TeliCamAIK

（TelliCamSDK USB3.0 AIK Adapter）

User Guide

Version 1.0.1 (2019/02/07)

Toshiba Teli Corporation

Information contained in this document is subject to change without prior notice.

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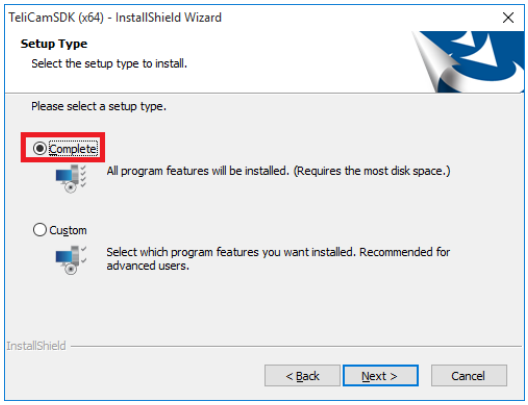
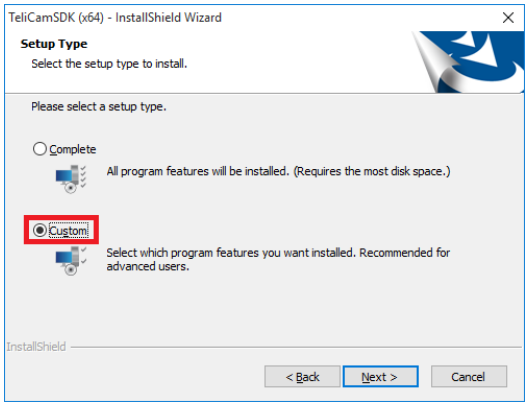
Contents

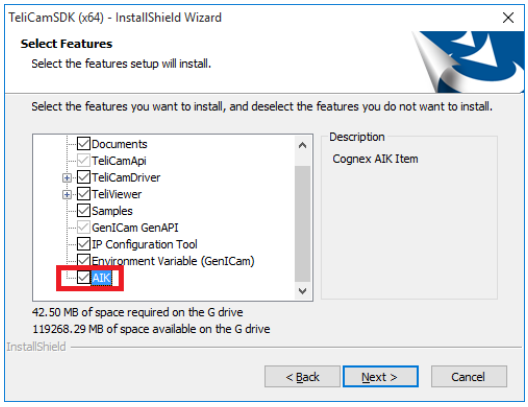
1. Introduction

TeliCamAIK is an interface library which provides access to Toshiba Teli USB3 Vision cameras from Cognex VisionPro vision software through Imaging Device module provided by Cognex Corporation.

TeliCamAIK is included in TeliCamSDK installer.
To install TeliCamAIK, you have to select "Complete" when installing TeliCamSDK, or check "AIK" checkbox in custom installation and install it.
Please refer to TeliCamSDK Start-up Guide for the installation method of TeliCamSDK.

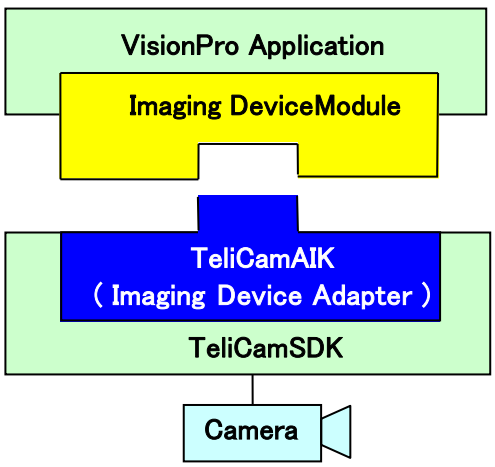






2. Architecture

The software configuration of the application software which uses TeliCamAIK interface is as follows.



 www.toshiba-teli.co.jp

3. How to use

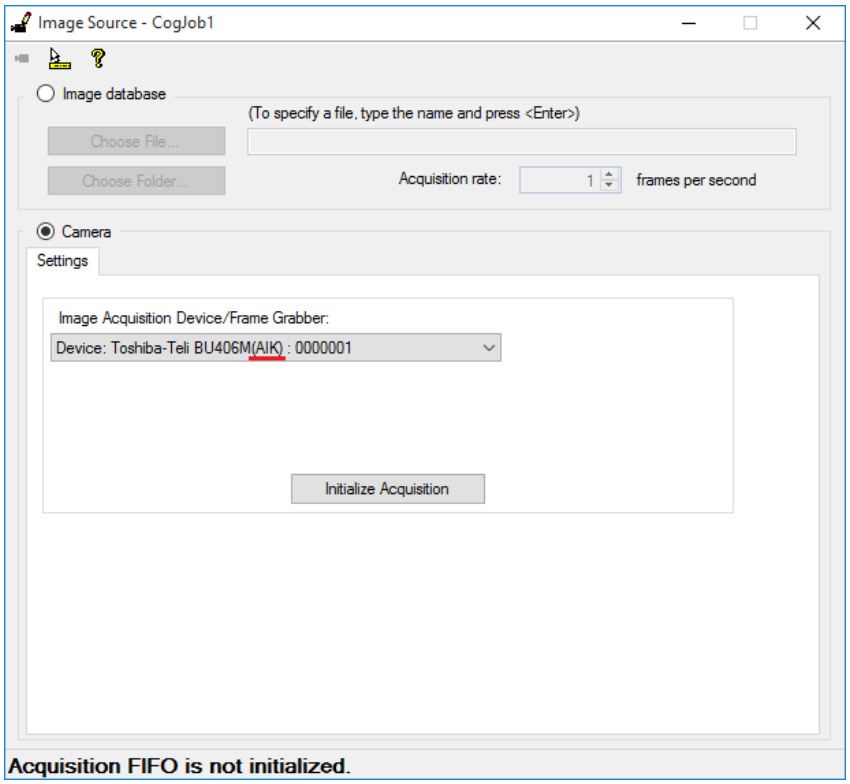
Administration privileges are required for executing application software that uses TeliCamAIK.
If application (include VisionPro QuickBuild) runs without administration privileges, application may fail to enumerate camera devices.

Refer to “Acquiring Images with an Imaging Device” section of Cognex VisionPro document, when you program using Microsoft Visual Studio.

3.1. Image Acquisition Device settings

The following name will be assigned to a camera device accessed through TeliCamAIK.
“Device: *VendorName ModelName* (AIK) : *SerialNo*.”

The following shows the Image Source window of VisionPro QuickBuild.
(The appearance may change if the version of VisionPro is different.)



If you create a .NET application, you need to add the following assemblies to the reference:

- Cognex.VisionPro
- Cognex.VisionPro.Core
- Cognex.VisionPro.ImagingDevice

[Example C#]

```
CogFrameGrabberImagingDevices cameras = new CogFrameGrabberImagingDevices();

ICogFrameGrabber camera = null;
for (int i = 0; i < cameras.Count; i++)
{
    if (cameras[i].Name.Contains("Teli"))
    {
        if (cameras[i].Name.Contains("AIK"))
        {
            camera = cameras[i];
            break;
        }
    }
}

if (camera == null)
{
    MessageBox.Show("No Teli camera Found.", "Error",
        MessageBoxButtons.OK, MessageBoxIcon.Error);
}
else
{
    string text = string.Empty;
    text = string.Format("DeviceName : {0}¥r¥nSerialNo : {1}"
        , camera.Name, camera.SerialNumber);
    MessageBox.Show(text, "OK"
        , MessageBoxButtons.OK, MessageBoxIcon.Information);
}
```

3.2. Video Format settings

When using TeliCamAIK, specify "Cognex Null Format" as the video format name.

[Example C#]

```
const string VIDEO_FORMAT = "Cognex NullFormat";
ICogAcqFifo fifo = camera.CreateAcqFifo(
        VIDEO_FORMAT,
        CogAcqFifoPixelFormatConstants.Format8Grey,
        0,
        true);
```

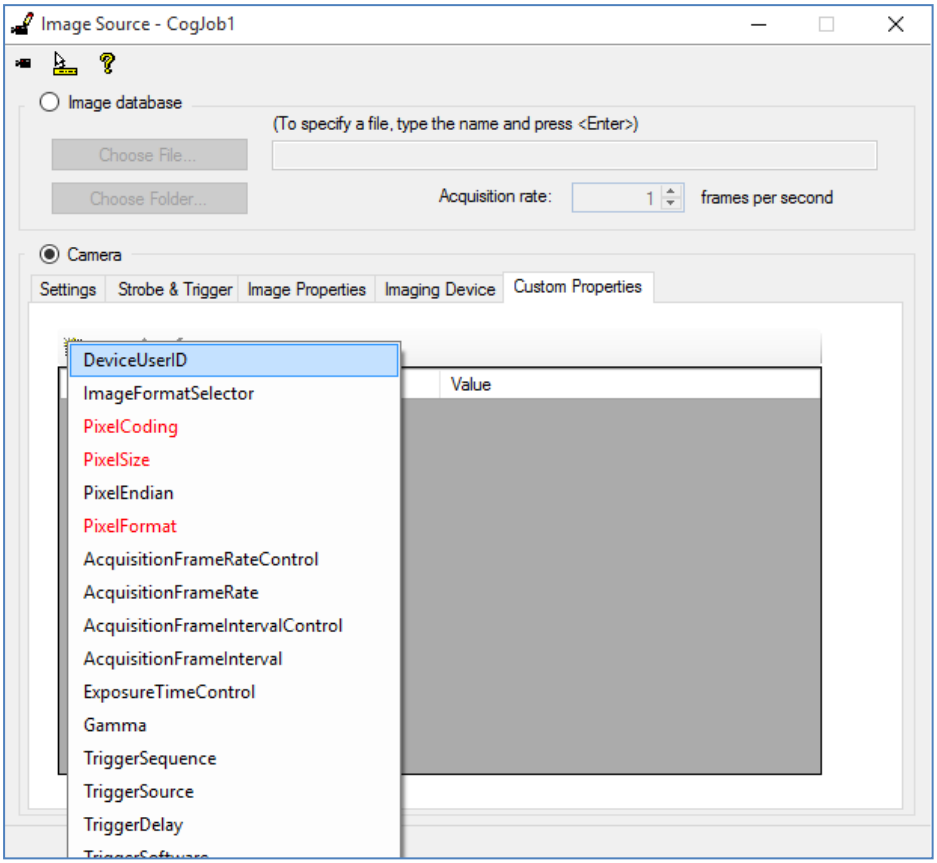
The supported image formats are as follows.

- Mono8
- Mono10
- Mono12
- RGB8
- BGR8
- BayerGR8
- BayerRG8
- BayerBG8
- BayerGR8

3.3. Custom Properties settings

TeliCamAIK supports Custom Properties for controlling device-specific features of the camera.

In VisionPro QuickBuild, custom Features can be shown in Custom Property tab and values of them can be edited here.



The “Reserved” custom properties are shown in red. “Reserved” custom properties are properties that VisionPro software may overwrite the value.

In TeliCamAIK, properties whose validness of property, access type, valid value range, etc. is affected by other custom properties are also handled as “reserved” and are shown in red.
Teli recommends you avoid setting a value to a reserved custom property or use extreme caution when choosing a value.

The following table shows custom properties defined in TeliCamAIK.
(Some of them may be not available if the connected camera does not support.)

“Reserved” custom properties (properties that VisionPro software may overwrite the value or properties whose validness of property, valid value range, etc. is affected by other custom properties) are shown in red. Be aware that the value, validness of property, access type, valid value range, etc. may be changed in background process.

For the contents of each custom property (register), refer to instruction manual of the camera.

Node Name	Type	Access	Description
AdapterVersion			
AdapterVersion	String	R	Returns the adapter dll version.
DeviceControl			
DeviceVendorName	String	R	Returns the vendor name.
DeviceModelName	String	R	Returns the model name.
DeviceManufacturerInfo	String	R	Returns the manufacturer information.
DeviceVersion	String	R	Returns the device version.
DeviceID	String	R	Returns the Device ID (serial number).
DeviceUserID	String	R/W	Set the free user ID.
ImageFormatControl			
ImageFormatSelector	Enum	R/W	Selects an image format.
Scalable			
SensorWidth	Integer	R	Returns effective width of the sensor in pixels.
SensorHeight	Integer	R	Returns effective Height of the sensor in pixels.
PixelFormat			
PixelCoding	Enum	R	Returns a pixel coding.
PixelSize	Enum	R/W	Selects a bit size of image pixel.
PixelEndian	Enum	R	Returns a pixel endian.
PixelFormat	Enum	R	Returns a selected pixel format. PixelFormat is conformed to AIA Pixel Format Naming Convention.
AcquisitionControl			
AcquisitionFrameRateControl	Enum	R/W	Activates frame rate setting.
AcquisitionFrameRate	Float	R/W	Sets frame rate of image stream.
AcquisitionFrameRate_Min	Float	R	Returns a minimum value of AcquisitionFrameRate.
AcquisitionFrameRate_Max	Float	R	Returns a maximum value of AcquisitionFrameRate.
AcquisitionFrameIntervalControl	Enum	R/W	Activates frame interval setting.
AcquisitionFrameInterval	Float	R/W	Sets frame interval of image stream.
AcquisitionFrameInterval_Min	Float	R	Returns a minimum value of AcquisitionFrameInterval.
AcquisitionFrameInterval_Max	Float	R	Returns a maximum value of AcquisitionFrameInterval.
ExposureTime			
ExposureTimeControl	Enum	R/W	Selects exposure time control mode. When other than "Manual" is selected, the value of the Exposure property of the imaging device is invalid.
Gamma			
Gamma	Float	R/W	Sets the Gamma correction.
Gamma_Min	Float	R	Returns a minimum value of Gamma.
Gamma_Max	Float	R	Returns a maximum value of Gamma.
TriggerControl			
TriggerSequence	Enum	R/W	Selects trigger sequence.
TriggerSource	Enum	R/W	Selects trigger source of Random Trigger Shutter.
TriggerDelay	Float	R/W	Sets trigger delay.
TriggerDelay_Min	Float	R	Returns a minimum value of TriggerDelay.
TriggerDelay_Max	Float	R	Returns a maximum value of TriggerDelay.
TriggerSoftware	Command	W	Executes software trigger.

Node Name	Type	Access	Description
DigitalIoControl			
LineModeAll	Integer	R	Returns the direction of each Line signal.
LineInverterAll	Integer	R/W	Selects the polarity of each Line signal.
LineStatusAll	Integer	R	Returns the status of each Line signal.
UserOutputValueAll	Integer	R/W	Sets the user output value.
LineSelector	Enum	R/W	Selects the Line of I/O connector.
LineSource	Enum	R/W	Selects the source of the output signal.
TimerControl			
TimerSelector	Enum	R	Returns the name of the timer that selected.
TimerDuration	Float	R/W	Sets the width of Timer0Active signal.
TimerDuration_Min	Float	R	Returns a minimum value of TimerDuration.
TimerDuration_Max	Float	R	Returns a maximum value of TimerDuration.
TimerDelay	Float	R/W	Sets the delay of Timer0Active signal.
TimerDelay_Min	Float	R	Returns a minimum value of TimerDelay.
TimerDelay_Max	Float	R	Returns a maximum value of TimerDelay.
TestPattern			
TestPattern	Enum	R/W	Selects a test pattern.

GetFeature() method of ICogImagingDeviceAccess is available for enumerating the name of supported custom properties.
Specify ”FeatureName_*n*” string for the “node” argument of GetFeature(). “n” is an integer index value starting from 0, which represents index of the custom property to get the name.
If custom property whose index is specified value does not exist, NULL value will be returned.
If the specified custom property is not supported by the connected camera, exception error occurs when a method of ICogImagingDeviceAccess is executed.

[Example C#]

```
ICogImagingDeviceAccess feature = camera.OwnedImagingDeviceAccess;

int no=0;
String propertyName;
String getFeatureName;
//String getFeatureComment;
//CogCustomPropertyTypeConstants getFeatureType;

listBox1.Items.Clear();

while(true)
{
    propertyName = String.Format("FeatureName_{0}", no);
    getFeatureName = feature.GetFeature(propertyName);
```



```
        if (getFeatureName == String.Empty)
        {
            break;
        }

        listBox1.Items.Add(getFeatureName);

        //getFeatureComment = feature.GetComment(getFeatureName);
        //getFeatureType = feature.GetFeatureType(getFeatureName);

        no++;
    }
```

4. Troubleshooting

Trouble	Answer
● Cannot enumerate imaging device. ● Cannot acquire image.	● TeliCamSDK may not be working properly. Run TeliU3vViewer.exe included in TeliCamSDK and confirm that Images are shown correctly. If images are not shown correctly, check and modify the settings referring to instruction manual of the camera and TeliCamSDK. ● If application runs without administration privileges, application may fail to enumerate camera devices. Make sure that it is running with administrator privileges.
● During Live display, the screen turns blue and stops. ● ”Adapter image pool full” error occurs. ● ”Remote Function Call Failed” error occurs.	Reserved pool size (memory size) used by CVL or VisionPro may be insufficient. This pool size is set with the following registry key. registry key : HKEY_LOCAL_MACHINE¥SOFTWARE¥Cognex¥AIK¥AdapterTeliCamAIK registry entry name : PoolSize （default value : 0x2AEA5400） Increasing the pool size value may improve the phenomenon. However, serious problems might occur if you modify the registry incorrectly. Be sure to acquire a backup of the registry before making changes. Supplement: Pool size greatly affects the operation of the camera. If the pool is too small, pool memory will be exhausted and image capture will fail when image capture is repeated. A pool size that is large enough to hold the maximum number of images used by the application at a certain period of time must be specified. When using the adapter with VisionPro QuickBuild, the maximum number of images to use can be estimated by the following formula. *PostedItemsQueueSize + (GarbageCollectionInterval + 2) * NumJobs + SafetyFactor* When using VisionPro 7.0 or later, it is recommended to set a value of 20 images or more. In the case of 12M color camera: 4000(W) × 3000(H) × 3(bytes) × 20 = 720,000,000 (0x2AEA5400)

5. Others

5.1. Revision History

Date	Version	Description
2017/10/13	1.0.0	Create the initial version.
2018/01/24	1.0.1	5.4 Inquiry was changed.

5.2. Disclaimer

The disclaimer of this Software is described in another “License Agreement TeliCamSDK Eng.pdf”.
Make sure to read this Agreement carefully before using it.
Refer to TeliCamSDK installation folder/Licenses folder

5.3. License

TeliCamSDK consists of multiple, independent software components. Each software component is copyrighted by a third party. TeliCamSDK uses software components that are distributed as freeware under a third-party end-user license agreement or copyright notice (hereinafter referred to as a “EULA”).

Some EULAs require that the source code of the applicable component be disclosed as the condition for distributing the software component in executable format. You can check the software components subject to such EULA requirements. For more information, please contact our inquiries described in section 5.4.

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EULAs are included in the installation directory: [TeliCamSDK install folder]/licenses .

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use conditions and items that must be observed regarding these software components.

The table below lists the software components using in TeliCamSDK, which are subject to EULAs.
The user should read the applicable EULAs carefully before using these software components.

Project name	Project license
GenICam GenApi	GenICam License

GenICam GenApi uses the following third party software.

TeliCamSDK redistributes the binaries of LGPL-applied software, and for these source code only, you have the right to obtain, modify and redistribute it in accordance with the LGPL provisions.
To the customer who wants the source code, we write to the media (CD - ROM etc.) and send it by post. Customers must pay for actual expenses such as shipping fee. If you want, please contact our inquiries described in section 5.4. We distribute source code only for open source software that you have right to obtain. (Source code of TeliCamSDK is not included.) Please understand beforehand that we can not answer questions about the content of the source code etc.

Microsoft, Windows, Windows XP, Windows Vista, Windows 7, Windows 8.1, Windows 10 and Visual C++ are the trademark or the registered trademark of Microsoft Corporation.
GigE VisionTM and USB3 VisionTM are camera interface standard defined by AIA (Automated Imaging Association).
GenICamTM is the trademark or the registered trademark of EMVA (European Machine Vision association).
Furthermore, the trade name used in this document is the trademark or the registered trademark of each company.

5.4. Inquiry

If you need help with TeliCamSDK, GigE Vision camera, USB3 Vision camera, please visit the following website :

https://secure.toshiba-teli.co.jp/ttfa/web/faq/top.html

If you still can not solve the problem, please contact “inquiries” on the following web site or the following e-mail address :

http://www.toshiba-teli.co.jp/en/support/contact/industrial.htm

Mail ：TELI-EXT-technical-support@toshiba-teli.co.jp