

HEINE® DV 1 Software Installation and How-to Guide

Software and camera driver have to be installed prior to the first start up. This requires administrator rights. Follow the instructions in the order given below.

1. Download the files

Visit <http://dv1.heine.com> to download the image capture software and camera drivers. From the homepage click on "Please click here to learn more", then click on the "Support Download-FAQ" icon. To start the download, click on the desired language under Software/Driver/Configuration package (a warning message may be displayed depending on your Windows version and your settings). Locate the downloaded ZIP folder.

2. Connect the camera to your computer

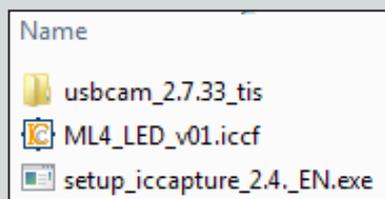
Connect the camera with the USB cable to your computer. Insert the side with the wide/big USB connection into the USB 2.0 port of your computer and the other side into the mini-USB port of the camera. Please make sure that the camera is connected directly to the computer, e.g. USB hub or other similar instruments are not interconnected.

3. Extracting the files

The ZIP archive has to be extracted prior to installation. To do this, click with the right mouse button on the download file and select „Extract all“. Then, select a new location for storing the extracted files. Once extracted, the following files will be in the respective folder, e.g. "Software_Driver_ML4_ENG_2.4+Win8":

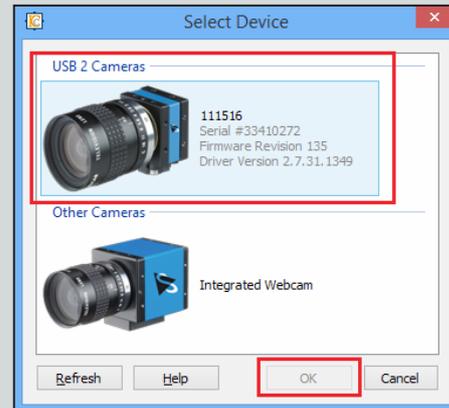
4. Camera Driver Installation

Open the "Software_Driver_ML4_ENG_2.4" folder (or the respective folder with the unzipped files) and double click on the directory „usbcam“ and then double click on the file „drvinstaller“. Follow the instructions of the installation routine.



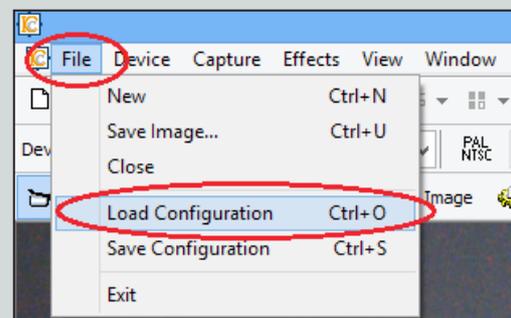
5. Image Capture Software Installation

Double click on the file „setup_icapture“ and follow the instructions of the installation routine. After successful installation, open the program „IC Capture“. The connected video camera will be recognized in the „Select Device“ window (please note that the device serial number will be unique and will not match the image below). Confirm the device selection by clicking „OK“.



6. Load the Initial Camera Configuration file

It is important to configure the software to provide the best possible performance with the DV 1. An initial configuration has been supplied in the download files – "ML4_LED_v01.iccf" file. You must load this configuration first. To do this, go to the menu item „File“ in IC Capture and select „Load Configuration“. Browse to the location where you saved the download files, choose the file "ML4_LED_v01.iccf" and confirm with „Open“.



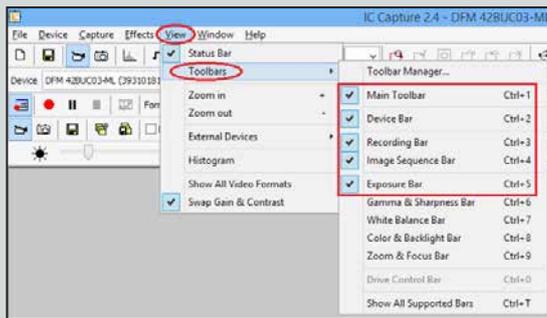
IC Capture will then align all necessary settings (e.g. white balance, refresh rate, etc.) to the connected camera.

7. Recommended toolbars

By the addition of toolbars, settings can be viewed and changed very fast in IC Capture. We recommend the display of the following toolbars:

- Main Toolbar
- Device Bar
- Recording Bar
- Image Sequence Bar
- Exposure Bar

To activate the display of toolbars go to menu and click on „View“ → „Toolbars“ and click on the appropriate toolbars.



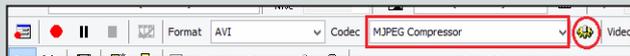
8. Video Recording Settings and How-To

A) Setting the video compression

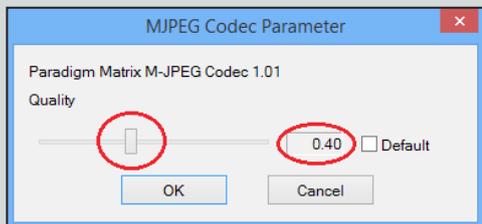
To ensure smooth video recording the compression has to be set correspondingly.

Before recording to the hard disc, the video compression has to be checked/corrected every time, as the compression is not saved in the configuration file.

On the Recording Bar, choose the codec "MJPEG Compressor" from the dropdown list and click on the gear-wheel on the right to change further settings.



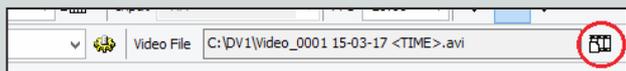
In the newly opened window, use the slide control to set the value to 0.40 and confirm with „OK“.



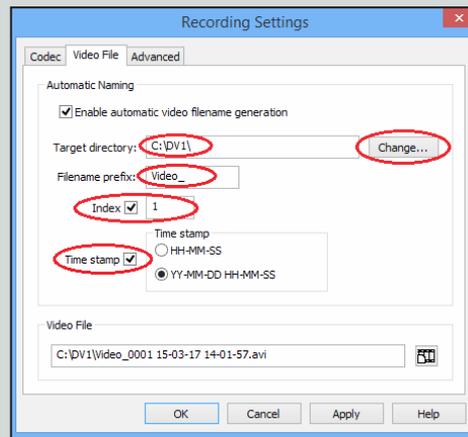
B) Setting the storage location of your video files

When recording videos and/or photos, it is important to select a storage location so they can be found quickly. We recommend you create a Target directory folder for your files before performing these steps.

On the very right of the "Recording" toolbar the chosen folder is displayed. To change the Recording settings for the file generated, click on the File Manager button on the right of this field.



In the „Video File“ tab that opens, perform the following operations: choose "Enable automatic video filename generation", select the Target folder you created as the Target directory by clicking on the "Change..." button, type in the Filename prefix you wish all of your video files to have, and choose a "Time stamp" to select a date format.



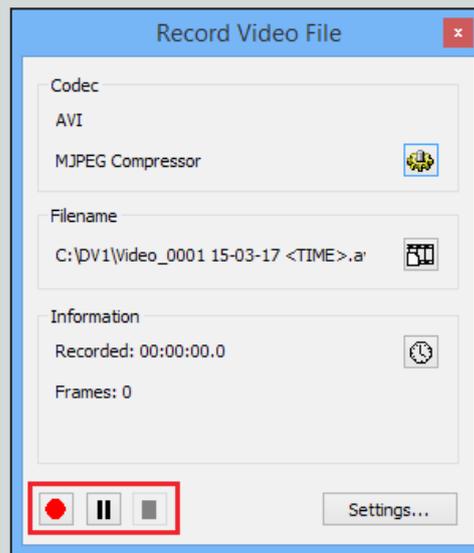
Confirm your selections with „Apply“ and close the window by clicking „OK“.

C) How-to record videos

Video recording can be started via the Recording toolbar (see image below) or the dialogue box „Record Video File“.



To display the dialogue box „Record Video File“, go to the menu item „Capture“ and select „Toggle Recording Info Dialog“. You will find the buttons to control the recording at the bottom of the dialog box.

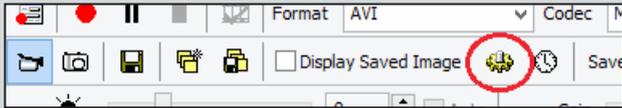


9. Still Image Capture Settings and How-To

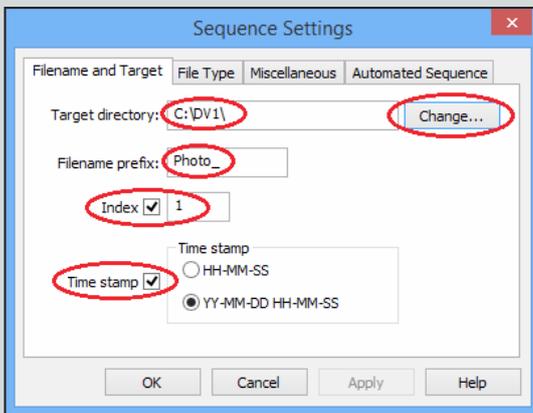
Photographs can be taken directly with IC Capture. Alternatively, photographs can also be generated from the recorded videos. These produce higher quality images, especially with quickly changing images. For this, software such as VLC is required.

A) Setting the storage location of the photographs

Settings of these snapshots can be defined using the toolbar "Image Sequence Settings". Click on the gear-wheel (see image below) to open the dialogue.



On the „Filename and Target“ tab select the field „Target directory“ and click on the button „Change...“ to select the storage location. On this tab you can also define a Filename prefix, and an Index and a Time stamp for every file. Save your selection by clicking on „Apply“.

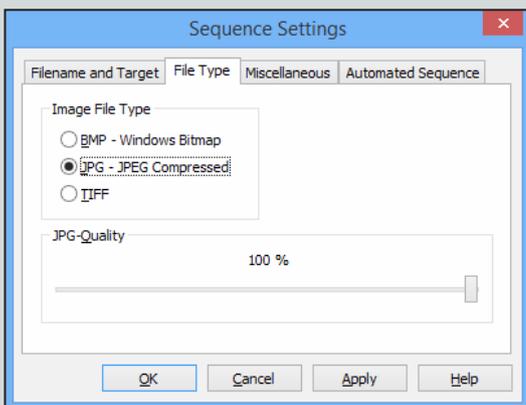


B) File Type Settings

The File Type of the Saved Image Files is defined on the „File Type“ tab. To display the tab go to the menu item „Capture“ → „Image Sequence Settings“ and choose the „File Type“ tab. 3 file formats are available:

- BMP – Windows Bitmap Uncompressed image file 3.5 MB
- JPG – JPEG compressed Compressed image file, file size depends on the compression factor
- TIFF Uncompressed image file 3.5 MB

We recommend JPG setting for Image File Type

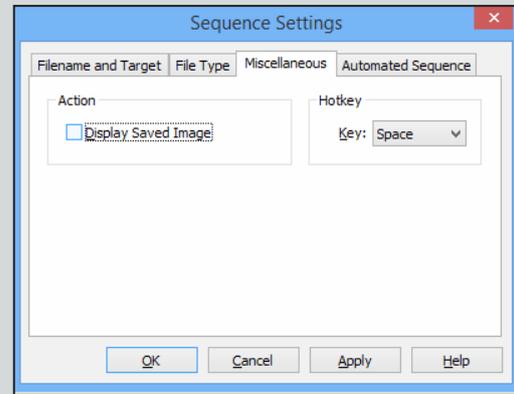


Click "Apply" to save any changes.

C) Action and Hotkey Selection

Additional settings for capturing photographs can be selected on the „Miscellaneous“ tab. The check box „Displayed Saved Image“ must be deactivated.

We recommend using the key „Space“ as Hotkey. This activates the Space bar as the key you press to take a photo and save it in the folder you defined beforehand.



To save the settings click on the button „Apply“ and then click „OK“ to close the window.

D) How-to Take Still Images

To take photographs click on the header of the Live Window of the video to activate the window. The activated window can be recognized by the darker window bar (see in the first image below). If the Live Window is not activated, the window header is lighter in colour and the text is not as dark (see the second image below).

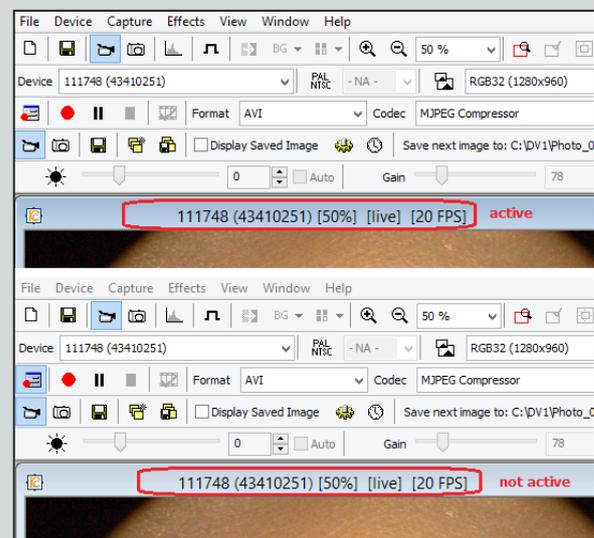
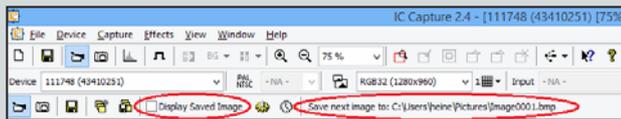


Photo capturing can be triggered by pressing the Hotkey defined earlier (the space bar). The recorded images will not be shown, but will be automatically saved in the destination folder.

NOTE: Check the Photo settings via the toolbar

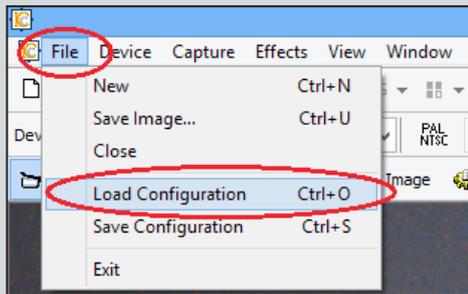
The most important settings can be controlled via the „Image Sequence Bar“ on the toolbar. To display the toolbar go to menu and click on „View“ → „Toolbars“ → „Image Sequence Bar“. On the toolbar you can see at first glance whether the check box „Display Saved Image“ is activated and in which folder images are saved. The file name is also displayed – if the index number is higher after recording a photo, the still shot was saved successfully.



10. Saving the updated configuration file

Once you have selected all of your preferences, we recommend you save the configuration file to avoid having to select the same settings again when opening IC Capture the next time. To do so, go to „File“ → „Save Configuration“. We recommend assigning a new file name, in order to keep the original configuration file. You can create as many files as needed, for example you could create one for every user of the DV1. Close the dialog box by clicking the button „Save“.

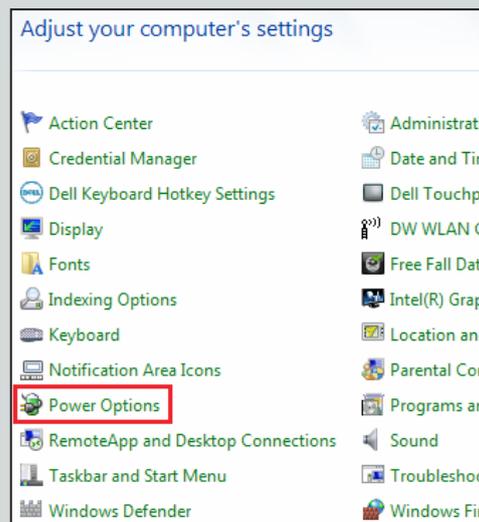
Next time you start IC Capture load the configuration you wish to use by going to „File“ and select „Load Configuration“. Browse to the location where you saved the configuration file and confirm with „Open“.



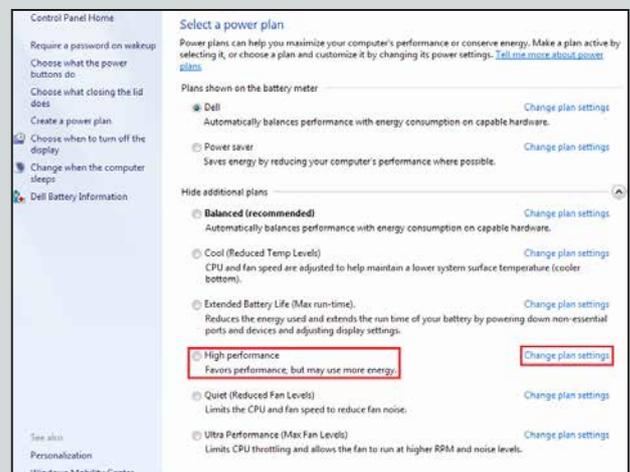
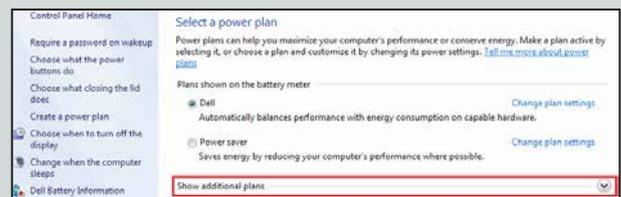
IC Capture will then align all necessary settings to the connected camera.

11. Switching off the Power Option of your computer

For the best video quality possible, your computer needs to be operating at its best performance. First, it needs to be connected to the power supply and second; the Power Option needs to be switched off. To do so, proceed as follows: Select the „Control Panel“ in the Windows Start menu and then click on „Power Options“.

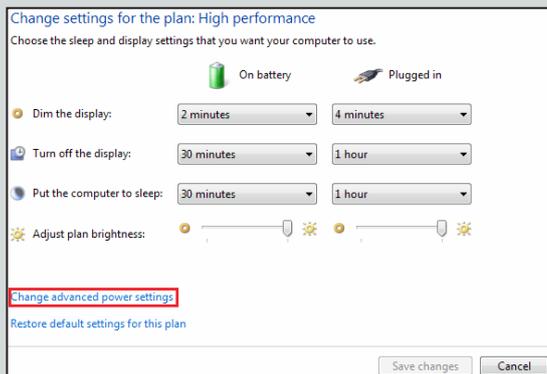


In the next window, select „High Performance“. To do so, you might have to display additional power saving profiles by clicking on the down arrow.

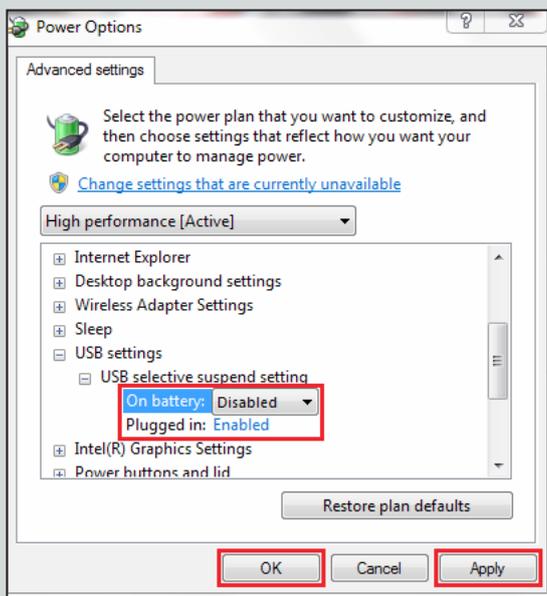


Activate the setting „High performance“ and click on „Change plan settings“. Then click on „Change advanced power settings“.

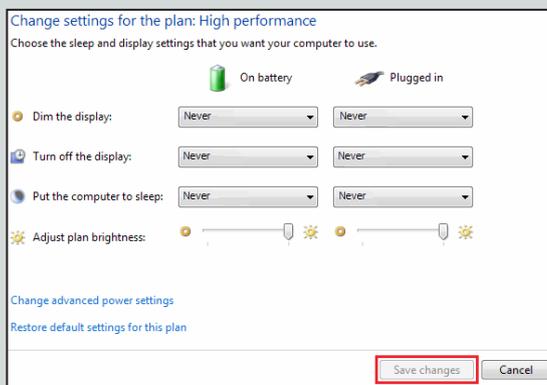




In the following window browse to the entry „USB settings“ and click on „+“ to change the setting. Then select „Disabled“ for both „On battery“ and „Plugged in“ by clicking on the entry highlighted in blue. Close the window by clicking „Apply“ and confirm with „OK“.



Select „Never“ in all drop-down windows of the newly opened window as shown below.



Close the window by clicking „Save changes“.

12. Tips & Tricks

A) Change image orientation

The easiest way to change the image orientation is by using the arrows and drop-down window at the right end of the “Device bar”.



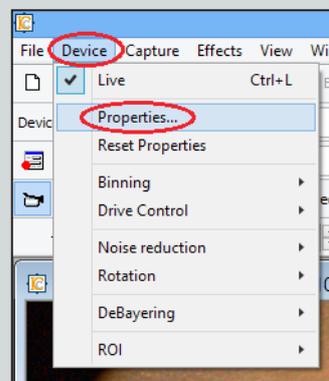
Once you found the correct setting make sure to save the configuration via “File” → “Save Configuration” as otherwise it needs to be set again when opening IC Capture the next time.

B) Influences on colour display

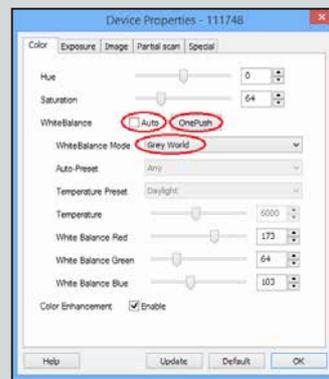
As computer screens are usually not colour calibrated the appearance of colours in a video can differ. Only by using a colour calibrated screen is it possible to guarantee that the colour on the screen is correct.

C) Adjust the colour – white balance

If you are not satisfied with the colour of the video image, first try restarting IC Capture and reloading the configuration file. Then aim the instrument at a white piece of paper and align the illuminated field with the camera. Compare the colours seen at the screen with the illuminated paper. If you feel they don't match (i.e. the paper doesn't appear white), change the adjustment of the white balance by performing the following steps while still illuminating the white piece of paper: Click on „Device“ → „Properties“.



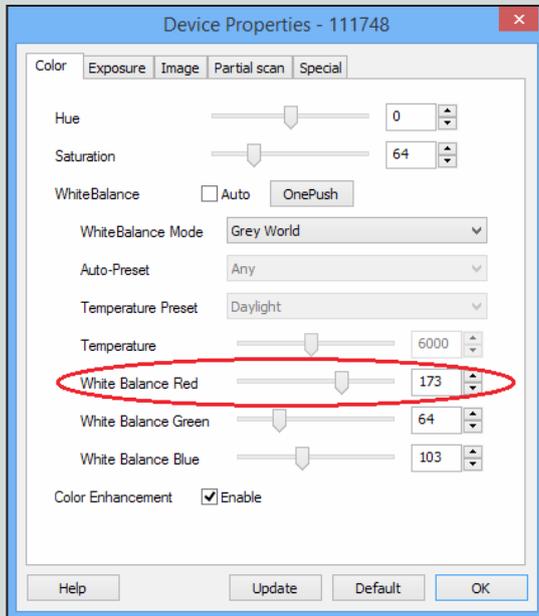
Click the button „One-Push“. Make sure that „Auto“ is NOT activated and „Grey World“ is chosen for the White Balance Mode drop down.



D) Enhance single colour settings

Sometimes adjusting the white balance may not lead to a satisfying colour display. Single colours (red, blue, or green) can be adjusted as follows:

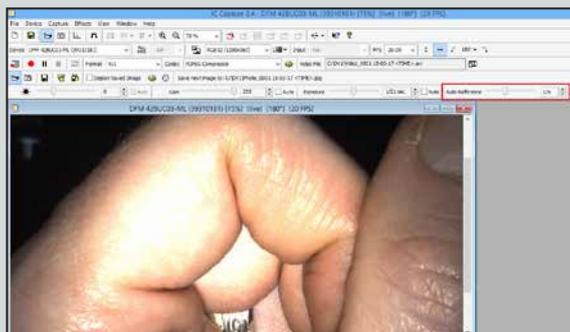
In the menu click on „Device“ → „Properties“. In the lower part use either the slide control or the up- and down arrows to increase or decrease a colour.



E) Reduce glare and reflections

Depending on the surface which is displayed with DV 1 the camera image might be brighter in the middle or there might be glare from wet surfaces such as teeth. Those can be reduced as follows:

Show the tool bar „Exposure bar“ by either pressing „CTRL + 5“ or select: „View“ → „Toolbars“ → “Exposure Bar“. On the very right end of this toolbar you can find a controller for setting the auto reference value. If the centre of the image is too bright, slightly reduce the value until you see a glare-free centre.



Below is an image taken with a lower auto reference value than above.



F) Brightness of light spot

In order to ensure that the image obtained with the DV 1 is best, make sure that the LED light from the instrument is brighter than the surrounding light. Check this by looking at the edge of the light spot – you may have to choose a smaller light spot on the ML 4 LED to see the edge clearly.

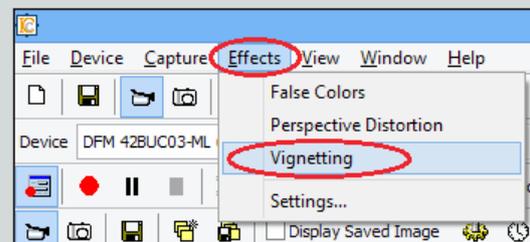
Size of brightness spot

Choose the biggest light spot on the ML 4 LED for a glare-free camera image.

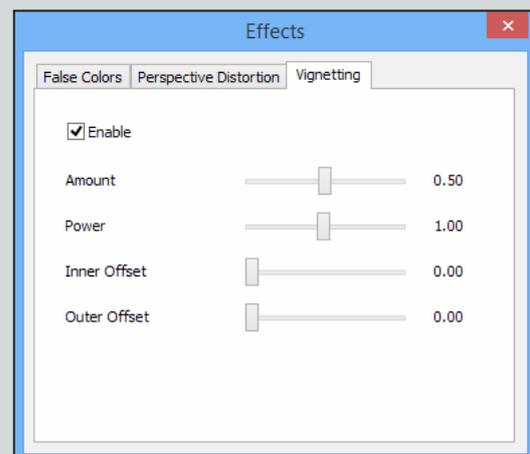
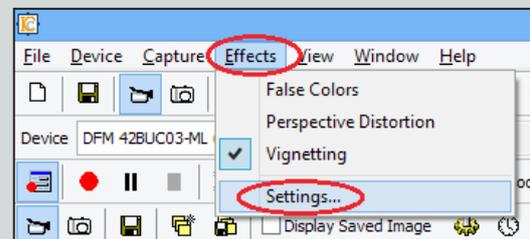
G) Function Vignetting

The overall brightness of the video image can be changed by setting the “Auto Reference Value“. Depending on your setting, the edges of the image might be too dark and details in these areas might not be visible any more. These dark edges can be brightened up, if necessary, with the help of the function “Vignetting”

To activate this function go to „Effects“ → „Vignetting“.



To change the settings go to the menu item „Effects“ → „Settings“.



Any adjustments of these settings can be seen directly in the live image display of the camera.