

## Installation Guide

Software and camera drivers 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

Please open the website with the latest version of your browser to use the full functionality of it. The files to be installed can be found on the webpage <http://dv1.heine.com> support area of the corresponding product. To start the download, click on the corresponding software package in the desired language (a warning message may be displayed depending on your Windows version and your settings). Save the downloaded file, if necessary. Open the file with a double click. The display in your Explorer should look like this:

Name	Typ
usbcam_2.7.9_tis	Dateiordner
ML4_LED.iccf	ICCF-Datei
setup_iccapture.de_DE.exe	Anwendung

### 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, e.g. no USB hub or similar other instruments are interconnected. Please use always the same USB Port for your camera.

### 3. Extracting the files

The ZIP archive has to be extracted prior to the 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. After storing, browse to the folder with the extracted files.

### 4. Save the configuration file

For a simply and quick setup of the parameters, a configuration file is available for every device with which the DV1 can be operated. These are included in the download package and have the ending \*.iccf.

Click with the right mouse button on the configuration file which is compatible with your device (e.g. ML4\_LED.iccf) and select the command "Copy". Select a location in your directory where you want to save the file (e.g. "My documents"). Save the file with the help of the command "Paste" (either by clicking with the right mouse button or via the menu item "Edit" of your Explorer).

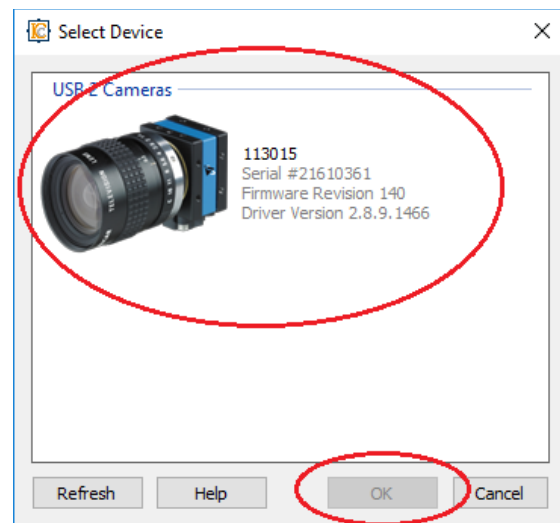
### 5. Camera Driver Installation

Select the folder with the unzipped files in your Explorer. Double click on the directory "usbcam" and then double click on the file "drvinstaller". Follow the instructions of the installation routine.

### 6. Software Installation

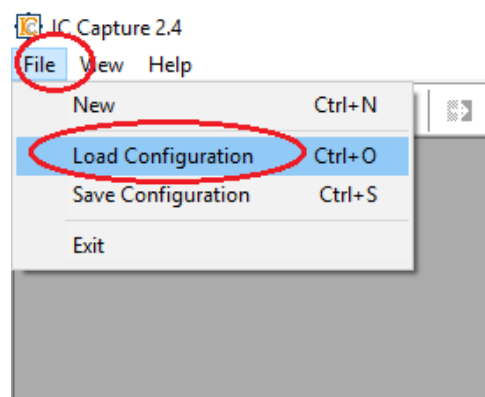
Double click on the file "setup\_iccapture" and follow the instructions of the installation routine. After successful installation, open the programme "IC Capture". The connected

video camera is recognized automatically. Confirm your selection by clicking "OK".



### 7. Adaption of the configuration file

Go to the menu "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 (e.g. white balance, refresh rate, etc.) to the connected camera.

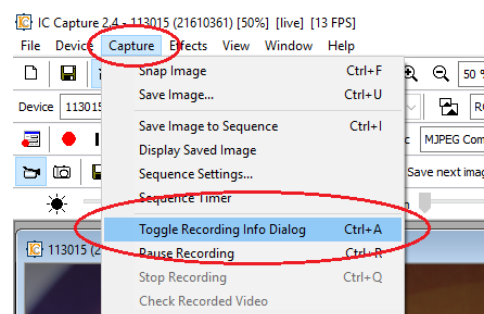
#### A) Video recording

##### Setting the video compression

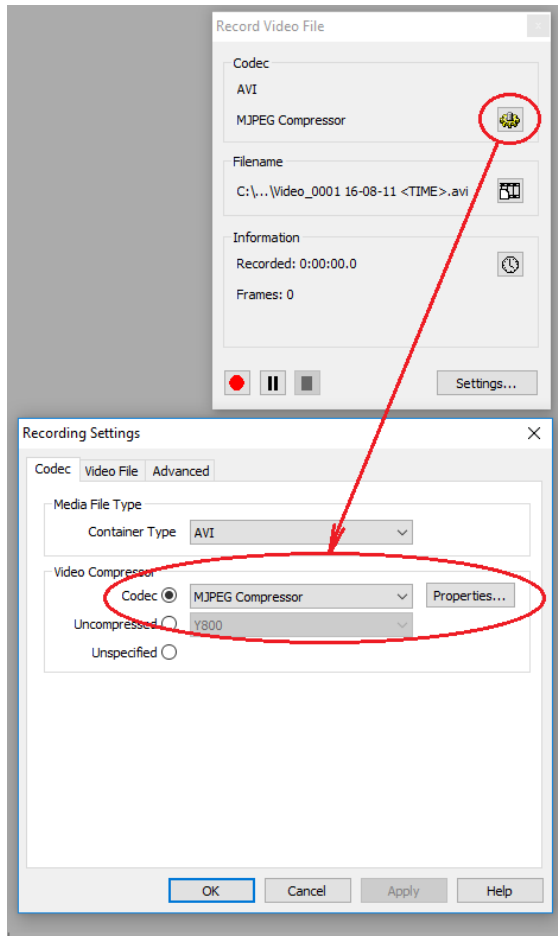
To ensure smooth video recording the compression has to be set correspondingly. This is important when using computers that merely fulfil the minimal requirements.

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

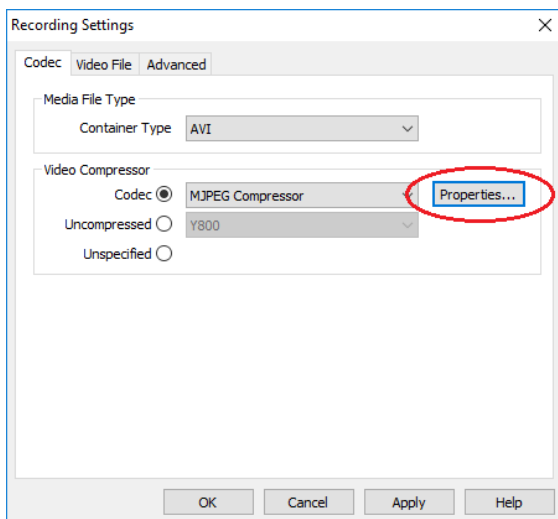
Go to the IC Capture menu and select the following path: "Capture" → "Toggle Recording Info Dialog".



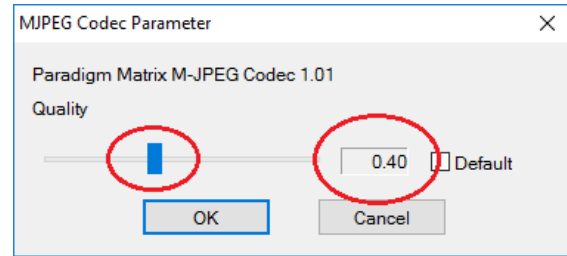
Click on the button for the Codec settings.



In the drop-down menu of the Codec select the setting „MJPEG Compressor“. Then click on the button “Properties” to the right of the drop-down menu.



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

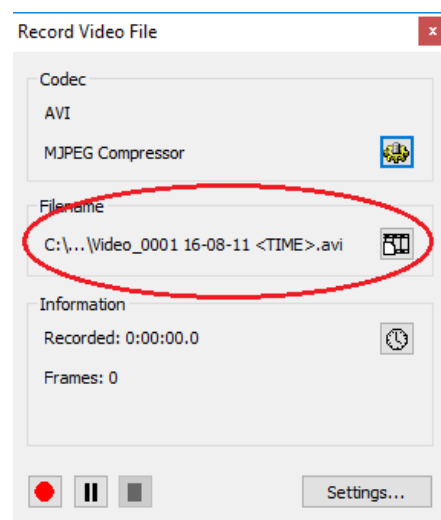


Close the window with the recording settings which opens then by clicking “Apply” first and next “OK”.

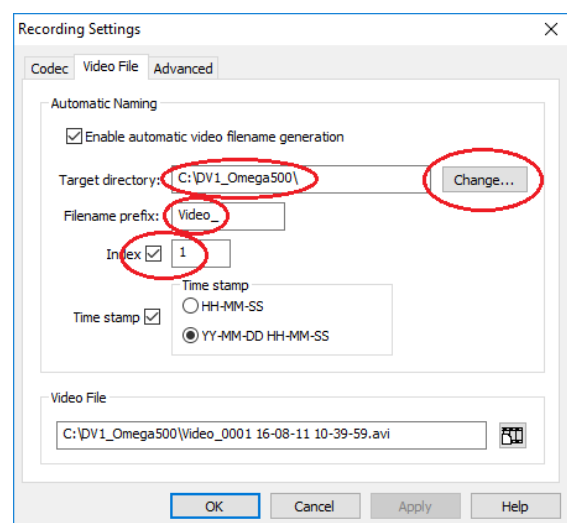
#### Setting the storage location of the recorded video file

Your video- and photo recordings can be found quickly if you select a personal storage location.

Go to the menu “Capture” and select “Toggle Recording Info Dialog”. In the section “Filename” click on the File Manager button.



On the “Video File” tab you can select your preferences for Target directories, Filenames and a possible Time stamp in the filename.

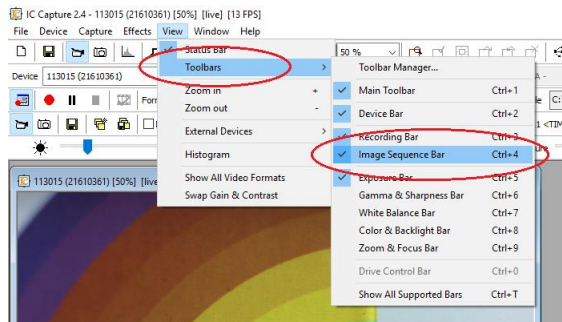


Confirm your selection with “Apply” and close the window by clicking “OK”.

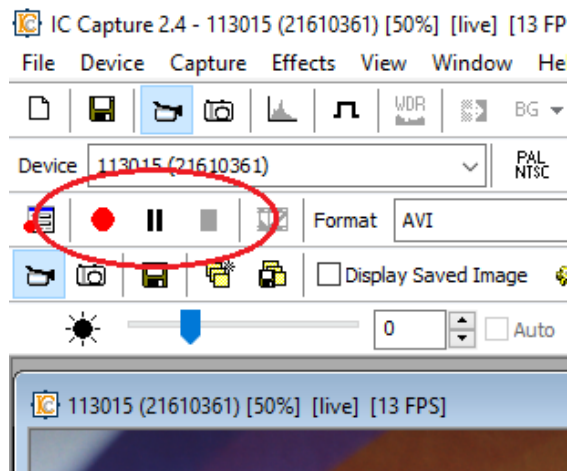
#### Record videos

Video recording can be started via the toolbar or the dialogue box “Record Video File”. To show the corresponding toolbar go

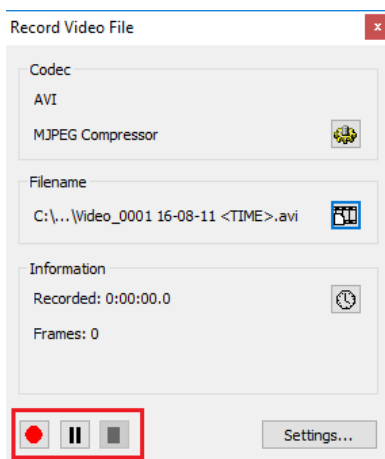
to the menu "View" → "Toolbars" → "Recording Bar".



The symbols for starting, pausing or stopping the video recording are displayed.



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

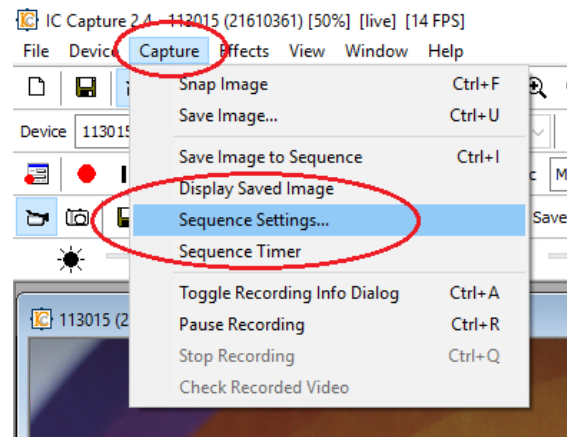


## B) Taking photographs

Photographs can be taken directly with IC Capture. As an alternative photographs can also be generated from the recorded video image. These produce higher quality images, especially with quickly changing images. A software such as VLC is required for this.

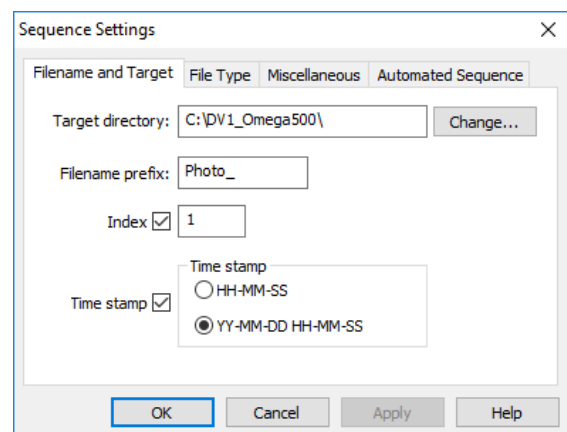
## C) Taking photographs with IC Capture

To define the settings of these snapshots, go to the menu "Capture" → "Sequence Settings".



## Setting the storage location of the photographs

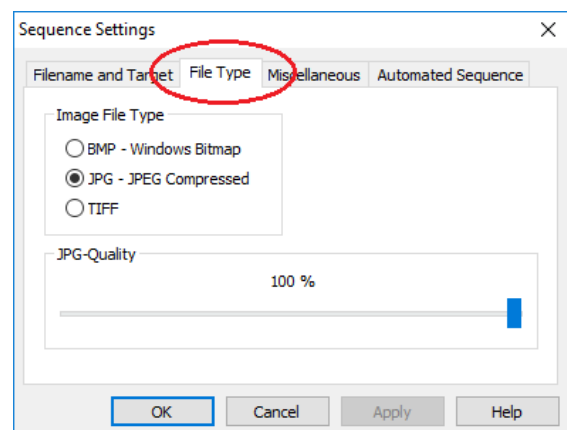
On the "Filename and Target" tab select the field "Target directory". To do this, click on the button "Change". On this tab, you can also define a Filename prefix, an Index and a Time stamp for every file. Save your selection by click on "Apply".



## File Type Settings

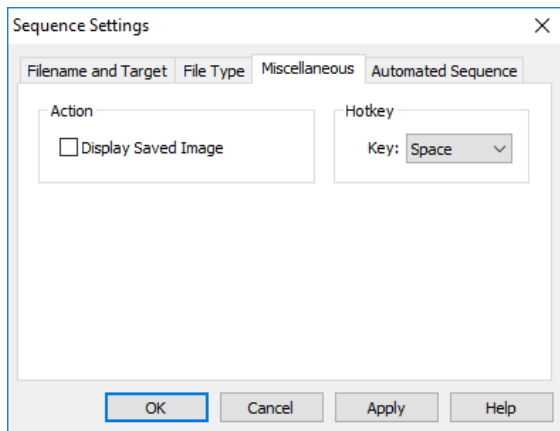
The File Type of the Saved Image Files is defined on the "File Type" tab. 3 file formats are available:

- 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



Settings for capturing photographs can be selected on the "Miscellaneous" tab. The check box "Displayed Saved Image"

has to be deactivated. We recommend setting the Hotkey "Space". Every time you press the space key, an image is saved in the folder you defined beforehand with the name you specified.



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

### Taking photographs

To take photographs click into the Live Window of the video to activate the window. The activated window can be recognized by the darker window bar (see below). If the Live Window is not activate the window bar is brighter and it is not possible to press the recording button.

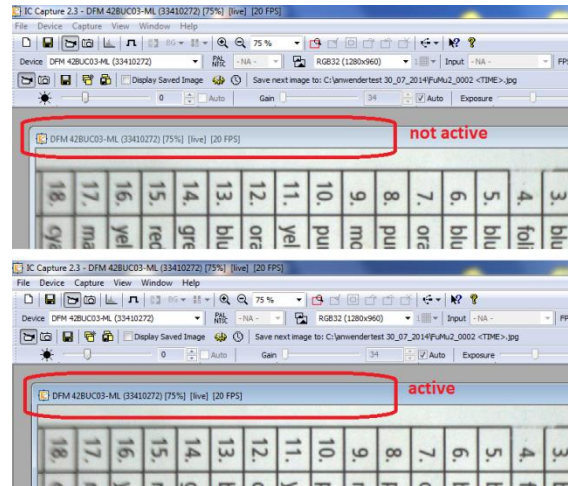
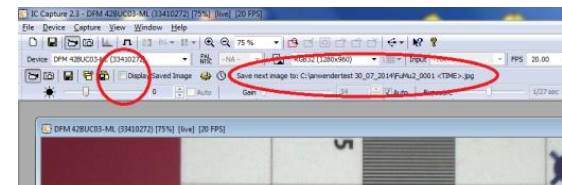


Photo capturing can be triggered by pressing the defined Hotkey (space key). As the recorded images are not shown, the user himself does not notice the image capture.

### Checking the 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. There also the file name is displayed – when the index number is higher after the recording of a photo this is an evidence that the still shot was saved successfully.

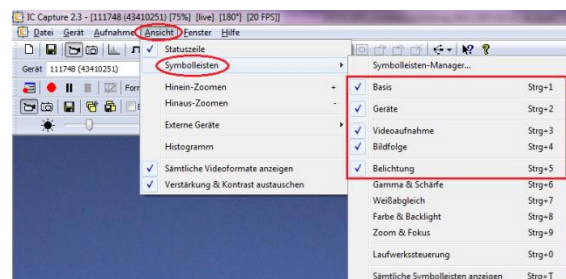


## 8. Recommended toolbars

Via the corresponding toolbars information to settings can be viewed and changed very fast. That's why 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".

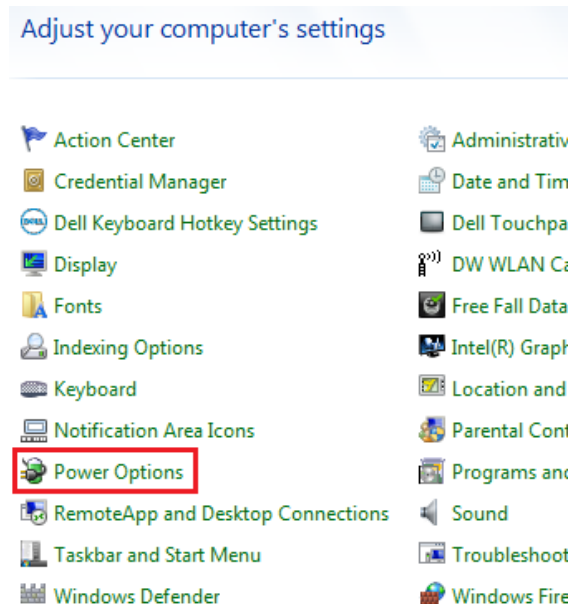


## 9. Saving the changed configuration file

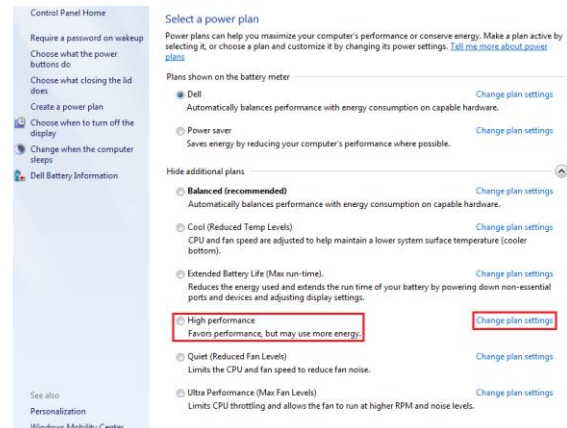
To not have to redo the settings you just made during the next opening of IC Capture, the configuration file must be saved. Just click the "File" menu → "Save Configuration". We recommend that you assign a new file name so that the original configuration file is retained. Any number of configuration files can be created, for example, for each user of the DV1. Close the dialog box by clicking on the button "Save". If you have changed the file name of the configuration file, please don't forget to create a new link on the desktop for easier access. Using Windows Explorer, navigate to the location of the new configuration file, click it with the right mouse button and select "Send to" → "Desktop".

## 10. Deactivating the power saving options of the computer

To obtain the best possible video quality, the utilized computer must deliver its highest possible performance. In addition to connecting a laptop to the mains supply, deactivation of the power saving mode, also for USB connections, is essential. Proceed as follows: from the windows start button, select "Control Panel" and the "Power Options".



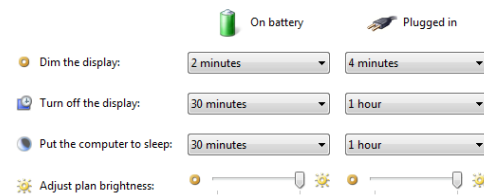
In the next window, select "High performance". You may have to view more energy-saving profiles by clicking on the down arrow.



Activate the profile "High Performance" and click "Change plan settings".

Change settings for the plan: High performance

Choose the sleep and display settings that you want your computer to use.

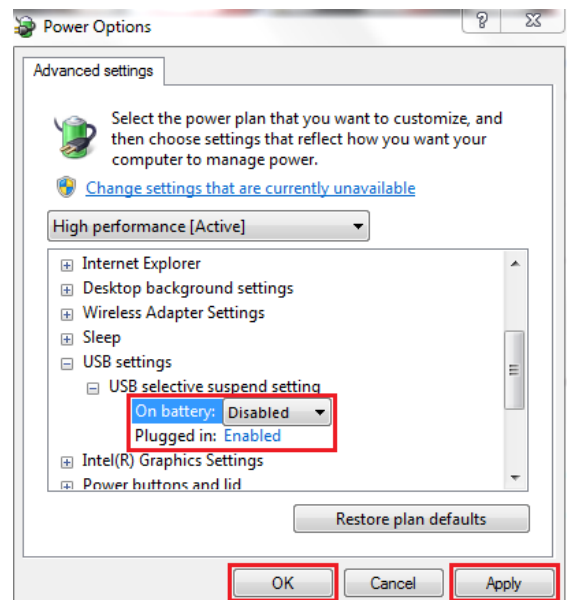


Change advanced power settings

Restore default settings for this plan

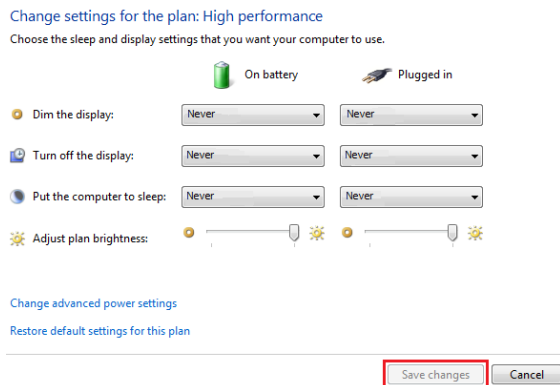
Save changes Cancel

Select "Change advanced power settings". Navigate to the window that opens to select "USB settings" and expand it by clicking on the "+". Select the entry "disabled" for both "On battery" and for "Network Operation" on the blue highlighted values. Close the window by clicking on "Apply" and "OK".



In the following window, as seen below, select "Never" for all drop-down menu points.





Close the window by clicking the “Save changes” button.

## 11. Tipps & Tricks

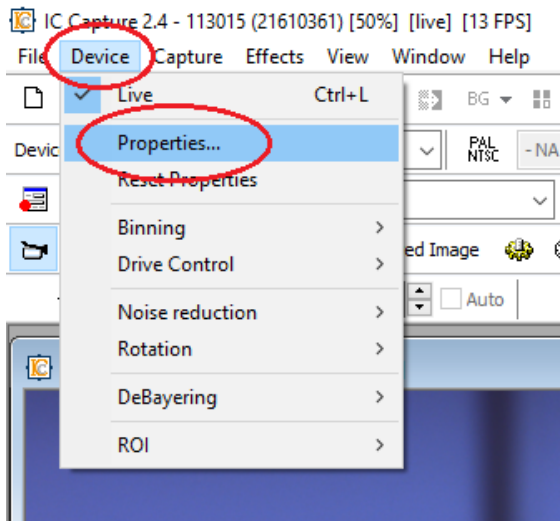
### *Influences on color display*

As computer screens are usually not color calibrated the appearance of colors in a video differ. Only by using a color calibrated screen it can be made sure that the color display on the screen is correct.

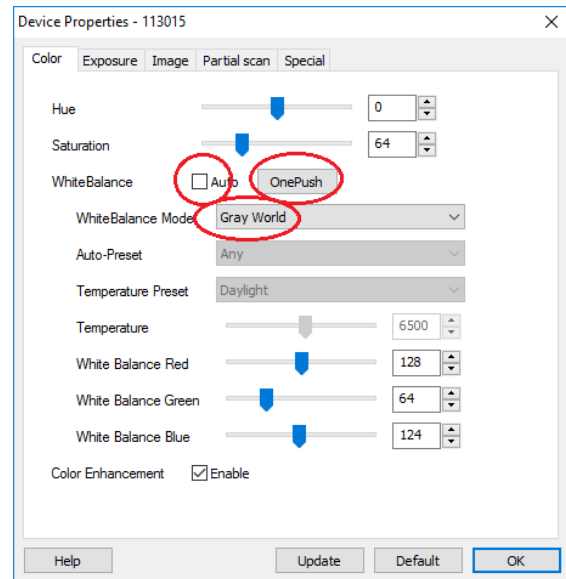
### *Adjust the color - white balance*

When you are not satisfied with the color display on the video image, try first to restart IC Capture by double clicking on the configuration file.

Illuminate a white paper with the instrument and align the illuminated field with the camera. Compare the colors seen at the screen with the illuminated paper. If you feel they doesn't match change the adjustment of the white balance: Click on “Device” → “Settings”.



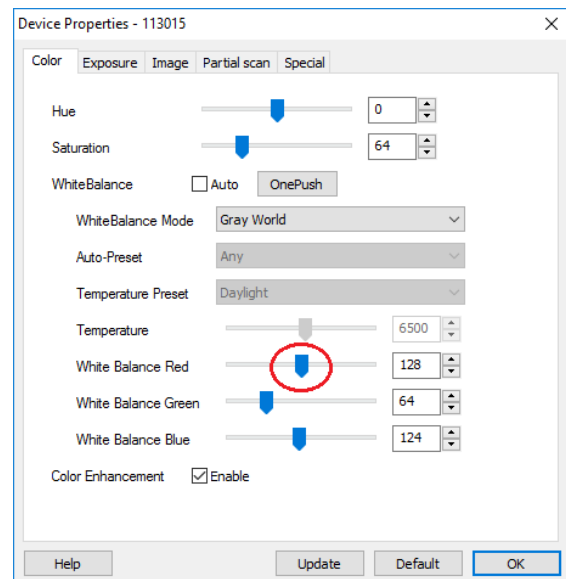
Click the button “One-Push”. Make sure that “Auto” is not activated and “Grey World” is chosen for the WhiteBalance Mode.



### *Enhance single color settings*

Sometimes adjusting the white balance may not lead to a satisfying color display. Single colors like e.g. red can be adjusted as follows:

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



### *Check brightness of light spot*

In order to ensure that the image obtained with the DV1 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 – maybe you have to choose a smaller light spot on the ML4 LED to see the edge.

### *Size of brightness spot*

Choose the biggest light spot on the ML4 LED for a glare-free camera image.

### *Reduce glare and reflections*

Depending on the surface which is displayed with DV1 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 center of the image is too bright, slightly reduce the value until you see a glare-free center.