

# Samples Manual

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# Contents

|                                   |           |
|-----------------------------------|-----------|
| <b>1. Introduction.....</b>       | <b>1</b>  |
| <b>2. GxSingleCamMono.....</b>    | <b>2</b>  |
| 2.1. Function introduction .....  | 2         |
| 2.2. UI Interface.....            | 2         |
| 2.3. Precautions .....            | 2         |
| <b>3. GxSingleCamColor.....</b>   | <b>3</b>  |
| 3.1. Function introduction .....  | 3         |
| 3.2. UI Interface.....            | 3         |
| 3.3. Precautions .....            | 3         |
| <b>4. GxMultiCam.....</b>         | <b>5</b>  |
| 4.1. Function introduction .....  | 5         |
| 4.2. UI Interface.....            | 5         |
| 4.3. Precautions .....            | 6         |
| <b>5. GxGetImage .....</b>        | <b>7</b>  |
| 5.1. Function introduction .....  | 7         |
| 5.2. UI Interface.....            | 7         |
| 5.3. Precautions .....            | 7         |
| <b>6. GxIOSample .....</b>        | <b>8</b>  |
| 6.1. Function introduction .....  | 8         |
| 6.2. UI Interface.....            | 8         |
| 6.3. Precautions .....            | 8         |
| <b>7. GxStoreAVI.....</b>         | <b>9</b>  |
| 7.1. Function introduction .....  | 9         |
| 7.2. UI Interface.....            | 9         |
| 7.3. Precautions .....            | 9         |
| <b>8. GxAutoFuncCtrl.....</b>     | <b>11</b> |
| 8.1. Function introduction .....  | 11        |
| 8.2. UI Interface.....            | 11        |
| 8.3. Precautions .....            | 11        |
| <b>9. GxUSBSnapPnp.....</b>       | <b>12</b> |
| 9.1. Function introduction .....  | 12        |
| 9.2. UI Interface.....            | 12        |
| 9.3. Precautions .....            | 12        |
| <b>10. GxViewer .....</b>         | <b>13</b> |
| 10.1. Function introduction ..... | 13        |

|                                   |           |
|-----------------------------------|-----------|
| 10.2. UI Interface .....          | 13        |
| 10.3. Precautions .....           | 13        |
| <b>11. GxSnapRaw16 .....</b>      | <b>14</b> |
| 11.1. Function introduction ..... | 14        |
| 11.2. UI Interface .....          | 14        |
| 11.3. Precautions .....           | 14        |
| <b>12. GxCameraEvents .....</b>   | <b>15</b> |
| 12.1. Function introduction ..... | 15        |
| 12.2. UI Interface .....          | 15        |
| 12.3. Precautions .....           | 15        |
| <b>13. GxGigeRecovery .....</b>   | <b>16</b> |
| 13.1. Function introduction ..... | 16        |
| 13.2. UI Interface .....          | 16        |
| 13.3. Precautions .....           | 16        |
| <b>14. GxImageProcess .....</b>   | <b>17</b> |
| 14.1. Function introduction ..... | 17        |
| 14.2. UI Interface .....          | 17        |
| 14.3. Precautions .....           | 18        |
| <b>15. GxTransferDelay .....</b>  | <b>19</b> |
| 15.1. Function introduction ..... | 19        |
| 15.2. UI Interface .....          | 19        |
| 15.3. Precautions .....           | 19        |
| <b>16. Revision History .....</b> | <b>20</b> |

## 1. Introduction

In this samples manual, the demos of samples are for some type of the cameras, which cannot cover the operation of all models. The parameter information on the interface after the programs runs is only used as the user's reference, and the specific parameter information is based on the device that the user actually opens.

## 2. GxSingleCamMono

### 2.1. Function introduction

The GxSingleCamMono is the sample written for monochrome camera, the program code mainly demonstrates how to allocate the buffers, images display, processing images, and save the image data into a bmp file for the monochrome images.

### 2.2. UI Interface

- Demonstration process demo

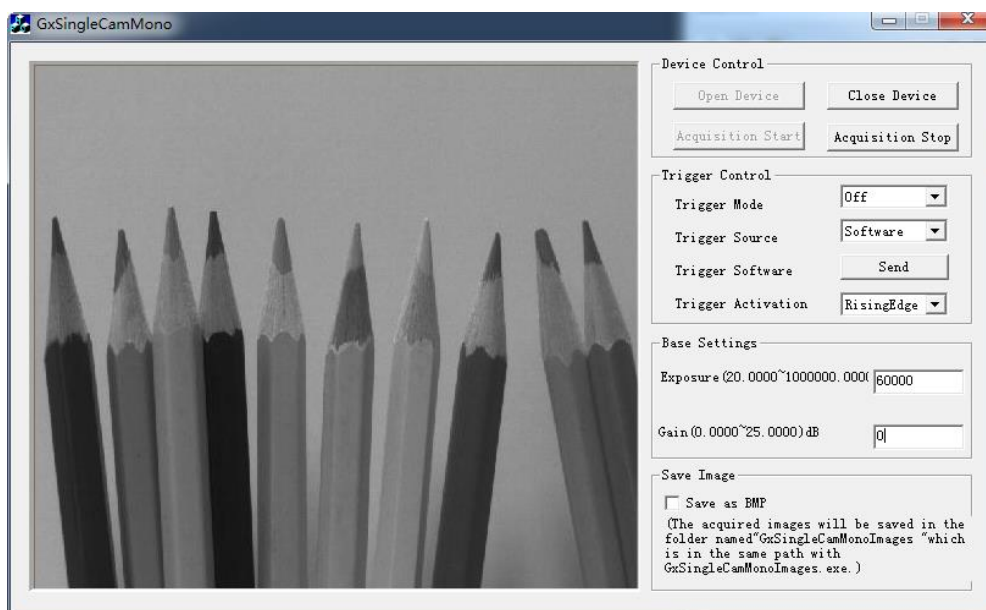


Figure 2-1 GxSingleCamMono demonstration process demo

- Parameter description

**Trigger Control:** Demonstrates how to set the related parameter in trigger mode, and the trigger control function is valid only when the trigger mode is On.

**Save Image:** Demonstrates the process how to save the monochrome image data into a bmp file, and the bmp file is named with the system time that the image saved, the specific format is "year\_month\_day\_hour\_minute\_second\_millisecond.bmp".

**Basic Parameter:** Demonstrates how to adjust the exposure time/gain.

### 2.3. Precautions

- The image is saved in the GxSingleCamMonoImages folder which is in the same level directory as the executable program. The folder is created by the program automatically, and the folder name and the path cannot be modified manually.
- When saving the images, the program will not detect the disk space where the storage path is located, so when the storage space is full, it will only generate the 0kB size BMP empty file.
- When compiling in VS2005 development platform, prompt "manifest authoring warning 81010002: Unrecognized Element "requestedPrivileges" in namespace "urn:schemas-microsoft-com:asm.v3"." warning information, this is because of adding the manifest administrator identity, there is no effect.

### 3. GxSingleCamColor

#### 3.1. Function introduction

And corresponding to the GxSingleCamMono, the GxSingleCamColor is written for the color cameras. The program code demonstrates how to allocate the buffers, images display, image RGB conversion, image quality improvement, automatic and manual white balance adjustment, and save the image data into a bmp file for the color images.

#### 3.2. UI Interface

- Demonstration process demo

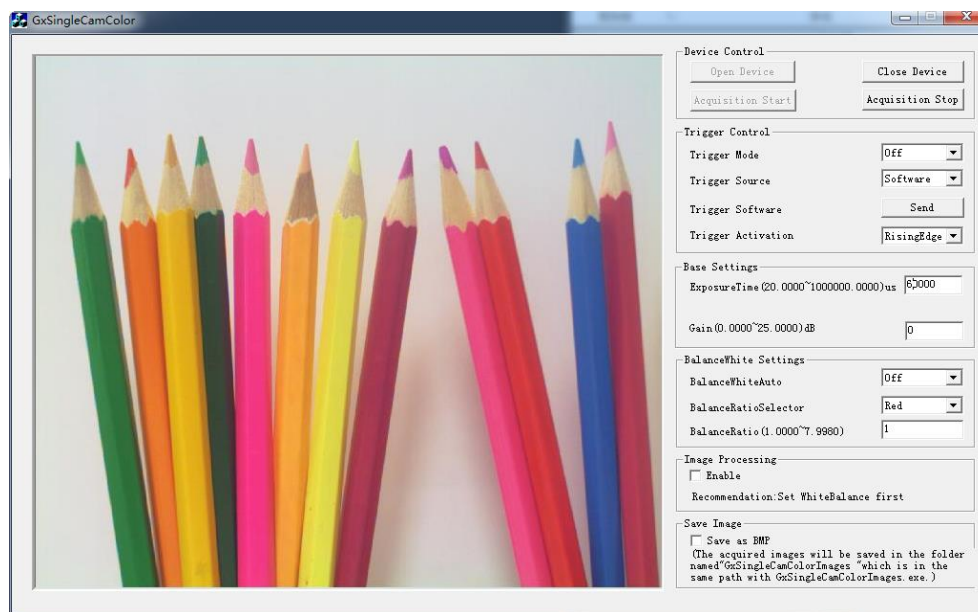


Figure 3-1 GxSingleCamColor Demonstration process demo

- Parameter description

**White Balance Adjustment:** Demonstrates how to adjust the white balance manually/ automatically. The manual adjustment is effective by setting the white balance channel and the white balance coefficient.

**Image Quality Improvement:** Demonstrates how to improve the image quality. And the image quality is best when cooperated with the white balance adjustment function.

**Trigger Control:** Demonstrates how to set the related parameter in trigger mode, and the trigger control function is valid only when the trigger mode is On.

**Save Image:** Demonstrates the process how to save the color image data which has been a RGB conversion into a bmp file, and the bmp file is named with the system time that the image saved, the specific format is "year\_month\_day\_hour\_minute\_second\_millisecond.bmp".

**Basic Parameter:** Demonstrates how to adjust the exposure time/ gain.

#### 3.3. Precautions

- The image is saved in the GxSingleCamColorImages folder which is in the same level directory as the executable program. The folder is created by the program automatically, and the folder name and the path cannot be modified manually.

- When saving the images, the program will not detect the disk space where the storage path is located, so when the storage space is full, it will only generate the 0kB size BMP empty file.
- When compiling in VS2005 development platform, prompt "manifest authoring warning 81010002: Unrecognized Element "requestedPrivileges" in namespace "urn: schemas-microsoft-com: asm.v3"." warning information, this is because of adding the manifest administrator identity, there is no effect.



## 4. GxMultiCam

### 4.1. Function introduction

The GxMultiCam sample mainly demonstrates how to capture, process, and display images with multiple cameras simultaneously. This sample supports up to four cameras at the same time.

### 4.2. UI Interface

- Demonstration process demo

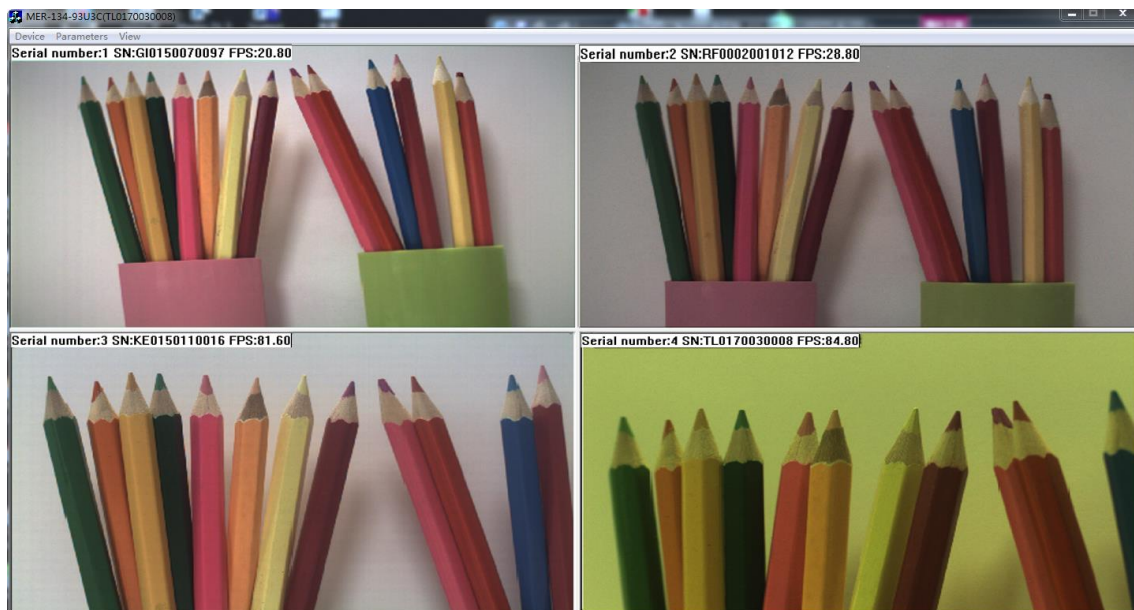


Figure 4-1 Four cameras capture simultaneously demonstration demo

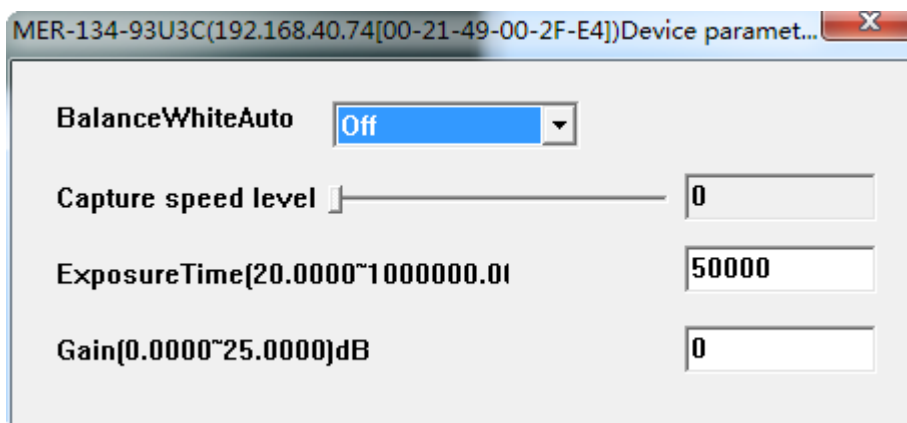


Figure 4-2 Parameter setting

- Parameter description

**Acquisition speed level:** Demonstrates how to set the acquisition speed level, multiple cameras capture at the same time may be affected by the PC performance, leading to a camera cannot output images, and the display frame rate is 0.0fps, in this case, you can try to reduce the acquisition speed level and reduce the acquisition frame rate, in order to let all the cameras output images.

**Exposure/Gain:** Demonstrates how to adjust exposure time/ gain parameters.

**White Balance:** Demonstrates how to set auto white balance function.

### 4.3. Precautions

- When compiling in VS2005/VS2008/VS2010 development platform, prompt "warning C4996: 'itoa' was declared deprecated", if you replace the function itoa as \_itoa\_s, the message will not occur. Because the VC6.0 development platform does not support the \_itoa\_s function, so it is unchanged and has no effect.
- When compiling in VS2005 development platform, prompt "manifest authoring warning 81010002: Unrecognized Element "requestedPrivileges" in namespace "urn: schemas-microsoft-com: asm.v3"." warning information, this is because of adding the manifest administrator identity, there is no effect.

## 5. GxGetImage

### 5.1. Function introduction

This sample mainly demonstrates the way to call the *GxGetImage* interface to get the image: send a software trigger and call the *GxGetImage* (you need to enter waiting time) to get an image. Note that the way to call the *GxGetImage* interface for images cannot be the same way as to call callback acquisition, and the *GX\_STATUS\_INVALID\_CALL* error will be returned if the *GxGetImage* interface is called after the callback is registered.

### 5.2. UI Interface

- Demonstration process demo

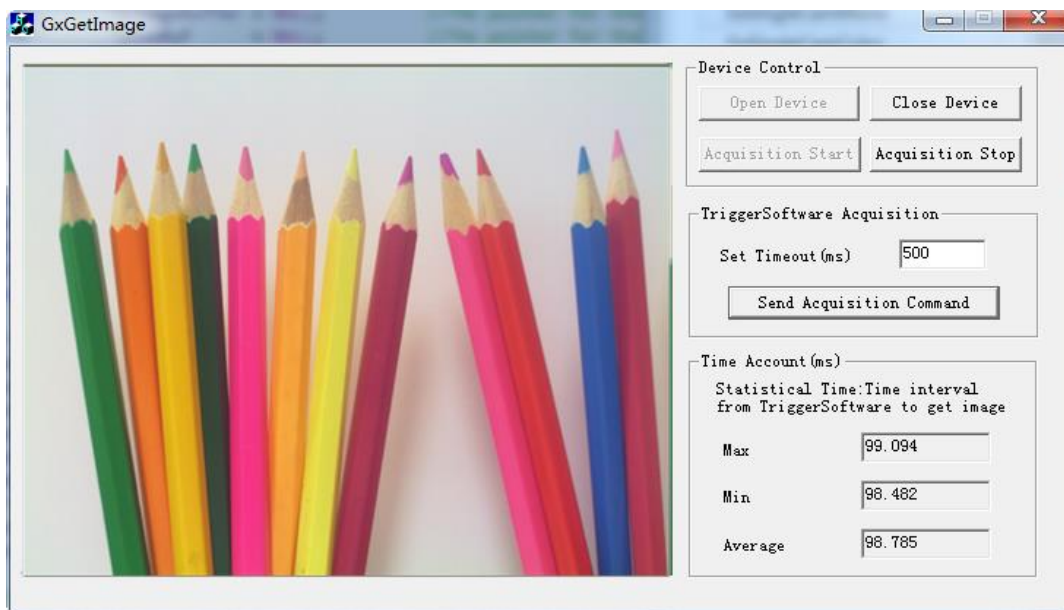


Figure 5-1 GxGetImage demonstrate process demo

- Parameter description

**Timeout Time:** By calling the *GxGetImage* interface to get the maximum waiting time.

**Time Statistical:** The statistical time is the time interval between sending software trigger command and calling the *GetImage* interface to get the images, and the maximum value, minimum value and mean value are calculated according to the recorded data.

### 5.3. Precautions

- When compiling in VS2005 development platform, prompt "manifest authoring warning 81010002: Unrecognized Element "requestedPrivileges" in namespace "urn: schemas-microsoft-com: asm.v3"." warning information, this is because of adding the manifest administrator identity, there is no effect.

## 6. GxIOSample

### 6.1. Function introduction

The GxIOSample sample mainly demonstrates the setting process of basic parameters such as trigger acquisition function, IO control function, and exposure/gain.

### 6.2. UI Interface

- Demonstration process demo

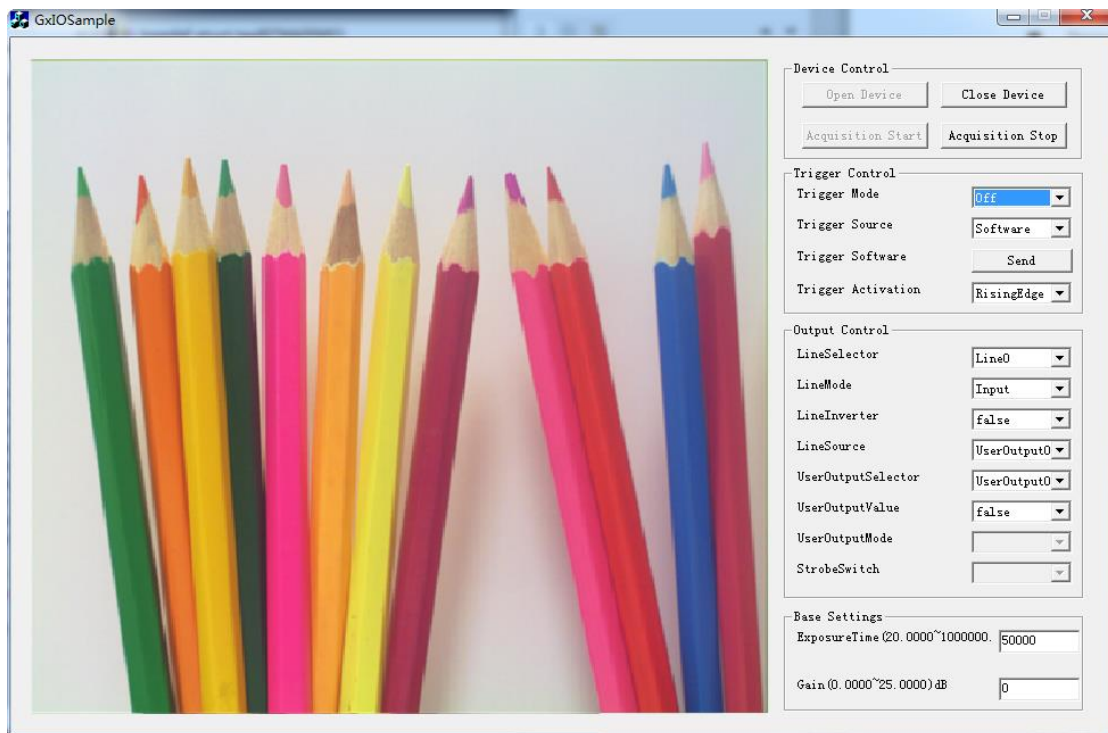


Figure 6-1 GxIOSample demonstrate process demo

- Parameter description

**Trigger Control:** Demonstrates how to set the related parameter in trigger mode, and the trigger control function is valid only when the trigger mode is On.

**Basic Parameter:** Demonstrates how to adjust the exposure time/ gain.

**Output Control:** Demonstrates how to set the related parameters of output control, where the user-defined output value is true for high level and false for low level.

### 6.3. Precautions

- When compiling in VS2005 development platform, prompt "manifest authoring warning 81010002: Unrecognized Element "requestedPrivileges" in namespace "urn: schemas-microsoft-com: asm.v3"." warning information, this is because of adding the manifest administrator identity, there is no effect.

## 7. GxStoreAVI

### 7.1. Function introduction

The GxStoreAVI sample mainly demonstrates how to save the AVI video stream by means of compression and non-compression mode. To save the AVI video stream by the compression mode, you need to choose the video compressor. The sample also demonstrates how to select the video encoder.

### 7.2. UI Interface

- Demonstration process demo

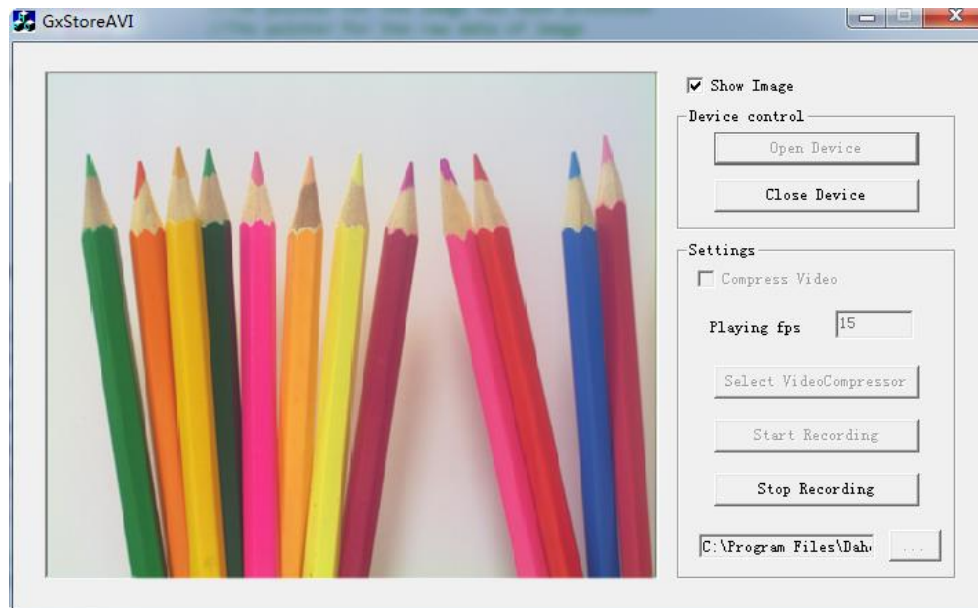


Figure 7-1 GxStoreAVI sample demonstrate process demo

- Parameter description

**Open Device:** The operation simultaneously performs the opening the device, registering the callback function and starting the acquisition process.

**Start Recording:** After starting recording is successful, the operation of writing AVI Video files is executed in the callback function.

**Broadcast frame rate:** This parameter is used to set the broadcast frame rate of the AVI video, which is recommended to match the frame rate of the current camera connected.

**Storage Path:** The AVI video is saved by default in the current directory of the executable program, if you want to modify the storage directory, you can click the path modified button '...' before recording.

**Storage Name:** The AVI video file is named with system time that the video obtained, and the specific format is "year\_month\_day\_hour\_minute\_second\_millisecond.avi".

### 7.3. Precautions

- When storage in the compression mode, if selecting video encoder failure or starting recording failure, you can try to choose other video encoder. The color camera is recommended to use the "DIVX" video encoder and the monochrome camera is recommended to use "Indeo video 5.10" encoder.
- During the recording process, the program storage the AVI file by the unit of 2GB/block.

- During the AVI video saving process, the application will detect the store path of disk space, when the free disk space is not enough to save the AVI video, the program will automatically stop recording.
- When compiling in VS2005 development platform, prompt "manifest authoring warning 81010002: Unrecognized Element "requestedPrivileges" in namespace "urn: schemas-microsoft-com: asm.v3"." warning information, this is because of adding the manifest administrator identity, there is no effect.

## 8. GxAutoFuncCtrl

### 8.1. Function introduction

The GxAutoFuncCtrl sample mainly demonstrates the exposure adjustment (manual/automatic), gain adjustment (manual/automatic), and the 2A ROI, expect gray value, 2A lighting environment functions settings that are related to automatic gain/automatic exposure adjustment.

### 8.2. UI Interface

- Demonstration process demo

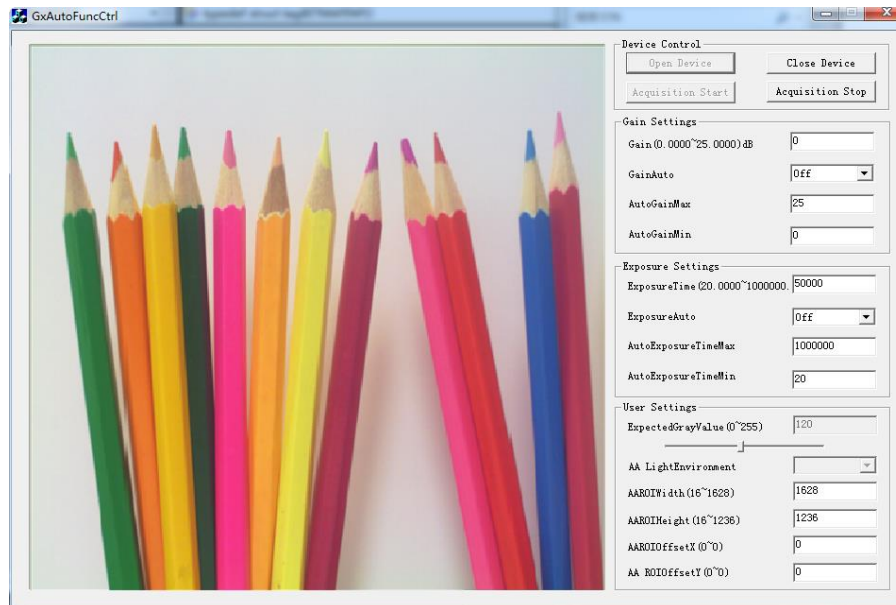


Figure 8-1 GxAutoFuncCtrl demonstration process demo

- Parameter description

**2A ROI:** Demonstrates how to set the range of statistical area, and the range is a statistical area for the calculation of automatic functions.

**Gain Adjustment:** Demonstrates how to adjust the gain manually or automatically.

**Exposure Adjustment:** Demonstrates how to adjust the exposure time manually or automatically.

**Expected gray value:** Demonstrates how to set the gray value. The value is a benchmark parameter of automatic exposure and automatic gain adjustment, and the final expectation of automatic function adjustment is to meet the desired gray value of the user set.

**2A lighting environment:** Demonstrates how to set the external lighting environment, and when the automatic function adjustment is enable, it will adapt to adjust according to the light environment.

### 8.3. Precautions

- When compiling in VS2005 development platform, prompt "manifest authoring warning 81010002: Unrecognized Element "requestedPrivileges" in namespace "urn: schemas-microsoft-com: asm.v3"." warning information, this is because of adding the manifest administrator identity, there is no effect.



## 9. GxUSBSnapPnp

### 9.1. Function introduction

The GxUSBSnapPnp sample is mainly demonstrates how to detect the camera's hot plug state, the implementation principle is according to the captured windows message *WM\_DEVICECHANGE* of the windows, by judging the message parameter and selecting the plug in or pull out message of the registered device. The GxUSBSnapPnp sample behavior is that when a device is detected plug in or pull out, it again enumerates the device and update the list of devices displayed on the interface, and the interface only shows the current connected device information.

### 9.2. UI Interface

- Demonstration process demo

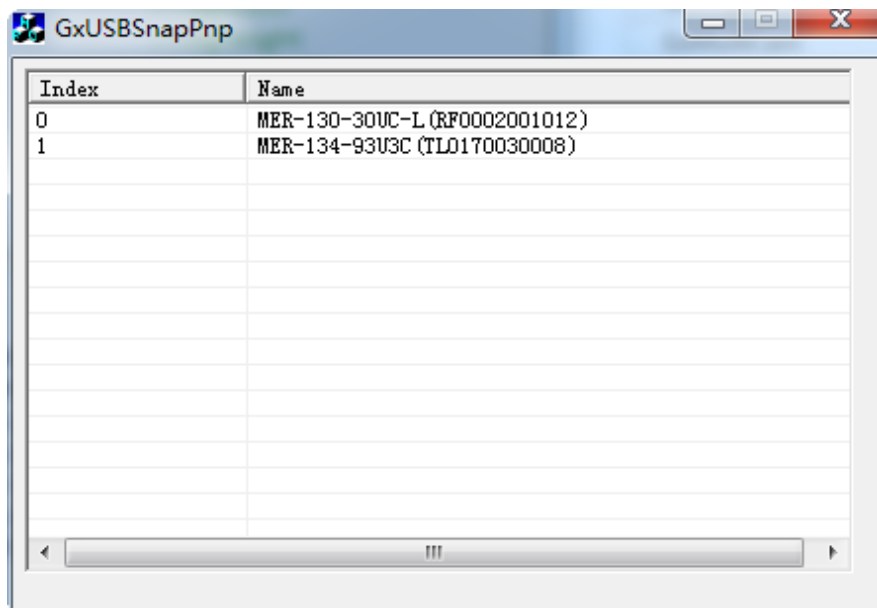


Figure 9-1 GxUSBSnapPnp interface

- Parameter description

Name: When connecting the device, the name column displays the device model and serial number information.

### 9.3. Precautions

- When compiling in VS2005 development platform, prompt "manifest authoring warning 81010002: Unrecognized Element "requestedPrivileges" in namespace "urn: schemas-microsoft-com: asm.v3"." warning information, this is because of adding the manifest administrator identity, there is no effect.
- When the camera is continuously plugged in or pulled out, it is necessary to wait for the device to be stable before the next plug in / pull out operation, in which the device manager will no longer refresh the operation indicating that the device has been stable.



## 10. GxViewer

### 10.1. Function introduction

The GxViewer sample is mainly demonstrates the capture, processing and display functions of the 8-bit images in the form of a single document.

### 10.2. UI Interface

- Demonstration process demo

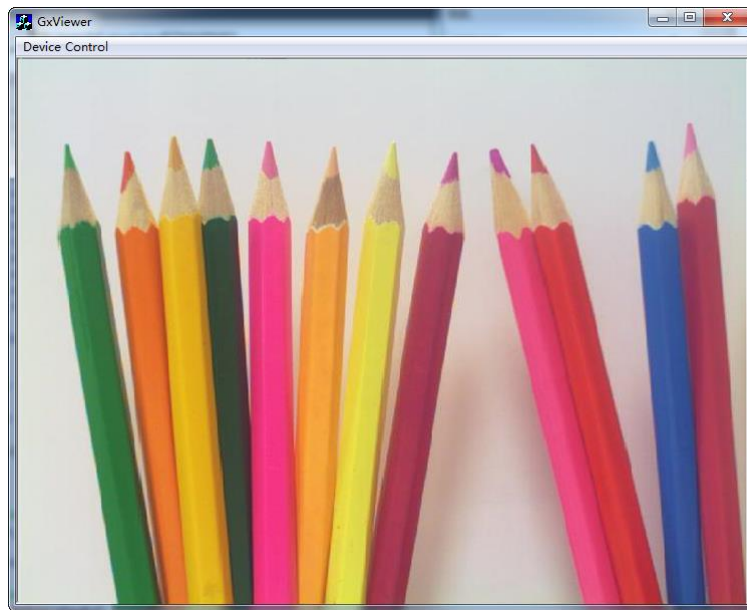


Figure 10-1 GxViewer demonstration process demo

- Parameter description

Not have.

### 10.3. Precautions

- When compiling in VS2005 development platform, prompt *"manifest authoring warning 81010002: Unrecognized Element "requestedPrivileges" in namespace "urn: schemas-microsoft-com: asm.v3"."* warning information, this is because of adding the manifest administrator identity, there is no effect.

## 11. GxSnapRaw16

### 11.1. Function introduction

The GxSnapRaw16 sample is mainly demonstrates the capture, processing, and display functions of the non 8-bit images and the process of how to save the image data to a raw file.

### 11.2. UI Interface

- Demonstration process demo



Figure 11-1 GxSnapRaw16 demonstration process demo

- Parameter description

**Save Image:** Demonstrates the process how to save the non-8bit image data which output by the camera into a Raw file, and the Raw file is named with the system time that the image saved, the specific format is "year\_month\_day\_hour\_minute\_second\_millisecond.raw".

### 11.3. Precautions

- The image is saved in the GxSnapRaw16Images folder which is in the same level directory as the executable program. The folder is created by the program automatically, and the folder name and the path cannot be modified manually.
- When saving the images, the program will not detect the disk space where the storage path is located, so when the storage space is full, it will only generate the 0kB size BMP empty file.
- When compiling in VS2005 development platform, prompt "manifest authoring warning 81010002: Unrecognized Element "requestedPrivileges" in namespace "urn: schemas-microsoft-com: asm.v3"." warning information, this is because of adding the manifest administrator identity, there is no effect.

## 12. GxCameraEvents

### 12.1. Function introduction

The GxCameraEvents sample mainly demonstrates the exposure end event in software trigger mode.

### 12.2. UI Interface

- Demonstration process demo

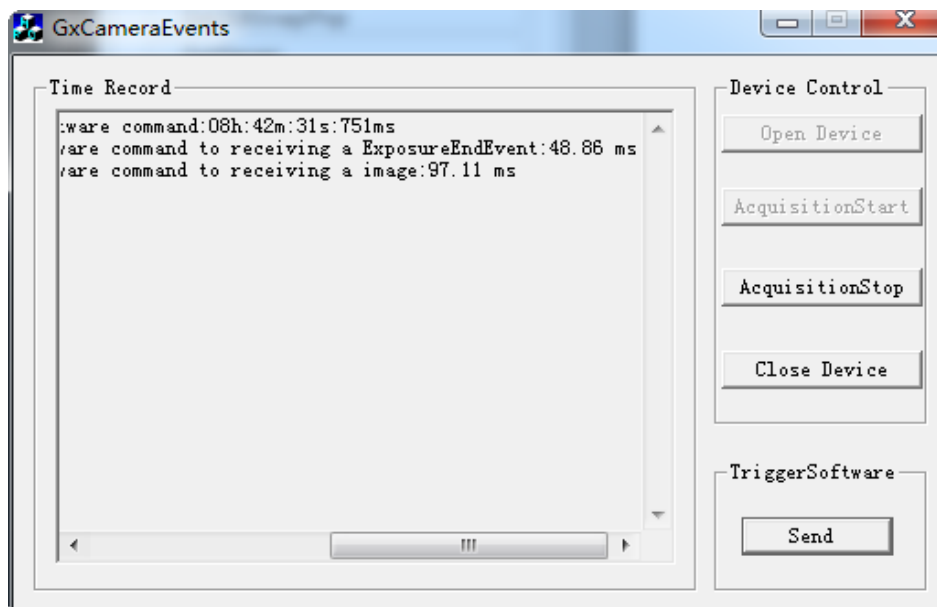


Figure 12-1 GxCameraEvents demonstration process demo

- Parameter description

Record the time: Record the time when sending the software trigger command, the time between sending software trigger command and the exposure end event, and the time between sending software trigger command and receiving the image successfully.

### 12.3. Precautions

- When compiling in VS2005 development platform, prompt "manifest authoring warning 81010002: Unrecognized Element "requestedPrivileges" in namespace "urn: schemas-microsoft-com: asm.v3"." warning information, this is because of adding the manifest administrator identity, there is no effect.

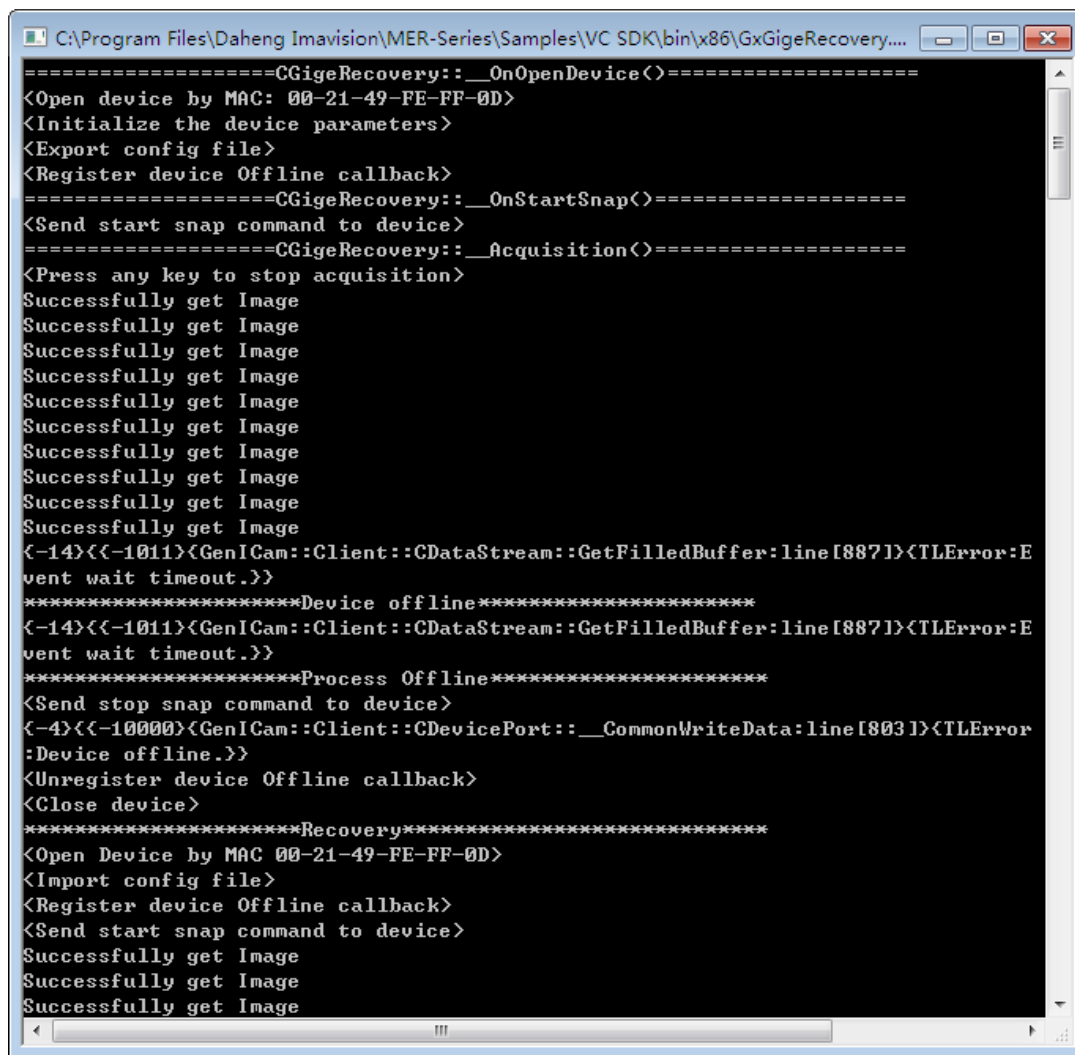
## 13. GxGigeRecovery

### 13.1. Function introduction

The GxGigeRecovery sample demonstrates the process of camera offline and reconnection, and the import and export of configuration file.

### 13.2. UI Interface

- Demonstration process demo



```
=====CGigeRecovery::__OnOpenDevice()=====
<Open device by MAC: 00-21-49-FE-FF-0D>
<Initialize the device parameters>
<Export config file>
<Register device Offline callback>
=====CGigeRecovery::__OnStartSnap()=====
<Send start snap command to device>
=====CGigeRecovery::__Acquisition()=====
<Press any key to stop acquisition>
Successfully get Image
Successfully get Image
Successfully get Image
Successfully get Image
Successfully get Image
Successfully get Image
Successfully get Image
Successfully get Image
Successfully get Image
Successfully get Image
Successfully get Image
<-14><<-1011><GenICam::Client::CDataStream::GetFilledBuffer: line [887]><TLError:E
vent wait timeout.>>
*****Device offline*****
<-14><<-1011><GenICam::Client::CDataStream::GetFilledBuffer: line [887]><TLError:E
vent wait timeout.>>
*****Process Offline*****
<Send stop snap command to device>
<-4><<-10000><GenICam::Client::CDevicePort::__CommonWriteData: line [803]><TLError
:Device offline.>>
<Unregister device Offline callback>
<Close device>
*****Recovery*****
<Open Device by MAC 00-21-49-FE-FF-0D>
<Import config file>
<Register device Offline callback>
<Send start snap command to device>
Successfully get Image
Successfully get Image
Successfully get Image
```

Figure 13-1 GxGigeRecovery demonstration process demo

- Parameter description

Not have.

### 13.3. Precautions

- When compiling in VS2005 development platform, prompt "manifest authoring warning 81010002: Unrecognized Element "requestedPrivileges" in namespace "urn: schemas-microsoft-com: asm.v3"." warning information, this is because of adding the manifest administrator identity, there is no effect.

## 14. GxImageProcess

### 14.1. Function introduction

The GxImageProcess sample demonstrates the use of image integrated processing functions for color cameras.

### 14.2. UI Interface

- Demonstration process demo

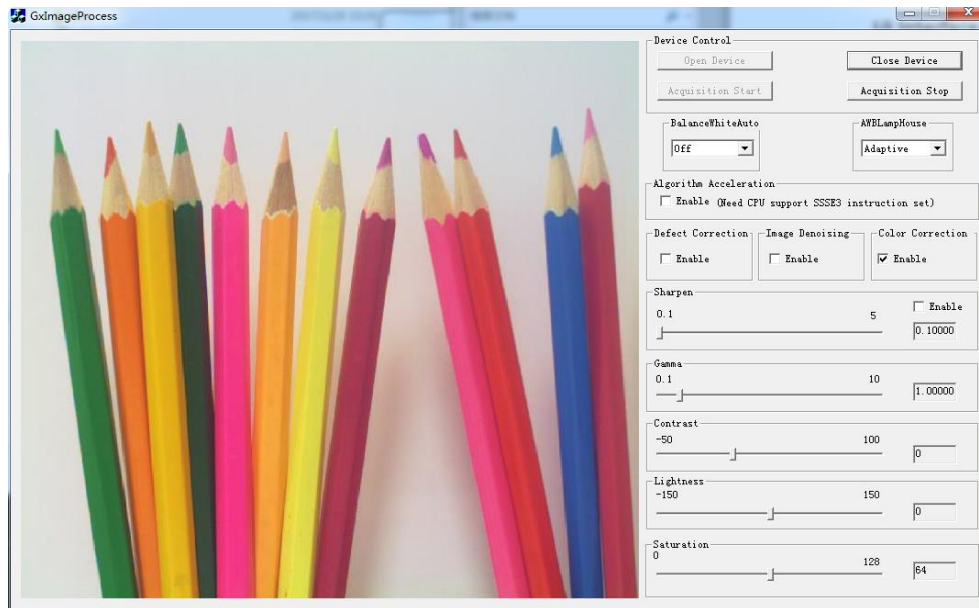


Figure 14-1 GxImageProcess demonstration process demo

- Parameter description

Automatic White Balance: Demonstrates how to set the automatic white balance function.

Automatic White Balance light source: Demonstrates how to set the automatic white balance light source.

Algorithm Acceleration: Demonstrates how to operate the algorithm acceleration.

Color Correction: Demonstrates how to operate the color correction.

Bad Pixel Correction: Demonstrates how to operate the bad pixel correction.

Image Denoise: Demonstrates how to reduce the noise of the image.

Sharpness: Demonstrates how to make sharpening adjustment.

Gamma: Demonstrates how to make Gamma adjustment.

Contrast: Demonstrates how to make contrast adjustment.

Brightness: Demonstrates how to make brightness adjustment.

Saturability: Demonstrates how to make saturability adjustment.

### 14.3. Precautions

- When compiling in VS2005 development platform, prompt "manifest authoring warning 81010002: Unrecognized Element "requestedPrivileges" in namespace "urn: schemas-microsoft-com: asm.v3"." warning information, due to add the manifest administrator identity, there is no effect.

## 15. GxTransferDelay

### 15.1. Function introduction

The GxTransferDelay sample mainly demonstrates the transmission delay function of four cameras in trigger mode.

### 15.2. UI Interface

- Demonstration process demo



Figure 15-1 GxTransferDelay demonstration process demo

- Parameter description

Not have.

### 15.3. Precautions

- There must to connect four cameras simultaneously, the sample can be run successfully.
- When compiling in VS2005 development platform, prompt "manifest authoring warning 81010002: Unrecognized Element "requestedPrivileges" in namespace "urn: schemas-microsoft-com: asm.v3"." warning information, this is because of adding the manifest administrator identity, there is no effect.

## 16. Revision History

| No. | Version | Changes  | Date       |
|-----|---------|--|------------|
| 1   | V1.0.1  | Initial release  | 2013-06-09 |
| 2   | V1.0.7  | Modify the GxMutiCam sample program                                  | 2014-02-17 |
| 3   | V1.0.8  | Add the sample program   | 2014-12-03 |
| 4   | V1.1.3  | Delete the description section of GxGigeSetPersistent sample program | 2017-01-18 |