

# ARTRAY Camera / Capture Module Software Developer Kit

Dynamic Link Library for Windows XP / Vista / 7 / 8 / 8.1 / 10

User's Manual Version 1.3.0.0-23

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 Vista, 7, 8, 8.1, 10(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, 8.1, 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]
ArtCamSdkUSB3_[ Model Name].dll	DLL for ARTCAM-[Model Name]-USB3
ArtCamSdk.dll	DLL for DirectShow camera
ArtCnvSdk.dll	DLL for ArtCnvI
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.

32 bit	C:¥WINDOWS¥SYSTEM32	
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 compitable for 64bit.

## Directory composition tree

SDK-root

+ -Japanese

+ -English

+ -ARTCCM-SDK-v1300

| +-DLL

| | +-Win32

| | | +-USB2

| | | | +-CCD

| | | | | +-ArtCamSdk\_098II.dll

| | | | | +-ArtCamSdk\_150P3.dll

| | | | | +-ArtCamSdk\_267KY.dll

| | | | | +-ArtCamSdk\_274KY.dll

| | | | | +-ArtCamSdk\_445KY.dll

| | | | | +-ArtCamSdk\_500P2.dll

| | | | | +-ArtCamSdk\_625KY.dll

| | | | |

| | | | +-CMOS

| | | | | +-ArtCamSdk\_006MAT.dll

| | | | | +-ArtCamSdk\_036MI.dll

| | | | | +-ArtCamSdk\_1000MI.dll

| | | | | +-ArtCamSdk\_1000MI\_HD2.dll

| | | | | +-ArtCamSdk\_130MI.dll

| | | | | +-ArtCamSdk\_300MI.dll

| | | | | +-ArtCamSdk\_500MI.dll

| | | | | +-ArtCamSdk\_900MI.dll

| | | | |

| | | | +-Other

| | | | | +-ArtCnvSdk.dll

| | | | |

| | | +-USB2-WOM

| | | | +-CCD

| | | | | +-ArtCamSdk\_150P5\_WOM.dll

| | | | | +-ArtCamSdk\_274KY\_WOM.dll

| | | | | +-ArtCamSdk\_285CX\_WOM.dll

| | | | | +-ArtCamSdk\_407UV\_WOM.dll

| | | | | +-ArtCamSdk\_424KY\_WOM.dll

| | | | | +-ArtCamSdk\_445KY2\_WOM.dll

| | | | | +-ArtCamSdk\_500P2\_WOM.dll

| | | | | +-ArtCamSdk\_655KY\_WOM.dll

| | | | |

| | | | +-CMOS

| | | | | +-ArtCamSdk\_036MI2\_WOM.dll

| | | | | +-ArtCamSdk\_092UV\_WOM.dll

| | | | | +-ArtCamSdk\_092XQE\_WOM.dll

| | | | | +-ArtCamSdk\_1000MI\_WOM.dll

| | | | | +-ArtCamSdk\_130E2V\_WOM.dll

| | | | | +-ArtCamSdk\_130HP\_WOM.dll

| | | | | +-ArtCamSdk\_130MI\_WOM.dll

| | | | | +-ArtCamSdk\_130UV\_WOM.dll

| | | | | +-ArtCamSdk\_130XQE\_WOM.dll

| | | | | +-ArtCamSdk\_1400MI\_WOM.dll

| | | | | +-ArtCamSdk\_264IMX\_WOM.dll

| | | | | +-ArtCamSdk\_265IMX\_WOM.dll

| | | | | +-ArtCamSdk\_300MI\_WOM.dll

| | | | | +-ArtCamSdk\_500MI\_WOM.dll

| | | | | +-ArtCamSdk\_900MI\_WOM.dll

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| | | | +-ArtCamSdk_IMX035_WOM.dll
| | | |
| | | +-USB3
| | | | +-CCD
| | | | | +-ArtCamSdk_USB3_100KAI.dll
| | | | | +-ArtCamSdk_USB3_1600KAI.dll
| | | | | +-ArtCamSdk_USB3_210KAI.dll
| | | | | +-ArtCamSdk_USB3_267KY.dll
| | | | | +-ArtCamSdk_USB3_274KY.dll
| | | | | +-ArtCamSdk_USB3_2900KAI.dll
| | | | | +-ArtCamSdk_USB3_410KAI.dll
| | | | | +-ArtCamSdk_USB3_424KY.dll
| | | | | +-ArtCamSdk_USB3_655KY.dll
| | | | | +-ArtCamSdk_USB3_810KAI.dll
| | | |
| | | +-CMOS
| | | | +-ArtCamSdk_USB3_1000MI.dll
| | | | +-ArtCamSdk_USB3_1400MI.dll
| | | | +-ArtCamSdk_USB3_500MI.dll
| | | | +-ArtCamSdk_USB3_900MI.dll
| | | |
| | | +-USB3-T2
| | | | +-CCD
| | | | | +-ArtCamSdk_1600KAI_USB3_T2.dll
| | | | | +-ArtCamSdk_174IMX_USB3_T2.dll
| | | | | +-ArtCamSdk_178IMX_USB3_T2.dll
| | | | | +-ArtCamSdk_2900KAI_USB3_T2.dll
| | | | | +-ArtCamSdk_410KAI_USB3_T2.dll
| | | | |
| | | | +-CMOS
| | | | | +-ArtCamSdk_1000MI_USB3_T2.dll
| | | | | +-ArtCamSdk_1400MI_USB3_T2.dll
| | | | | +-ArtCamSdk_265IMX_USB3_T2.dll
| | | | | +-ArtCamSdk_500MI_USB3_T2.dll
| | |
| | +-x64
| | | +-USB2
| | | | +-CCD
| | | | | +-ArtCamSdk_098II.dll
| | | | | +-ArtCamSdk_150P3.dll
| | | | | +-ArtCamSdk_267KY.dll
| | | | | +-ArtCamSdk_274KY.dll
| | | | | +-ArtCamSdk_445KY.dll
| | | | | +-ArtCamSdk_500P2.dll
| | | | | +-ArtCamSdk_625KY.dll
| | | | |
| | | | +-CMOS
| | | | | +-ArtCamSdk_006MAT.dll
| | | | | +-ArtCamSdk_036MI.dll
| | | | | +-ArtCamSdk_1000MI.dll
| | | | | +-ArtCamSdk_1000MI_HD2.dll
| | | | | +-ArtCamSdk_130MI.dll
| | | | | +-ArtCamSdk_300MI.dll
| | | | | +-ArtCamSdk_500MI.dll
| | | | | +-ArtCamSdk_900MI.dll
| | | | |
| | | | +-Other
| | | | | +-ArtCnvSdk.dll
| | |
| | +-USB2-WOM

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| | +-CCD
| | | +-ArtCamSdk_150P5_WOM.dll
| | | +-ArtCamSdk_274KY_WOM.dll
| | | +-ArtCamSdk_285CX_WOM.dll
| | | +-ArtCamSdk_407UV_WOM.dll
| | | +-ArtCamSdk_424KY_WOM.dll
| | | +-ArtCamSdk_445KY2_WOM.dll
| | | +-ArtCamSdk_500P2_WOM.dll
| | | +-ArtCamSdk_655KY_WOM.dll
| | +-CMOS
| | | +-ArtCamSdk_036MI2_WOM.dll
| | | +-ArtCamSdk_092UV_WOM.dll
| | | +-ArtCamSdk_092XQE_WOM.dll
| | | +-ArtCamSdk_1000MI_WOM.dll
| | | +-ArtCamSdk_130HP_WOM.dll
| | | +-ArtCamSdk_130MI_WOM.dll
| | | +-ArtCamSdk_130UV_WOM.dll
| | | +-ArtCamSdk_130XQE_WOM.dll
| | | +-ArtCamSdk_1400MI_WOM.dll
| | | +-ArtCamSdk_264IMX_WOM.dll
| | | +-ArtCamSdk_265IMX_WOM.dll
| | | +-ArtCamSdk_300MI_WOM.dll
| | | +-ArtCamSdk_500MI_WOM.dll
| | | +-ArtCamSdk_900MI_WOM.dll
| | | +-ArtCamSdk_IMX035_WOM.dll
| |
| | +-USB3
| | | +-CCD
| | | | +-ArtCamSdk_USB3_100KAI.dll
| | | | +-ArtCamSdk_USB3_1600KAI.dll
| | | | +-ArtCamSdk_USB3_210KAI.dll
| | | | +-ArtCamSdk_USB3_267KY.dll
| | | | +-ArtCamSdk_USB3_274KY.dll
| | | | +-ArtCamSdk_USB3_2900KAI.dll
| | | | +-ArtCamSdk_USB3_410KAI.dll
| | | | +-ArtCamSdk_USB3_424KY.dll
| | | | +-ArtCamSdk_USB3_655KY.dll
| | | | +-ArtCamSdk_USB3_810KAI.dll
| | |
| | | +-CMOS
| | | | +-ArtCamSdk_USB3_1000MI.dll
| | | | +-ArtCamSdk_USB3_1400MI.dll
| | | | +-ArtCamSdk_USB3_500MI.dll
| |
| | +-USB3-T2
| | | +-CCD
| | | | +-ArtCamSdk_1600KAI_USB3_T2.dll
| | | | +-ArtCamSdk_174IMX_USB3_T2.dll
| | | | +-ArtCamSdk_178IMX_USB3_T2.dll
| | | | +-ArtCamSdk_2900KAI_USB3_T2.dll
| | | | +-ArtCamSdk_410KAI_USB3_T2.dll
| | |
| | | +-CMOS
| | | | +-ArtCamSdk_1000MI_USB3_T2.dll
| | | | +-ArtCamSdk_1400MI_USB3_T2.dll
| | | | +-ArtCamSdk_265IMX_USB3_T2.dll
| | | | +-ArtCamSdk_500MI_USB3_T2.dll
| |
| +-Lib
| +-C

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- | | +-C#
- | | +-C++
- | | +-Delphi
- | | +-VB.NET
- | |
- | +-Manual
- | |
- | +-Sample
  - | +-Win32
    - | | +-BCB2006
    - | | +-CSharp.NET
    - | | +-Delphi2006
    - | | +-VB.NET
    - | | +-VC++
  - | +-x64
    - | | +-CSharp.NET
    - | | +-VB.NET
    - | | +-VC++
- | +-old-version
  - | +-ARTCCM-SDK-v1277
  - | +-ARTCCM-SDK-v1282

## 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**

### **Caution to use DirectShow camera**

Use ArtCamSdk.dll to control DirectShow camera by our SDK.

You need to set up correct capture size after formatting DLL. Because capture size is not set up properly at the default setting.

For example, if you use ARTCAM-150P3-DS, resolution is 1360\*1024.

Set up the resolution clearly as ArtCam\_SetCaptureWindow(hACam, 1360, 1024, 150) after calling HACAM hACam = ArtCam\_Initialize(hWnd).

If you do not set up it, controlling height and width takes wrong value. It would cause unusual shut down because of illegal access to a memory.

### **Caution to use SATA camera**

Use ArtCamSdk\_Sata.dll to control SATA camera by our SDK.

You can use the DLL at all SATA cameras. But you need to set up the setting for each camera by SetCameraType.

Please refer the "SetCameraType" in the "SDK Functions Manual" page.

Also please refer the sample in it.

About ARTCAM-130MI-SATA and ARTCAM-200MI-SATA, change resolution size of ARTCAM-300MI-SATA, and you can use it.

## **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.

### NOTICE for new series of cameras

When purchasing relatively new camera, it is possible that your preferable sample is not available.

In that case, please refer to available samples, and load dll and compile again. Internal mode is basically the same so it can be used after changing dll name.

Also, the latest sample is usually Sample\_VC.NET\_MFC\_FullControl in the VC.NET folder.

For the latest function and instruction for other languages, it might not be found in the sample. In that case, please refer to the VC.NET sample.

### Notice for Windows Vista, 7

To use ArtCamSdk\_130MI.dll, please use the latest DLL and driver (**v1.72** or later)

To use ArtCnvSdk.dll, please use the latest DLL and driver (**v1.60** or later).

When DLL and driver version are incompatible, Snapshot, Preview, CallBackPreview functions might fail to capture images and return with the error of [ARTCAMSDK\_CAPTURELOST].

If any of above problems occurs, please confirm the driver and DLL version and contact Artray support center.

Support center : [support@artray.co.jp](mailto:support@artray.co.jp)

### Notice about usage of USB3.0 camera

The following operations are unnecessary for "USB3-T2" models.

It is necessary to obtain access from administrator when using USB3.0 camera.

When log in the administrator account, please also turn off the UAC of windows (user account control)

The step to turn UAC off as below.

Windows Vista	Windows Vista : Start -> Control Panel ->User Account -> Turn User Account control On or Off -> Unclick "Use User Account Control to help protect your computer" and click "OK"(After restarting, the UAC will be disabled on the PC)
Windows 7	Start ->Control Panel ->User Account -> User Account Control Settings -> Choose "Never Notify" and click "OK" (After restarting, The UAC will be disabled on the PC.)

It is not necessary to turn off UAC on a Windows XP.

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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@artray.us](mailto:sales@artray.us)  
URL: [www.artray.us](http://www.artray.us)