uEyeRecorderWin User Manual

System Requirements

Operating system:
- Windows 10 (64-bit)
- Windows 8.1/8 (64-bit)
- Windows 7 Service Pack 1 (64-bit) with SHA-2 code signing support (KB3033929)

CPU:
- Intel® Core™ i7-3520M or better (requires USB3.0 support)
- AMD A8-3820 or better (requires USB3.0 support)

GPU:
- Integrated or discrete graphics

RAM:
- 2 GB RAM

Storage:
- 10 MB for the executable and source code
- up to 300 MB per typical recording

Hardware ports:
- USB 3.0 port

Installation

Installing iDS Software Suite from https://en.ids-imaging.com/

You have to register on the iDS website to download it. The registration is free and the account does not require any verification as of writing of this manual.

To download the Software suite installer, click on Support -> Downloads -> uEye industrial cameras; under "Firmware" select "uEye (IDS Software Suite)", under "Interface" select "USB 3", under "Family" select "CP Rev.2", under UI-3130CP-M-GL Rev.2. Click on "Software" and click on the "IDS Software Suite" to download the .zip archive, which contains the iDS Software suite installer.

If you have the uEye Software suite installed properly, the LED on the camera should light up green after it is plugged into a USB3.0 port on PC. If the software is not installed properly or if the camera has been plugged into a non-USB3.0 port, the LED will light up red.

Downloading the recorder or cloning the GitHub repository for uEyeRecorderWin

In the GitHub repository https://github.com/humanphysiologylab/ueyemappingWin there is a folder called "recorder". It contains the files "recorder.exe" and "config.txt", which are the only

files required to run the uEyeRecorderWin. However, you could clone the whole repository and build the application yourself from Visual Studio project files.

Using the recorder

In order to launch the recorder, simply run recorder.exe. The camera has to be connected. Most of the recorder window should be taken up by the viewfinder window. Use it to detect the overblown and blacked out regions in the view for the histogram feature is not yet implemented.

The "Apply settings" button restarts the live feed with new settings. The "Stop Live" button stops the live feed, the "Start Capture" button begins the recording sequence. The "Wait for Trigger" button is responsible for hardware trigger functionality, which is work in progress. The "Exit" button closes the application.

Recording length must be set prior to recording in the "Length (ms)" field. Gain is a value between 100 and 400 for uEye cameras, therefore it should only be set to values between 100 and 400 in the "Gain" field. FPS cannot be set precisely to any number, the camera has pre-set FPS values, out of which it will choose the closest possible value and report it back to the program. The value will update in the "FPS" field after a recording is done. Please note that 977.001 FPS is the highest possible framerate with this software. Resolution is currently locked at 200 by 200 pixels.

On clicking the "Start Capture" button, the application will stop responding until the recording is done. RAM will be allocated to store the whole recording, the amount of allocated RAM will vary based on FPS and length of the recording. For example, a 1s (1000ms) recording at 977 fps would take up 200 pixels * 200 pixels * 1 s * 977 fps * 2 bytes per frame per pixel = 78160000 bytes = 74.5 MB. Then the camera starts recording into RAM. After the set length of the recording has passed, the recording is written to a file located in the "output" folder (if it doesn't exist, it will be created automatically) in the directory where recorder.exe is stored. Files are named in the following format: <index>_<prefix>_<dd>_<mm>_<yyyy>.bin, where index represents file's order in the output directory. Prefix can be set in the "Prefix" field of the recorder to add custom commentary to filenames.

Output file format and usage with RHYTHM

The file includes a 24 byte header which contains a 4-byte integer for width of the recording in pixels, 4 blank bytes, a 4-byte integer for height of the recording in pixels, another 4 blank bytes and an 8-byte double precision floating point number for FPS. The rest of the file is a sequence of frames as 4-bytes integers.

The resulting files can be loaded using RHYTHM 1.2. On the first loading the binary output files will be converted, which can take some time. Once a file has been converted it will be saved in .mat format and subsequent loadings of this file will be faster.