

THE MEASURABLE DIFFERENCE.

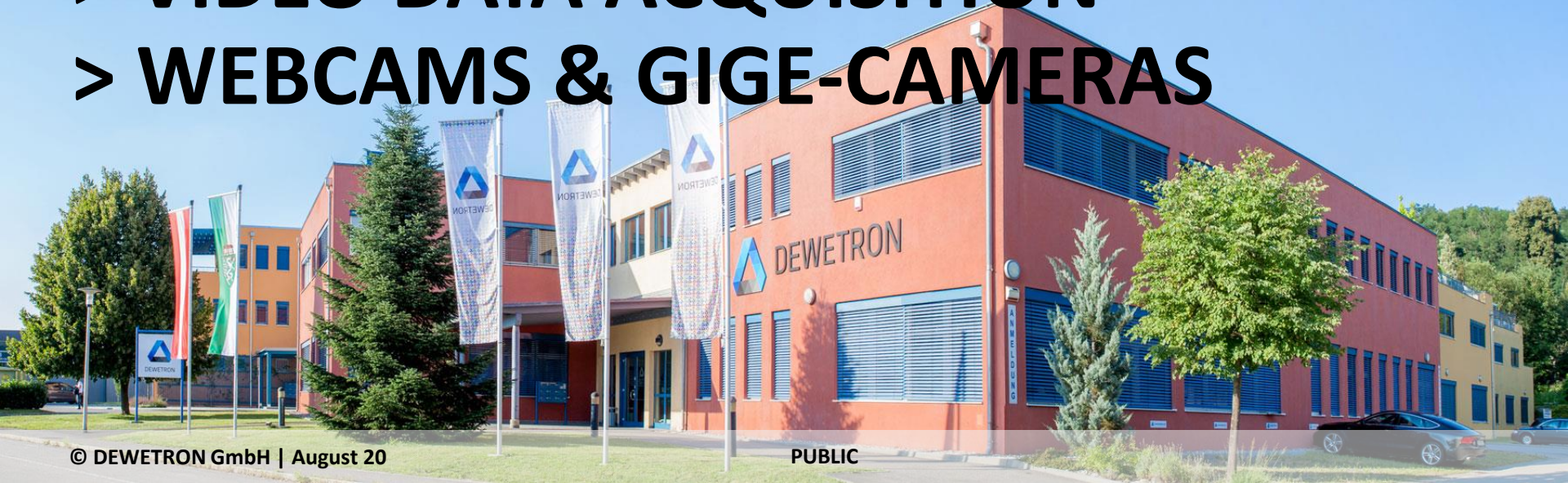


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OXYGEN TRAINING

- > VIDEO DATA ACQUISITION
- > WEBCAMS & GIGE-CAMERAS





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WEBCAM SETUP

Connect the webcam to the PC and (re)start OXYGEN

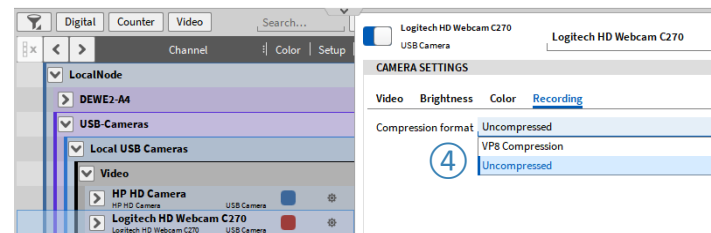
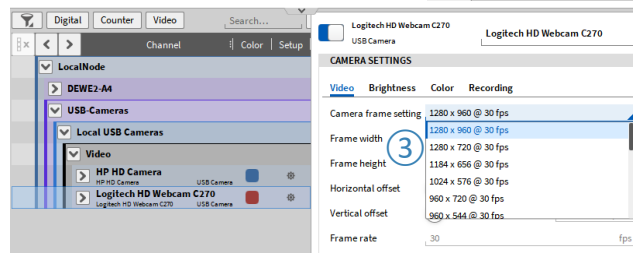
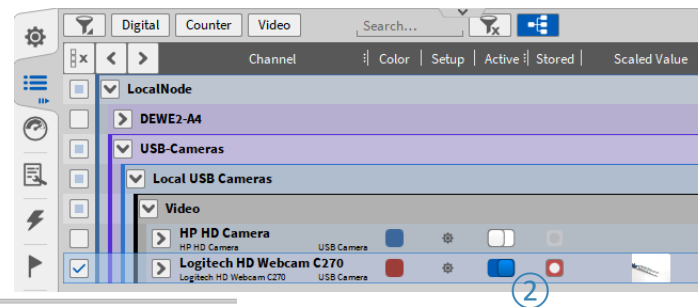
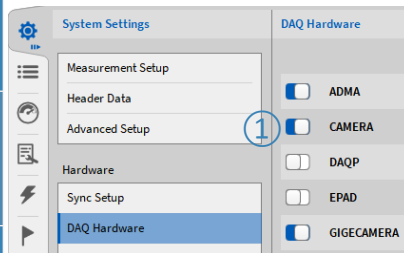
① Enable CAMERA in DAQ Hardware menu and restart OXYGEN if not already activated

② Go to the Channel List and enable the camera for DAQ and Recording

③ The resolution could be adjusted in the Camera Settings

④ The data could be stored to mkv-format (compressed) or dmv-format (uncompressed)

Please note that the video data will not be stored into the OXYGEN dmd-file but in a separate video data file (.mkv or *.dmv)*





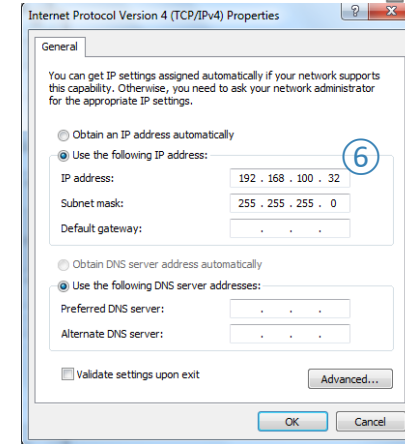
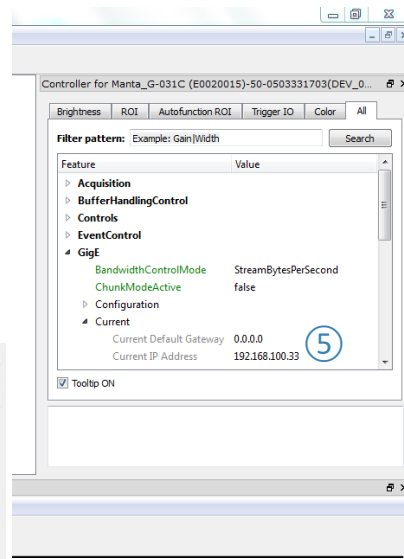
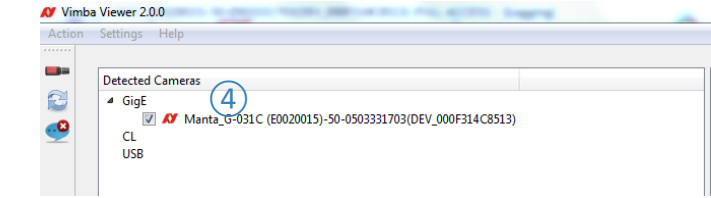
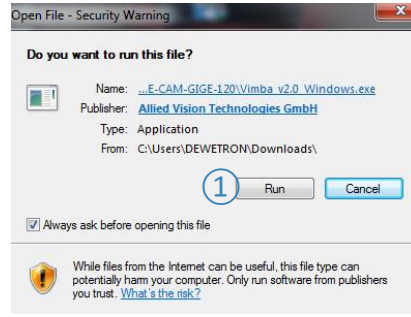
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GIGE CAMERA SETUP - INSTALLATION

Connect the GIGE camera to the PC

- To install the drivers, execute the file *Vimba_v2.0_Windows.exe* and confirm the execution
- Select the *Vimba Applications* and press *Start*
- After installation is finished, press *Exit*
- A system restart is recommended
- Open the *Vimba Viewer*. The connected camera will show up in the *Detected Cameras* section
- Check the camera's IP address which can be found in *All > GigE > Current > Current IP Address*
- Set the IP address of the network port the camera is connected to a static IP address within the same subnet range *192.168.100.xxx*





GIGE CAMERA SETUP - OXYGEN

- 1 Enable *GIGECAMERA* in DAQ Hardware menu and restart OXYGEN if not already activated
- 2 Go to the *Video* section and enable the camera
- 3 If the camera shall be used in freerun mode (frame update not triggered by OXYGEN), select *Fixed Frame Rate* and select the desired *Frame Rate* below

The screenshot displays the OXYGEN software interface. The top section shows 'System Settings' with a sidebar menu including 'Measurement Setup', 'Header Data', 'Advanced Setup', 'Hardware', 'Sync Setup', and 'DAQ Hardware'. The 'DAQ Hardware' panel is active, showing a list of hardware options: ADMA, CAMERA, DAQP, EPAD, and GIGECAMERA. The GIGECAMERA option is checked and marked with a circled '1'. Below this, the 'Video' section is visible, showing a 'Video Channels' list with one channel selected: 'Camera 50-0503331703'. This channel is also marked with a circled '2'. To the right, the 'CAMERA SETTINGS' panel is open, showing various configuration options: Camera Frame Setting (656 x 492), Frame Width (656 pixel), Frame Height (492 pixel), Horizontal Offset (0 pixel), Vertical Offset (0 pixel), Trigger Mode (Fixed Frame Rate), and Frame Rate (50 fps). The Trigger Mode is marked with a circled '3'.

If multiple cameras are activated at the same time, they share the network bandwidth. If the bandwidth is not enough OXYGEN will display a warning and the user needs to limit the frame rate.



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GIGE CAMERA SETUP - OXYGEN

- 1 If the frame update of the camera shall be triggered by OXYGEN, select AUX
 - 2 For triggering the camera by OXYGEN a TRION-BASE, TRION-TIMING or TRION-VGPS board is required. These boards have an AUX connector which can be configured to provide a LVTL signal for triggering the cameras. Proper cables are typically provided by DEWETRON.
 - 3 For configuring the AUX output, press the Gear button to open the *Sync Setup*
 - 4 Enable the *Frequency (AUX)* output
 - 5 Select the proper *Frequency* which will equal your camera frame rate
 - 6 Select *StartEdge Rising* which means that the camera frame is update every time the signal has a rising edge.
- Synchronization to falling edges is not supported.

The image shows a software interface for configuring a camera. The top part displays a list of video channels under 'DEWE2-A4' and 'Video Channels'. The 'Camera 50-05...1703 RcvdCNT' is selected. The 'CAMERA SETTINGS' panel shows 'Trigger Mode' set to 'AUX' (indicated by a circled 1) and 'Frame Rate' set to 50 Hz. A gear icon (3) is used to access the 'Sync Setup' menu.

The middle part shows a physical hardware unit with connectors labeled 'IRIG DC', 'CNT 1', 'CNT 2', 'AUX' (indicated by a circled 2), and 'DIO'. A 'TRION™ BASE DEWETRON' board is plugged into the 'DIO' connector.

The bottom part shows the 'System Settings' menu with 'Sync Setup' selected. The 'Sync Setup' window shows 'Auto setup' checked and 'Frequency (AUX)' selected. The 'SYNCHRONISATION OUTPUT' section shows 'Frequency (AUX)' set to 50 Hz (indicated by a circled 4 and 5) and 'StartEdge' set to 'Rising' (indicated by a circled 6).



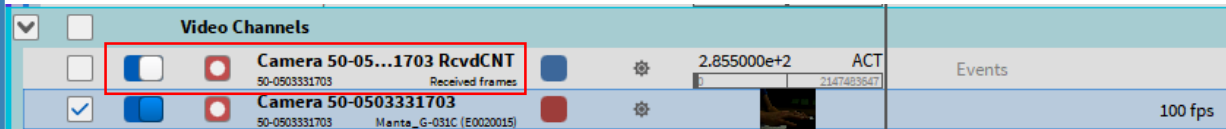
GIGE CAMERA SETUP – CAMERA SETTINGS

- 1 The frame size (width and height), Horizontal and vertical offset can be adjusted in the Video section of the Camera settings as well as the Trigger mode.
- 2 Exposure and Gain settings of the camera can be edited in the Brightness section of the Camera Settings
- 3 Color settings can be edited in the Color section of the Camera Settings
- 4 The data could be stored to mkv-format (compressed) or dmv-format (uncompressed)

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FRAME COUNTER CHANNEL

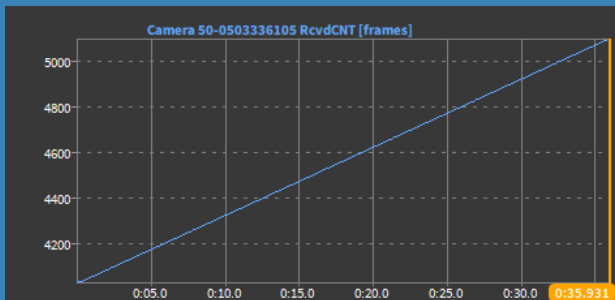


For each camera there exists a counter channel that counts the number of received frames since acquisition start. The channel has the same name as the respective camera with *RcvdCNT* appended. In order to activate the counter, you need to activate the channel (the channel is not activated automatically).

This channel increases by one every time a new frame is received by OXYGEN from the camera. The instant of time when the frame is updated is stored as well and can be displayed in a table instrument or if the frame counter is visualized in a Recorder.

Thus, the information when the camera frame is updated, is available in this channel. In case the camera is running with a fixed frame rate, the instant of time the frame is updated is determined by the camera itself.

In case, the camera is running in AUX mode and is triggered by OXYGEN, the instant of time the frame is updated is determined by OXYGEN.



Time	Camera 50-0503336105 RcvdCNT [frames]
0:35.8985212	5096
0:35.8651879	5095
0:35.8318546	5094
0:35.7985212	5093
0:35.7651879	5092
0:35.7318546	5091
0:35.6985212	5090
0:35.6651879	5089
0:35.6318545	5088
0:35.5985212	5087
0:35.5651879	5086
0:35.5318545	5085
0:35.4985212	5084
0:35.4651879	5083
0:35.4318545	5082
0:35.3985212	5081
0:35.3651878	5080
0:35.3318545	5079
0:35.2985212	5078
0:35.2651878	5077

WEBCAM VS GIGE CAMERA



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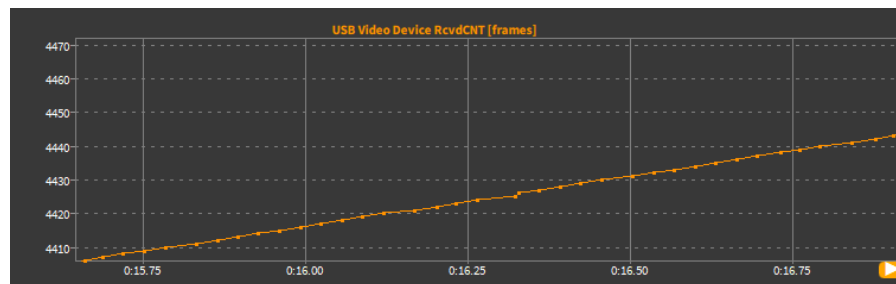
Webcam:

- > Data transmission over USB
- > Fixed frame rate, not editable by the user
- > Stochastic frame update
- > Only free run mode

GigE camera:

- > Data transmission over LAN
- > Frame rate editable by the user
- > Deterministic frame update
- > Possibility to trigger frame update by OXYGEN

Webcam frame update:



GIGE camera frame update:

