

multichannel*
systems

**Multi Channel VideoControl
Manual**



Imprint

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1 Welcome to the Multi Channel VideoControl

The Multi Channel VideoControl is the video acquisition software of the Multi Channel Suite package. The Multi Channel Experimenter is for online data acquisition, the Multi Channel Analyzer is for offline data analysis, and the Multi Channel DataManager is for data conversion. Please read the following chapters to understand the general concept of the Multi Channel Suite before starting.

2 Before Your Start

2.1 Terms of Use

You are free to use Multi Channel VideoControl for its intended purpose. You agree that you will not decompile, reverse engineer, or otherwise attempt to discover the source code of the software.

2.2 Limitation of Liability

Multi Channel Systems MCS GmbH makes no guarantee as to the accuracy of any and all tests and data generated by the use the Multi Channel VideoControl software. It is up to the user to use good laboratory practice to establish the validity of his findings. To the maximum extent permitted by applicable law, in no event shall Multi Channel Systems MCS GmbH or its suppliers be liable for any special, incidental, indirect, or consequential damages whatsoever (including, without limitation, injuries, damages for data loss, loss of business profits, business interruption, loss of business information, or any other pecuniary loss) arising out of the use of or inability to use Multi Channel VideoControl or the provision of or failure to provide Support Services, even if Multi Channel Systems MCS GmbH has been advised of the possibility of such damages.

2.3 Important Safety Advice



Warning: Make sure to read the following advices prior to install or to use Multi Channel VideoControl. If you do not fulfil all requirements stated below, this may lead to malfunctions or breakage of connected hardware, or even fatal injuries. Obey always the rules of local regulations and laws. Only qualified personnel should be allowed to perform laboratory work. Work according to good laboratory practice to obtain best results and to minimize risks. Make always sure to validate your findings. Prepare backup copies on a regular basis to avoid data loss.

The operator is obliged to ensure that Multi Channel VideoControl is only be used for its intended purpose and that it is only used by qualified personnel.

Important: Multi Channel VideoControl software is developed for Multi Channel Systems MCS devices. MCS devices are not intended for medical uses and must not be used on humans, especially not for uses that could impair health.

3 Installation and Updates

One of the following Microsoft Windows ® operating systems is required: Windows 10, 8.1 (English and German versions supported) with the NT file system (NTFS). Other language versions may lead to software errors. If a computer was acquired from MCS, the Multi Channel Suite will be preinstalled. **Updates** are available for free download on a regular basis from the [MCS web site](#). It is recommended always to install the latest software version. To install the software download and start the respective *.exe file and follow the instructions on the screen.

3.1 Recommended Operating System Settings

The following automatic services of the Windows operating system interfere with the data storage on the hard disk and can lead to severe performance limits in Multi Channel VideoControl. These routines were designed for use on office computers, but are not very useful for a data acquisition computer.

- Turn off Screen Saver
- Turn off Windows Indexing Service. Only important for data hard drive
- Manual management of automatic Windows Update
- Power Options: Power scheme: Never turn off monitor, hard disk and system standby

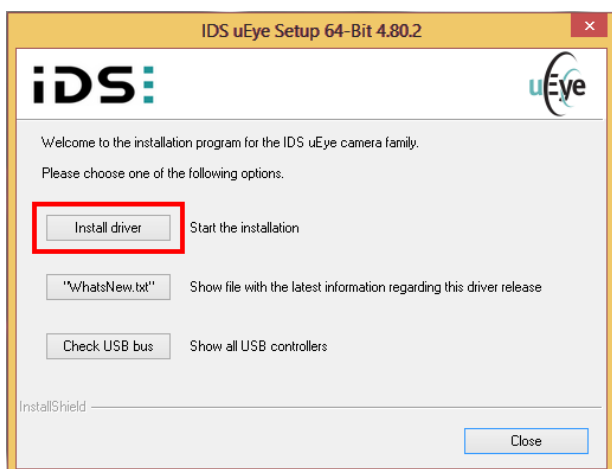
It is also not recommended to run any applications in the background when using Multi Channel VideoControl. Remove all applications from the Autostart folder. Be careful when using a Virus Scanner.

3.2 Driver Installation

The Multi Channel VideoControl software is free and can be installed on any computer. However, it can only be used to operate cameras from [IDS](#), distributed by Multi Channel Systems MCS GmbH as part of the W2100-Video-System. Therefore, it is necessary to install the latest IDS camera drivers in addition to the VideoControl Software. The uEye software and driver packages from IDS are distributed by MCS on a CD with the W2100-Video-System, updates can be downloaded from the [IDS homepage](#). Versions for 32 or 64 bit operating systems are available:

uEye32_48002_WHQL.exe
uEye64_48002_WHQL.exe

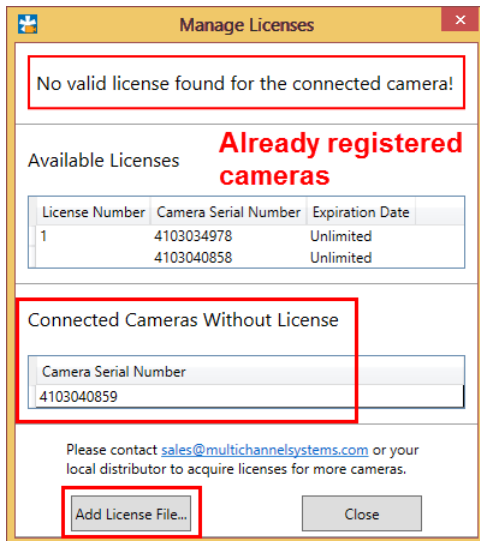
Start the *.exe and follow the instructions on the screen. Select the **Install driver** option.



This will install the camera drivers and the **IDS uEye software** on your computer. Using the uEye software is not necessary to work with the W2100-Video-System, but uEye offers much more control options for the camera if need be.

3.3 Camera License Keys

IDS cameras distributed by MCS require a **license key** to operate with the Multi Channel VideoControl software. The license is individual for each camera and is **stored on the computer**, but the same license can be used on any computer for the matching camera. If a camera not yet registered on the computer it is connected to, the following window will come up automatically once the VideoControl software is started.



The Add License File button brings up a file browser. Look for the *.lic file for your camera, which is on a USB stick included in each W2100-Video-System. This procedure has to be done once for every camera on each computer. The same *.lic file will work for the respective camera on any computer. If you cannot find the USB stick, contact Support@multichannelsystems.com and provide the serial number of your camera, as shown in the window above, to get the license file.

3.4 Hardware Setup

For the video synchronization to work properly, please make sure:

- The Camera is connected to a USB 3.0 port. They are labeled in blue, or with SS USB (super speed).
- The Digital IO port of the camera is connected to the Interface Board of the W2100-System with the provided cable. One Lemo connector must be connected to Digital Out 1 and the other Lemo connector to the Digital In 1. The connectors are labeled accordingly.



4 Software Features

The [Multi Channel Suite](#) consists of four parts: the **Multi Channel Experimenter** for online data acquisition, the **Multi Channel Analyzer** for offline data analysis, the **Multi Channel DataManager** for data conversion, and the **Multi Channel VideoControl** for controlling a video camera. Many features and concepts apply to all parts.

4.1 Description and Purpose

The Multi Channel VideoControl software can be used to record a video file which is frame-by-frame synchronized to the electrophysiological data recorded with the W2100-System simultaneously. The software is **free to download** and install on an unlimited number of computers, but only works with IDS cameras provided by MCS (please see chapter 3.3, Camera License Key).

4.2 Main Window

The main window shows the live feed from the camera, independently from the status of the W2100 recording system. The control functions are only visible if the mouse pointer is moved inside the main window.



4.3 Start and Stop Recording



The Start or Stop Recording button starts and stops the video recording, and also the data recording of the W2100-System, if the synchronization is enabled.

4.4 Video Synchronization



enabled



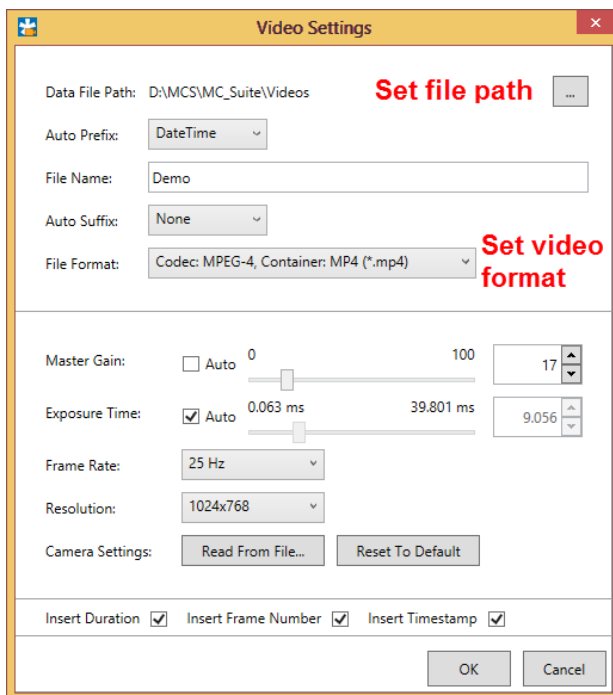
disabled

The Video Synchronization toggles the connection between the video and data recording with the W2100-System. If enabled, the Start or Stop function in the VideoControl also controls the data recording. If disabled, only the video is recorded.

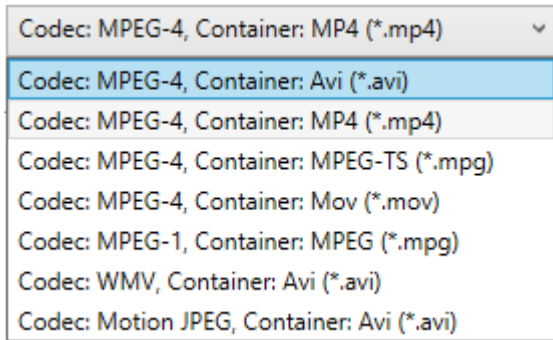
4.5 Video Settings



The Adjust Video Settings brings up a menu with the camera and video settings. **File path and name** for the videos can be selected. The file name consists of a Prefix, a Suffix and a user defined text string in between.



The video can be stored in a number of different **formats**, select one from the drop down menu. Currently, the following formats are available:

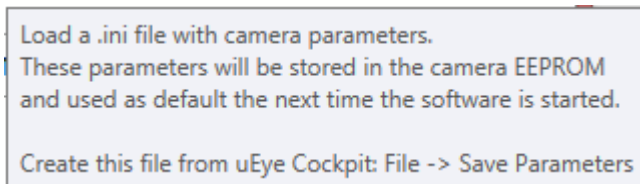


Gain and Exposure Time for the camera can be set automatically or manually via sliders or text entry.

The **Frame Rate** can be adjusted between 10 and 50 Hz.

The **Resolution** of the video can range from 649 x 480 pixel to 1280 x 1024 pixel. Be aware that higher resolution and high frame rate will generate large amounts of video data.

More detailed camera parameters can also be done in the uEye software provided by IDS (please see chapter 3.2). These settings can be saved in uEye and opened with the **Read from File** command:



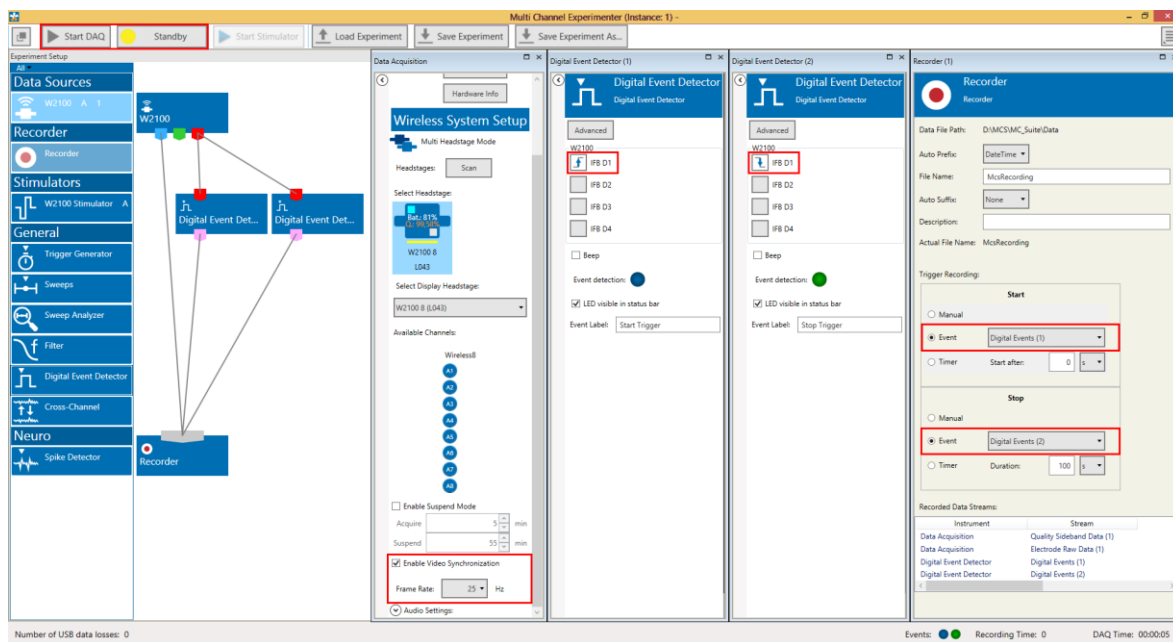
5 Setting Up Synchronized Video and Data Recording

To synchronize the data acquisition with the W2100-System and the video recording, the **IFB** of the **W2100-System** and the W2100-Video-System **camera** must be connected as described in chapter 3.4, Hardware Setup.

The Multi Channel Experimenter to control the W2100-System and the Multi Channel VideoControl **do not communicate directly**, the synchronization works by TTL pulses exchanged between the IFB and the camera. Both software instances can run either on the same or **different computers**, that makes no difference for data quality or synchronization. The VideoControl is the master, the Experimenter waits for the start command for the camera. While the video and data acquisition is running, the Experimenter will **trigger each frame** in the video file with a TTL from the Digital Out 1, and generate a corresponding time stamp in the data file. This allows synchronization of both files with frame-by-frame precision.

5.1 Multi Channel Experimenter Setup

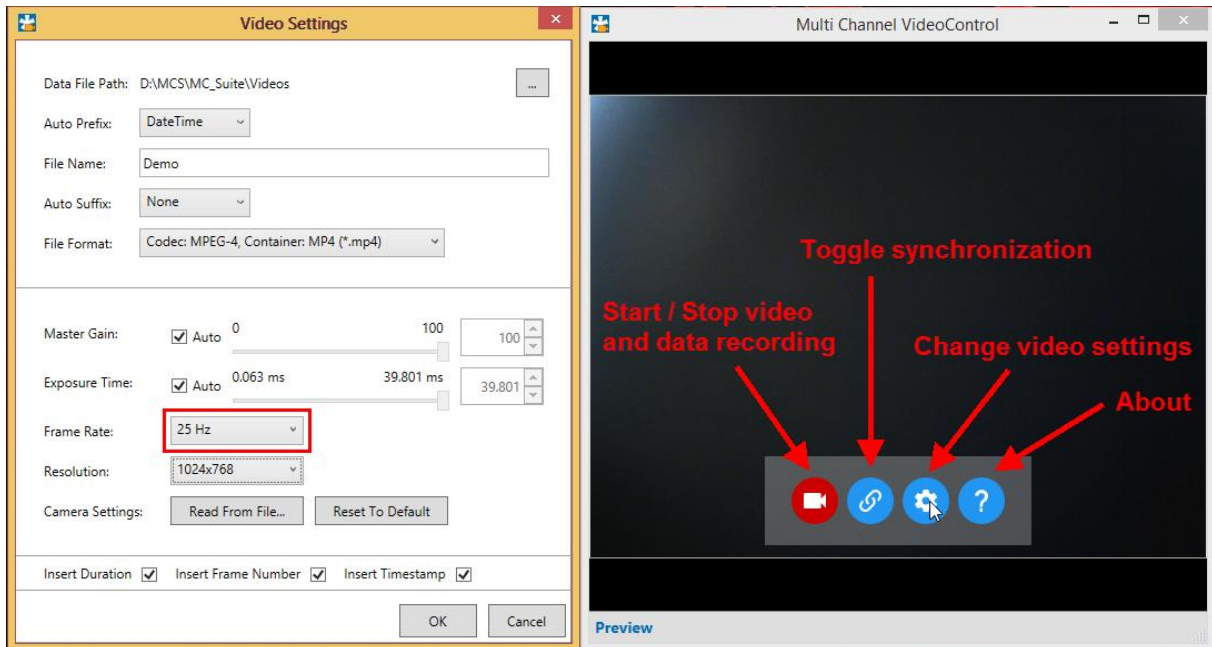
For synchronized recording, a start or stop command for the data acquisition is generated **by the camera**. The camera sends a gate trigger to **Digital In 1** of the Interface Board, which goes HIGH as soon as the video acquisition starts, and LOW when the video stops. One Digital Event Detector generates an event on the **rising flank of the TTL**. This event starts the recording. A second Digital Event Detector generates an event on the **falling flank of the same TTL**, which stops the recording.



Make sure the **Video Synchronization function** in the W2100-System data acquisition tool is enabled, and the right **Frame Rate** is selected. The frame rate **MUST be identical** to the frame rate of the camera (please see chapter 5.2, Multi Channel VideoControl Setup). Set the recording to Standby and start the DAQ. As soon as the camera is started in Multi Channel VideoControl, the data recording in the Multi Channel Experimenter will begin.

5.2 Multi Channel VideoControl Setup

In the Multi Channel VideoControl software, make sure to **enable the synchronization** (please see chapter 4.4, Video Synchronization). Open the Video Settings and adjust them as needed. It is mandatory that the **frame rate is identical** to the frame rate selected in the W2100-System data acquisition in the Multi Channel Experimenter. All other parameters can be changed at will.



Start or Stop of the video recording will now also start and stop the data recording with the W2100-System.

6 Support and Troubleshooting

The Multi Channel Suite is a software under development, so bugs may occur more frequently than usual. Also, new software versions are released in short intervals. The software development team of Multi Channel Systems MCS GmbH is very grateful for all reported bugs. Due to the modular nature of the software, it is impossible to test all possible configurations for each new release, and any customer feedback is much appreciated to find all problems.

Please report all bugs, feature requests or other issues to Support@multichannelsystems.com. We can only fix things we know about.

In case of problems, please check first whether your **software version** is up to date. The latest release can always be found in the [Downloads](#) section of the MCS web site. Maybe the problem has already been solved. If not, reboot the software and power cycle the recording device.

If the problem persists, report it together with the **video file** and the corresponding **data file**, if applicable. An upload option for the files will be provided if need be.

7 Contact Information

Local retailer

Please see the list of official [MCS distributors](#) on the MCS web site.

User forum

The Multi Channel Systems MCS GmbH [user forum](#) provides the opportunity for you to exchange your experience or thoughts with other users worldwide.

Mailing list

If you have subscribed to the [newsletter](#), you will be automatically informed about new software releases, upcoming events, and other news on the product line. You can subscribe to the newsletter on the contact form of the MCS web site.

www.multichannelsystems.com