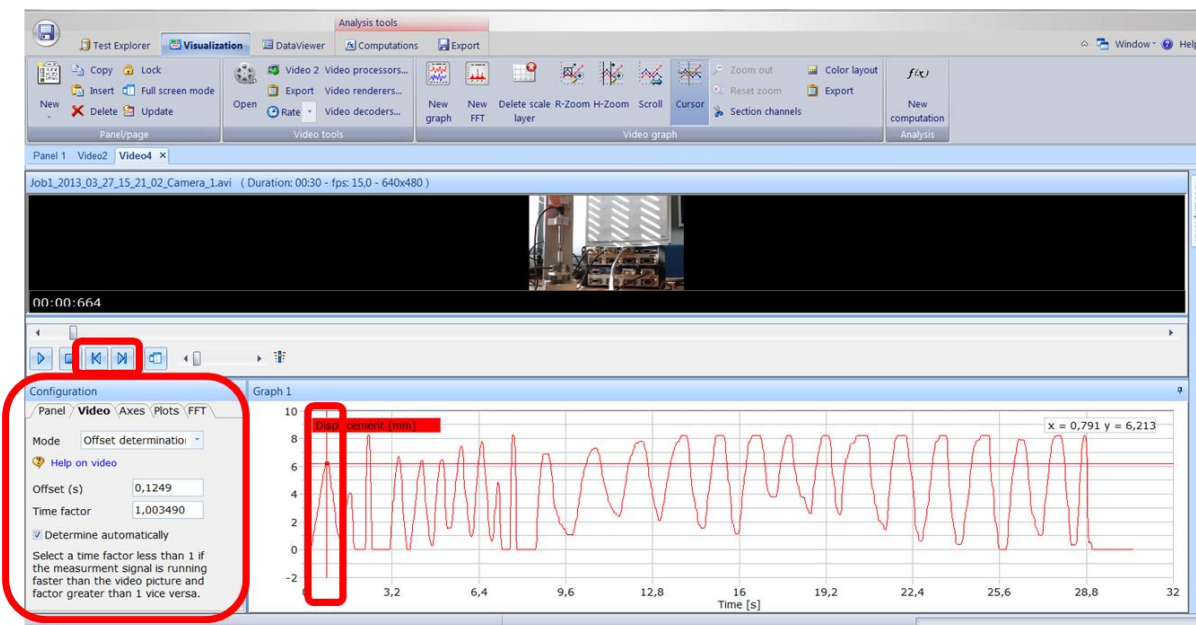
In the analysis mode, add a video panel to your visualization. Open the video file from the measurement job to be analyzed. This can be done either by the action Open in the group Video tools of the Visualization ribbon, or by simply dragging the “Video file from camera ...” test parameter from the analysis project into the video display window:



Push playback to review the video and measurement data in parallel. A cursor in the measurement data indicates the time and measurement values corresponding to the actual video picture:



A possible time offset between the measurement data and the video data can be corrected as follows: In the Video tab of the panel configuration dialogue, switch the mode to Offset Determination. Move the video to a frame which corresponds to a distinct feature (e.g. peak) in the graph, and move the cursor of the graph to the same feature. Furthermore, a possible difference in the durations of the video stream and the data stream is automatically corrected for by a time factor if the corresponding option is activated.



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