

ARTRAY Camera / Capture Module Software Developer Kit for TNIR

Dynamic Link Library for Windows XP, Vista, 7, 8, 10

User's Manual Version 1.3.0.0-4

Artray Co., Ltd.

Introduction

This booklet explains about Software Developer Kit (SDK) for cameras and capture module (frame grabbers) provided by ARTRAY.

SDK is provided by Dynamic Link Library (DLL).

This library is designed for programmers in a way that they do not need to bother internal control of cameras and hardware.

Compitable OS

Windows 10(32bit / 64bit)

Windows 8(32bit / 64bit)

Windows 7(32bit / 64bit)

Windows Vista(32bit / 64bit)

Windows XP(32bit)

Compatible Language

This DLL is comptatible for C++, C, VB.NET, C#.NET, and Delphi.

Use of Library

This library is in the format of Windows Dynamic Link Library (DLL).

This library is to be used in Microsoft Windows XP, Vista, 7, 8, 10.

There is no guarantee of proper operation with other operating systems.

This library partly uses MicrosoftDirectX8.1. However, installation of MS DirectX8.1 may be required to operate the library.

Configuration of Library

ArtCamSdk_[Model Name].dll DLL for ARTCAM-[Model Name]

CArtCamSdk.h Header file for C language

CArtCamSdk.hpp Class header file for C++

CArtCamSdk.cs Class file for C#.NET

CArtCamSdk.vb Class file for VB.NET

ArtCamSdk.pas Class file for Delphi

Please install each DLL to SYSTEM*1 directory or copy to directory created for the compiler. Copy all other files to the directory prepared for software development.

*1 System directories for Windows XP, Vista, 7 are as below.

| | | |
|--|-----------------------|---------------------|
| Windows2000 | C:\WINNT\SYSTEM32 | |
| WindowsXP, Vista, 7, 8, 10 (32 bit) | C:\WINDOWS\SYSTEM32 | |
| Windows Vista, 7, 8, 10 (64 bit) | DLL of 32 bit version | C:\WINDOWS\SYSWOW64 |
| | DLL of 64 bit version | C:\WINDOWS\SYSTEM32 |

About using native 64 bits

Please use DLL inside "x64" folder of "DLL" folder.

(for the folder composition, please refer to the "[Directory composition tree](#)")

Currently there is only sample for Visual Studio 2005, 2010 is available.

Delphi, BCB, and older version of Visual Studio2003 are not compatible for 64bit.

Directory composition tree

SDK-root

+Japanese

+English

+ARTCCM-TNIR-SDK-v1300

+DLL

| +-Win32

| | +-ArtCamSdk_008TNIR.dll

| | +-ArtCamSdk_009TNIR.dll

| | +-ArtCamSdk_031TNIR.dll

| | +-ArtCamSdk_032TNIR.dll

| | +-ArtCamSdk_0016TNIR.dll

| | +-ArtCamSdk_131TNIR.dll

| | +-ArtCamSdk_990SWIR.dll

| | +-ArtCamSdk_990SWIR_TEC.dll

| | +-ArtCamSdk_991SWIR.dll

| | +-ArtCamSdk_991SWIR_TEC.dll

| |

| +-x64

| | +-ArtCamSdk_008TNIR.dll

| | +-ArtCamSdk_009TNIR.dll

| | +-ArtCamSdk_031TNIR.dll

| | +-ArtCamSdk_032TNIR.dll

| | +-ArtCamSdk_0016TNIR.dll

| | +-ArtCamSdk_131TNIR.dll

| | +-ArtCamSdk_990SWIR.dll

| | +-ArtCamSdk_990SWIR_TEC.dll

| | +-ArtCamSdk_991SWIR.dll

| | +-ArtCamSdk_991SWIR_TEC.dll

+Lib

| +-C

| +-C#

| +-C++

| +-Delphi

| +-VB.NET

|

+Manual

|

+Sample

+Win32

| +-BCB2006

| +-CSharp.NET

| +-Delphi2006

| +-VB.NET

| +-VC++

+x64

+CSharp.NET

+VB.NET

+VC++

API-Operational Procedure

C++

1. Copy CArtCamSdk.hpp and DLL to directory prepared for software development.
2. Once each file is built in Project, library can simply be used by a class called CartCamSdk, which is described in CArtCamSdk.hpp.
This class facilitates use of DLL that is dynamically read.
3. When you use functions of library, make sure to execute CArtCamSdk:: LoadLibrary().
If returned value is TRUE, call other function.
4. To end, call CArtCamSdk::FreeLibrary.

Samples for C++ are as follows:

Solution files of VisualStudio are offered for different versions as below.

For Microsoft Visual C++ 6.0, .NET2002, 2003, 2005, 2010

| | |
|-------------------------------|---|
| Sample_VC.NET | A simple version works only for WindowsSDK. |
| Sample_VC.NET_2Cam | Sample displays two cameras of same model simultaneously. |
| Sample_VC.NET_Graphic | Sample for Cross hair function on video mode. |
| Sample_VC.NET_MFC_FullControl | A full control version by using MFC |

For Borland C++ Builder 2006

| | |
|--------------------------------|---|
| Sample_BCB_2006 | Simple version |
| Sample_BCB_2006_2Cam | For displaying two cameras simultaneously |
| Sample_BCB_2006_FullControl | Full control version |
| Sample_BCB_2006_Graphic&Allbpp | Sample supports cross hair function on video mode |

C language

1. Copy ArtCamSdk.h and DLL to directory prepared for software development.
2. Copy ArtCamSdk.h, use LoadLibrary and GetProcAddress to obtain address of function within DLL.
3. Once all pointers of functions which are described in header are obtained, SDK is ready for use.

As long as you do not have to use C language for your development environment or platform, please use C++ version.

C#.NET

1. Copy CArtCamSdk.cs and DLL to directory prepared for software development.
2. Once each file is built in Project, library can simply be used by a class called CartCam, which is described as CArtCamSdk.cs here.

This class facilitates easy use of DLL that is loaded dynamically.

3. When you use functions of library, make sure to execute CArtCam:: LoadLibrary(). If returned value is TRUE, call other function.
4. To end the program, call CArtCam::FreeLibrary.

Samples for C# are as follows:

These samples are compatible for Visual Studio2005, 2010.

| | |
|---------------------------|---|
| Sample_CS.NET | Simple version |
| Sample_CS.NET_2Cam | For displaying two cameras simultaneously |
| Sample_CS.NET_FullControl | Full control version |
| Sample_CS.NET_Graphic | Sample supports cross hair function on video mode |

NOTICE

For versions above VisualStudio2008, please use solution file of VisualStudio and change for use
Headfile is applicable for version above VisualStudio2005 (.NET2.0)For version of VisualStudio 2002 or
2003, please request it from our sales representatives.

VB.NET

1. Copy CArtCamSdk.vb and DLL to directory prepared for software development.
2. Once each file is built in Project, library can simply be used by a class called CartCam, which is described in CArtCamSdk.cs.

This class facilitates easy use of DLL that is loaded dynamically.

3. When you use functions of library, make sure to execute CArtCam:: LoadLibrary().
If returned value is TRUE, call other function.
4. To end the program, call CArtCam::FreeLibrary.

Sample VB.NET is as follows

These samples are compatible for Visual Studio2005, 2010.

| | |
|---------------------------|---|
| Sample_VB.NET | Simple version |
| Sample_VB.NET_2Cam | For displaying two cameras simultaneously |
| Sample_VB.NET_FullControl | Full control version |
| Sample_VB.NET_Graphic | Sample supports cross hair function on video mode |

NOTICE

For versions above VisualStudio2008, please open the solution file of VisualStudio and change for use.

Headfile is applicable for version above VisualStudio2005 (.NET2.0)For version of VisualStudio 2002 or 2003, please request from our sales representatives.

The support for VB is based on VB.NET and other than the current version. We are unable to provide other support for previous versions.

Delphi

Copy ArtCamSdk.pas and DLL to a folder prepared for software development.

Library can simply be used by a class called TArtCam

This class facilitates use of DLL that is dynamically read.

Sample for Delphi is as follows

Sample is compatible for Borland Delphi 2006.

| | |
|-----------------------------------|--|
| Sample_Delphi_2006 | Simple version |
| Sample_Delphi_2006_2Cam | For displaying two cameras simultaneously |
| Sample_Delphi_2006_FullControl | Full control version |
| Sample_Delphi_2006_Graphic&Allbpp | Sample for cross hair function on video mode |

Caution to use DLL

About filter compensation

Each image sensor has its own sensitivity characteristic. However, it is possible to homogenize the linearity of all pixels through software compensation.

User can use the compensation file named "Default.msk", located in the CD-rom provided with the camera. Please use function "ArtCam_LoadMaskFile()" to read this file.

On the other hand, user can also create a compensation file (mask data), by manually taking a dark image (cover the lens mount to block the light completely) and a bright image (expose the sensor to strong light until the whole image is saturated).

To generate the compensation file, please call the function "ArtCam_UpdateMaskData" after both images have been captured.

After calling the function "ArtCam_Initialize" or "ArtCam_SetDeviceNumber", user can call "ArtCam_LoadMaskFile" to load "Default.msk" provided by manufacturer, or call "ArtCam_UpdateMaskData" after images have been captured to generate a user-defined mask file.

For more details, please refer to the manual "ARTRAY Camera / Capture Module Software Developer Kit for TNIR".

Caution to use several cameras

a. Switch cameras and use

You can get camera index number to use by calling function "ArtCam_EnumDevice" after calling "ArtCam_Initialize".

Call "ArtCam_Preview" after setting connected camera's index at "ArtCam_SetDeviceNumber".

Please call "ArtCam_Close" every time when you switch a camera.

b. Use same time

It is all most impossible to preview more than 2 cameras at same time if cameras clock is normal because of USB's limitation of transferring range.

Divide normal clock with the number of cameras in which connect same time and clock down (Optional).

For example, if you want to connect 3 normal 24MHz cameras, we recommend to clock down to 8MHz (24MHz / 3 cameras = 8MHz(under)).

If a camera correspondence to a "SetHalfClock" function, you can switch 24MHz / 12MHz by DLL.

Please refer the SDK sample for 2 cameras to use.

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ARTRAY CO., LTD.
4F Ueno Bldg, 1-17-5 Kouenjikita, Suginami-ku, Tokyo 166-0002 Japan
TEL: 03-3389-5488
FAX: 03-3389-5486
E-mail: sales@arrray.us
URL: www.arrray.us