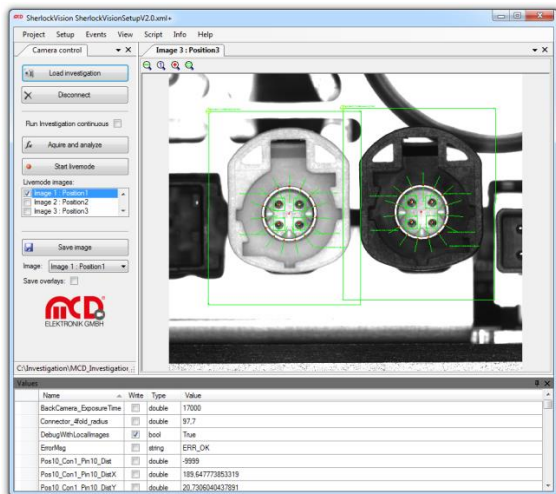# Manual

Toolmonitor Sherlock Vision

GET IN **touch**
WITH SENSITIVE TESTING

Softline

Modline
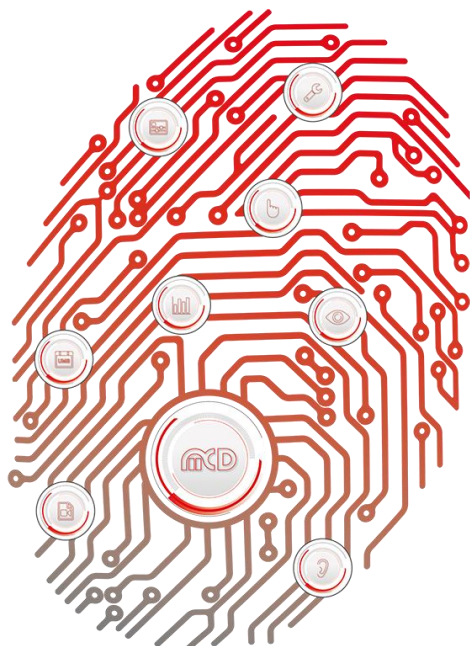
Conline

Boardline

Avidline

Pixline

Application

Table of Contents

1. General

An extensive range of industrial image processing tasks can be solved using the Toolmonitor Sherlock Vision. For this purpose, investigations are created using the Teledyne Dalsa Sherlock software. Then these investigations are loaded and executed by using the Toolmonitor Sherlock Vision. The camera is integrated into the MCD Sherlock Investigation using the Stemmer Imaging CVB (Common Vision Blox) driver. This enables the integration of many different camera standards from different manufacturers (GigEVision, USB ...).

The following functions are available with the Toolmonitor Sherlock Vision:

- Loading and execution of investigations
- Reading out results from investigations
- Displaying all images of the investigation
- Saving of recorded images with and without overlay

Order number: # 150249

2. Software and Driver Installation

2.1. Requirements

Requirement:

- Windows (Windows XP – Windows 8.1, 32 or 64 bit)
- .Net – Framework 3.0

Copy the SherlockVisionMonitor.exe into a user-defined directory on the targets system to install the MCD Toolmonitor Sherlock Vision.

2.2. License

To protect the software against unauthorized use, the Toolmonitor must be licensed after the installation.

For **demonstration and test purposes,** the Toolmonitor can be operated for **30 minutes** without license. Some program functions are deactivated.

For **bridging the waiting time** until activation (e.g., on the weekend), a **temporary 24-h license** can be activated as well.

To activate the Toolmonitor, open the **License Administration** dialog via the **License -> Register** menu item.

Figure 1: Accessing the Registration Dialog

1. The status of your current license is displayed in the **Current Licensing** dialog:
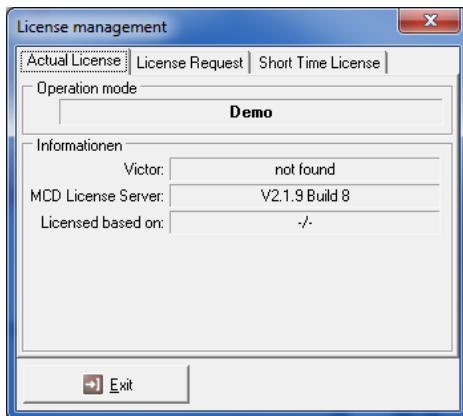
Figure 2: Accesing the License Status

2. To request a **permanent license** for your software, proceed as follows:

- Select the Request **License** tab.
- Enter the **number** of required licenses (for your PC) into the **Number of Licenses** field.
- Click on the **Create Request File** button.
- Now, an additional window opens and asking you to **save the MCD Licenser Request file (*.mlr)**.
- Please **save** this file and **send it via e-mail to the following address:** info@mcd-elektronik.de
  Please add an order or project number to make the allocation easier.

- Next, you will receive an e-mail from MCD Elektronik with your **license file (MCD License Key *.mlk)** attached.

- To complete licensing, **save** this file either under **C:\Windows** or in the directory, where your software executable (*.exe) was saved.

- After you **restart** your software, the **full scope of function** will be available to you.
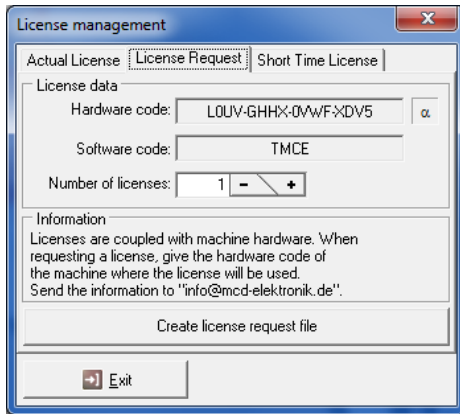

Figure 3: Requesting a Permanent License

3. To activate a **temporary 24-h license**, select the tab "Temporary License". Next, enter the series of numbers from the left window into the right window. If you cannot read the numbers, click on the "new number" button to receive a new number. Once you enter the number correctly, you can activate the temporary license via the "Activate" button. Please be advised that the temporary license expires as soon as you exit the software. However, you can activate the temporary license as many times as you want.
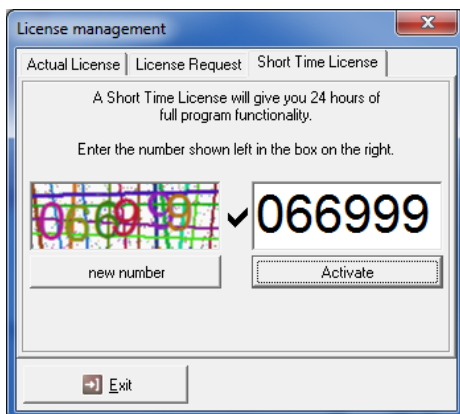

Figure 4: Requesting a Temporary License

2.3. Register COM-Server

Using this command, the Toolmonitor can be registered as COM server. This is required, when the Toolmonitor should be remote - controlled by a different program, such as the MCD TestManager.
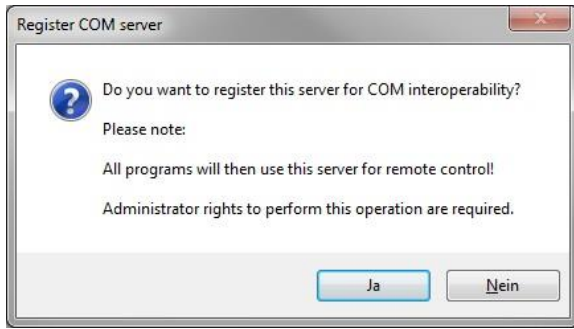
Figure 5: Register COM Server

2.4. Installing Sherlock / CVB Software and Drivers

Install the software in the following order:

_Sherlock 7.2.2.0:

- Sherlock7_x86_Setup.exe

_Acquisition Software and Drivers:

- CommonVisionBlox CameraSuite (Win32).exe
- Sherlock CVB Driver (Win32).exe

Adjust the CVB driver:

Open the %SP7DATA% directory (enter %SP7DATA% into Explorer). There is more data in the %SP7HOME% directory. However, this data must not be adjusted.

Enter the desired cameras (GigEVisioin) into the CVBDrv.ini file:

```
[Camera0]
Driver = %CVB%\Drivers\GenICam.vin
CameraPort = 0
AutoSoftwareTrigger = 1
```

```
25    ############################################################################
26    #
27    #           Camera Configuration
28    #
29    #   (Example Configurations can be found in the bottom of this file)
30    ############################################################################
31
32  [Camera0]
33    Driver = %CVB%\Drivers\GenICam.vin
34    CameraPort = 0
35    AutoSoftwareTrigger = 1
36
37    #[Camera1]
38    #Driver = %CVB%\Drivers\GenICam.vin
39    #CameraPort = 1
40    #AutoSoftwareTrigger = 1
41
42
```

Figure 6: View of the CVBDrv.ini

2.5. Connecting the Hardware

Connect the camera to the PC, e.g., via Ethernet (GigE Vision). To ensure data transmission with the required performance, use the respective hardware (e.g., ADLINK PCIe-GIE64+ or PCIe-GIE62+).

2.6. Starting the Installed Software

Create the investigation using the Teledyne Dalsa Sherlock software. Load and execute the investigation using the Toolmonitor Sherlock Vision.

3. Quick Start Guide

1. Install Teledyne Dalsa Sherlock

2. Install Stemmer CVB

3. Adjust the CVB Sherlock driver

4. Create a Sherlock investigation

5. Open Toolmonitor Sherlock Vision

6. Load the created investigation using the "Load Investigation" button

7. Execute the investigation using the "Acquire and Analyze" button

8. The results can be viewed under View->Values and View->Images

4. Software Manual

4.1. Camera Control

4.1.1. General Information

The **Camera Control** window is used for controlling the Toolmonitor. From here, the analysis can be started, live mode activated, and images saved.
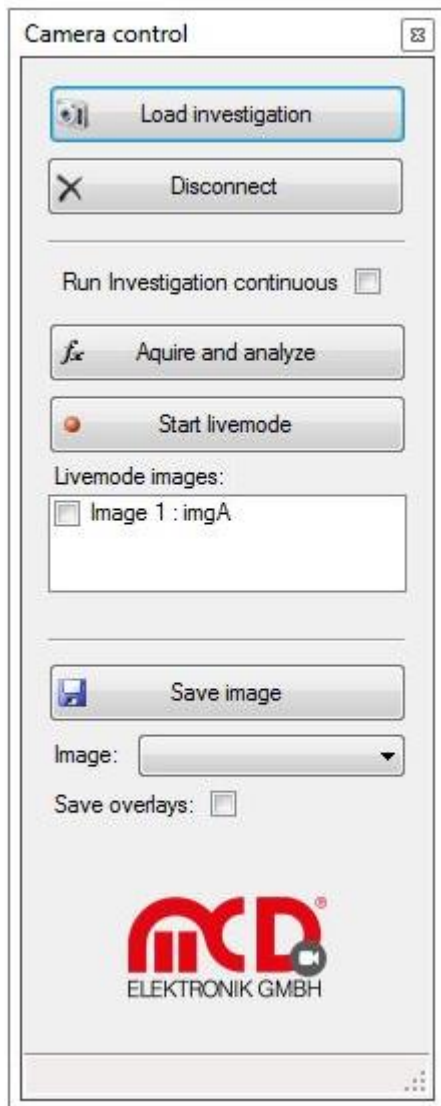

Figure 7: Sherlock Vision Camera Control

4.1.2. Load Investigation / Disconnect

To start an investigation, a Sherlock investigation with the .ivs file extension can be loaded via the **Load Investigation** button. Using the information stored in the investigation, the connection to the camera is established and the image displayed in the assigned image window.

4.2. Acquire and Analyze

Click on the "Acquire and Analyze" button for executing the investigation. The investigation is then executed once. Triggering, image acquisition, and image analysis are performed in the investigation. Next, the recorded image is displayed in the assigned image window with the updated overlays. If the "**Run Investigation Continuous"** check box is clicked, the investigation is continuously executed. This mode can help when setting up or developing image processing applications. This function should not be used for normal, automated test operation.

4.2.1. Start Livemode

Livemode is used for setting up the image processing system. However, the image processing algorithm is not executed in the activated Livemode. The current camera image is displayed as video only. For this purpose, the desired image window is selected for Livemode in the **livemode images** box. The Livemode can be started via the "**Start livemode"** button. If the Livemode is activated, it can be executed via the same button **("Stop livemode")** to exit the Livemode.

4.2.2. Save Image

Using the **Save Image function**, the different images can be stored. For this purpose, the standard save file dialog is displayed when clicking the button. The image can be saved under the desired name. The formats .bmp and .jpg are supported. Prior to saving, the image to be saved can be selected via **Image:** Using the **Save overlays:** check box, it can be selected, whether the overlays (drawing elements for visualization of the image processing tools) should be displayed in the saved image or not. If the images should be loaded again into an image processing algorithm, it is recommended not to save the overlays, as these falsify the result.

4.3. Image

The assigned images of the Sherlock Investigation are displayed in the **Image** window of the Toolmonitor Sherlock Vision. The individual images are assigned in the Options. Here, the names of the windows in the Sherlock Investigation can be entered for the images. Maximum 20 images can be currently displayed from the investigation. The image windows can be opened via the **View -> Images** menu.
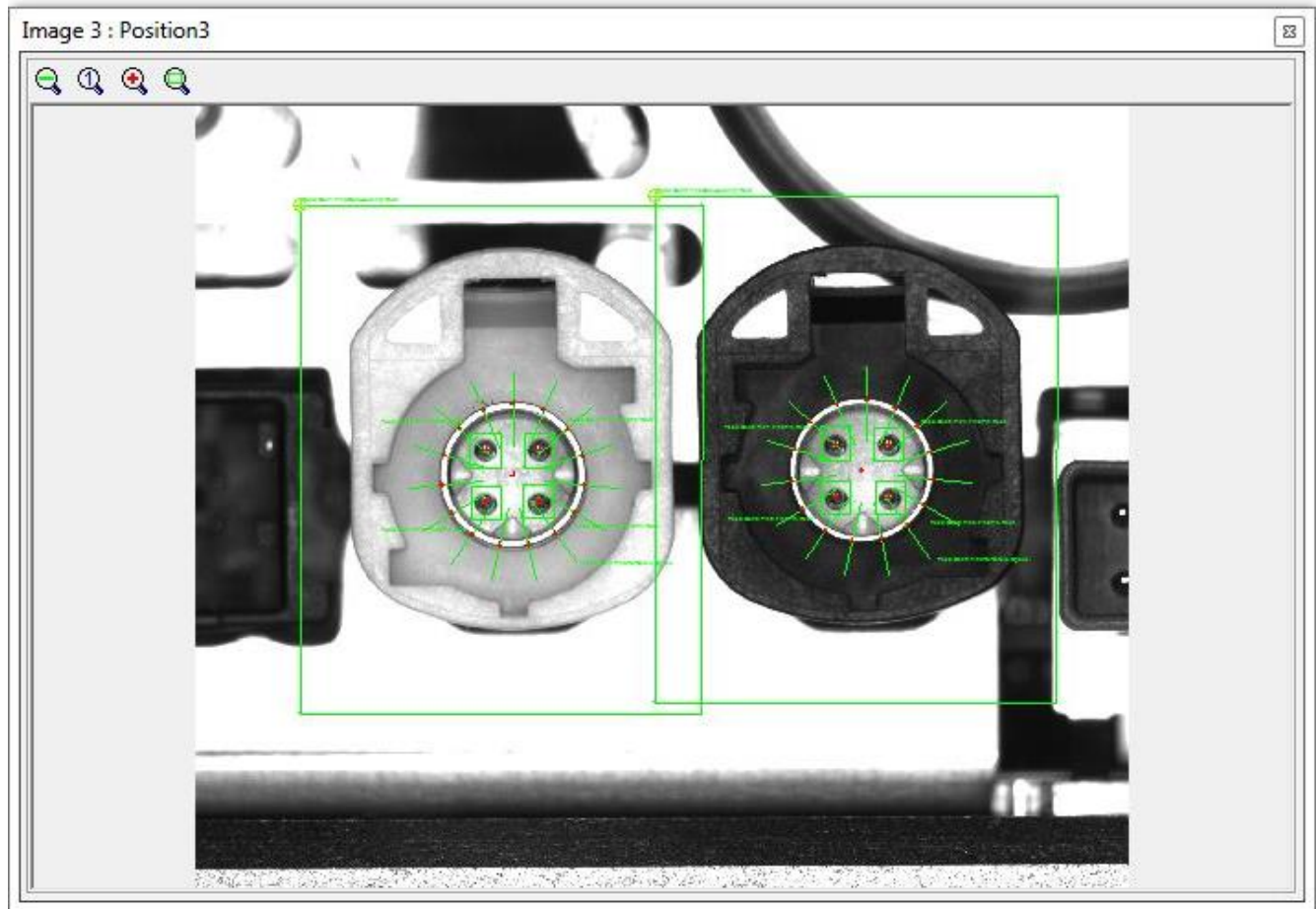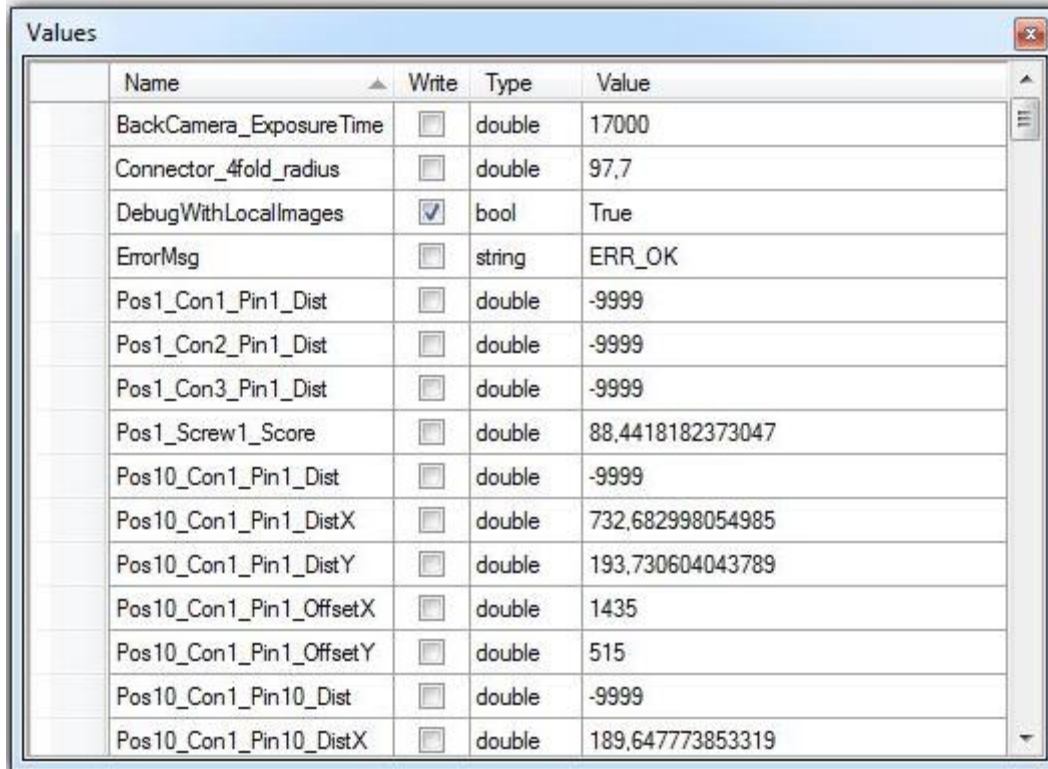

Figure 8: Sherlock Vision Image View

The image window is similarly structured as in the Sherlock image processing software. The view can be changed via the buttons on the top left: zoom out of image, view actual size, zoom into image, and adjust image to current window (from left to right).

4.4. Values

The variables of the Sherlock Investigation are displayed in the **Values** window. On one hand, these variables are used for actions within the investigation. On the other hand, they are also used for communication and / or data exchange of the investigation with the Toolmonitor Sherlock Vision. These variables are created in the investigation via the Sherlock software.

Name	Write	Type	Value
BackCamera_ExposureTime	☐	double	17000
Connector_4fold_radius	☐	double	97,7
DebugWithLocalImages	☑	bool	True
ErrorMsg	☐	string	ERR_OK
Pos1_Con1_Pin1_Dist	☐	double	-9999
Pos1_Con2_Pin1_Dist	☐	double	-9999
Pos1_Con3_Pin1_Dist	☐	double	-9999
Pos1_Screw1_Score	☐	double	88,4418182373047
Pos10_Con1_Pin1_Dist	☐	double	-9999
Pos10_Con1_Pin1_DistX	☐	double	732,682998054985
Pos10_Con1_Pin1_DistY	☐	double	193,730604043789
Pos10_Con1_Pin1_OffsetX	☐	double	1435
Pos10_Con1_Pin1_OffsetY	☐	double	515
Pos10_Con1_Pin10_Dist	☐	double	-9999
Pos10_Con1_Pin10_DistX	☐	double	189,647773853319

Figure 9: Sherlock Vision Values View

In the Toolmonitor Sherlock Vision, variables can be activated via the "**Write check box**". The value can be adjusted in the **Value** column. When the" **Acquire and Analyze"** function is executed, then this value is applied for the execution of the investigation and the Write activation is removed again.

5. Events

Here, the views for the log and trace messages can be accessed.

Figure 10: Events Menu

Logging

Using this menu, the log messages view for general events, warnings, errors, etc. is called up.
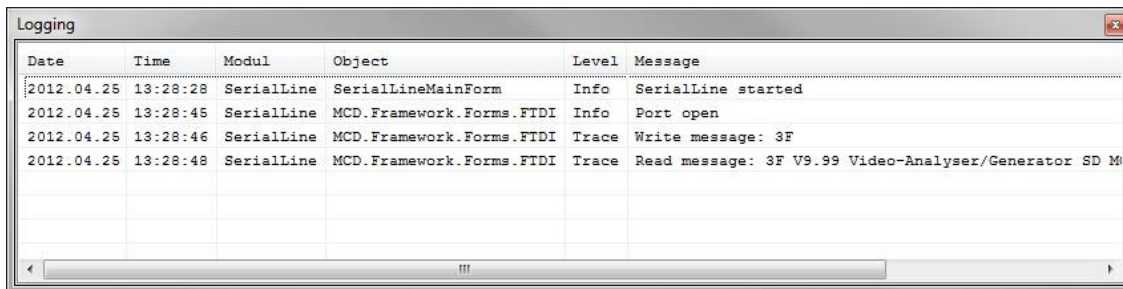

Figure 11: Log Monitor

Trace

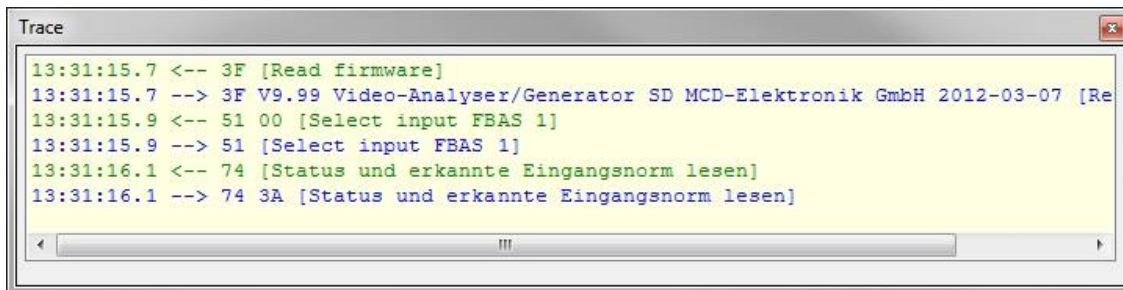Using this menu, the trace messages view (sent and received messages) is called up.

Figure 12: Trace

5.1. Setup

The parameters for the current Sherlock application can be indicated in the "**Sherlock options"** dialog.
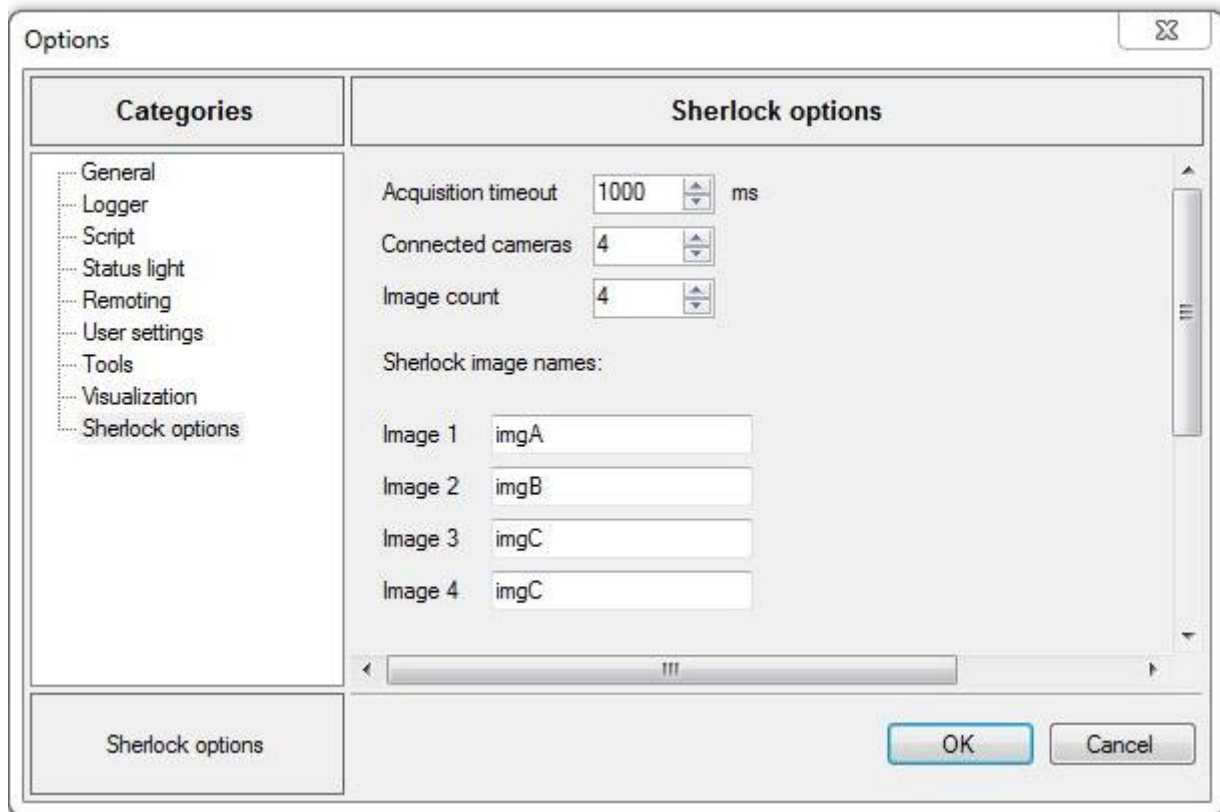

Figure 13: Sherlock Vision Options

Acquisition timeout
The Toolmonitor expects a response from the Sherlock investigation within the Acquisition timeout. This timeout is used as safety timeout to generate an error message, if the triggering new image acquisition does not function.

Connected cameras
The number of cameras is a parameter to allow a check with the loaded investigation. When executing the investigation, it is checked, whether the number of cameras indicated in the options is available in the investigation. If the required number of cameras is not available, an error message is generated.

Image count
The number of windows required in the investigation can be indicated via **Image count**. Not all Sherlock windows must be created in the Toolmonitor Sherlock Vision application. If the number is changed, the number of text boxes in the options dialog is automatically adjusted. The name of the respective window from the Sherlock investigation can be entered into the text boxes next to the names **Image 1 ... n (Sherlock image names:)**.

6. Programming

6.1. Control Events

Names for setting parameters for the camera control module. Use these names to apply settings in the camera control module.

Example:

```
SetValue("Camera control.ExposureTime");
```

Enumerated values:

LoadInvestigation	Loading the Sherlock investigation/.ivs (indicate path with file name)
SaveImage	Save recorded image without overlays (formats: bmp, jpg), handover path with file name, e.g.: C:/Pictures/picture.bmp.
SaveImageWithOverlays	Save recorded image with overlays (formats: bmp, jpg), handover path with file name, e.g.: C:/Pictures/picture.bmp.

6.2. Control Parameters

Names for controlling the Toolmonitor Sherlock Vision. Using these names, the system control actions are triggered. Events are accessed without handover parameters. For this purpose, the desired name of the Enum entry is handed over to the SetEvent () function as string.

Example:

```
SetEvent("Camera control.Connect");
```

Enumerated values:

AcquireAndAnalyze	Acquire an image and run all activated image-processing tools.