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# **ARTRAY Camera / Capture Module Software Developer Kit**

## **---Function Manual---**

Dynamic Link Library for Windows XP

2007.10.15

**ARTRAY CO., LTD.**

■ DLL Initializing ■

|                      |       |    |
|----------------------|-------|----|
| ArtCam_GetDllVersion | ..... | P4 |
| ArtCam_GetLastError  | ..... | P5 |
| ArtCam_Initialize    | ..... | P6 |
| ArtCam_Release       | ..... | P6 |

■ Image capture ■

|                        |       |     |
|------------------------|-------|-----|
| ArtCam_Preview         | ..... | P7  |
| ArtCam_Record          | ..... | P7  |
| ArtCam_CallBackPreview | ..... | P8  |
| ArtCam_SnapShot        | ..... | P9  |
| ArtCam_Capture         | ..... | P10 |
| ArtCam_Close           | ..... | P10 |
| ArtCam_Trigger         | ..... | P11 |
| WM_GRAPHPAINT          | ..... | P12 |
| WM_ERROR               | ..... | P13 |
| ArtCam_StartPreview    | ..... | P14 |
| ArtCam_StopPreview     | ..... | P14 |
| ArtCam_SaveImage       | ..... | P15 |
| ArtCam_GetImage        | ..... | P16 |

■ Setting dialog ■

|                     |       |     |
|---------------------|-------|-----|
| ArtCam_SetCameraDlg | ..... | P17 |
| ArtCam_SetImageDlg  | ..... | P17 |
| ArtCam_SetAnalogDlg | ..... | P18 |

■ Camera setting ■

|                           |       |     |
|---------------------------|-------|-----|
| ArtCam_SetPreviewWindow   | ..... | P19 |
| ArtCam_SetCaptureWindow   | ..... | P20 |
| ArtCam_SetCaptureWindowEx | ..... | P21 |
| ArtCam_GetCaptureWindowEx | ..... | P22 |
| ArtCam_SetColorMode       | ..... | P23 |
| ArtCam_GetColorMode       | ..... | P24 |
| ArtCam_SetCrossbar        | ..... | P24 |
| ArtCam_SetDeviceNumber    | ..... | P25 |
| ArtCam_GetDeviceName      | ..... | P25 |
| ArtCam_EnumDevice         | ..... | P26 |
| ArtCam_SetCameraType      | ..... | P27 |
| ArtCam_GetCameraType      | ..... | P27 |
| ArtCam_Width              | ..... | P28 |
| ArtCam_Height             | ..... | P28 |
| ArtCam_Fps                | ..... | P29 |
| ArtCam_GetCameraInfo      | ..... | P29 |

|                        |     |
|------------------------|-----|
| ArtCam_SetIOPort       | P30 |
| ArtCam_GetIOPort       | P30 |
| ArtCam_SetSubSample    | P31 |
| ArtCam_GetSubSample    | P31 |
| ArtCam_SetWaitTime     | P32 |
| ArtCam_GetWaitTime     | P32 |
| ArtCam_SetMirrorV      | P33 |
| ArtCam_GetMirrorV      | P33 |
| ArtCam_SetMirrorH      | P34 |
| ArtCam_GetMirrorH      | P34 |
| ArtCam_SetHalfClock    | P35 |
| ArtCam_GetHalfClock    | P35 |
| ArtCam_SetAutoIris     | P36 |
| ArtCam_GetAutoIris     | P36 |
| ArtCam_SetSamplingRate | P37 |
| ArtCam_GetSamplingRate | P37 |
| ArtCam_GetVideoFormat  | P38 |
| ArtCam_WriteSromID     | P39 |
| ArtCam_ReadSromID      | P39 |
| ArtCam_WriteRegister   | P40 |
| ArtCam_ReadSRegister   | P40 |
| ArtCam_SetFilterValue  | P41 |
| ArtCam_GetFilterValue  | P41 |
| ArtCam_Set***          | P41 |
| ArtCam_Get***          | P41 |
| ArtCam_SetSyncV        | P43 |
| ArtCam_GetSyncV        | P43 |
| ArtCam_SetSyncH        | P44 |
| ArtCam_GetSyncH        | P44 |

■ Image filter setting possible value ■

|                       |     |
|-----------------------|-----|
| For all cameras       | P45 |
| Convert to Gray scale | P46 |
| ARTCNV7               | P47 |

## ■ ArtCam\_GetDllVersion

Definition: **DWORD** ArtCam\_GetDllVersion(*void*)

Function: Obtain library's version

Argument: None

Function Detail:

Obtain version and type of DLL

Among returned DWORD (32 bits), DLL type is stored in upper 16 bits while DLL version is stored in lower 16 bits.

Before you use library, check the DLL versions you installed. So as SDK .

The version is obtained as 4 places integral number.

If the version is 1.278, 1278 is stored for lower 16 bits.

DLL types are as below:

| CODE                         | DEVICE TYPE          |
|------------------------------|----------------------|
| ARTCAM_CAMERATYPE_DS         | DirectShowCamera     |
| ARTCAM_CAMERATYPE_USTC       | ARTUST               |
| ARTCAM_CAMERATYPE_CNV        | ARTCNV               |
| ARTCAM_CAMERATYPE_130MI      | ARTCAM-130MI         |
| ARTCAM_CAMERATYPE_200MI      | ARTCAM-200MI         |
| ARTCAM_CAMERATYPE_300MI      | ARTCAM-300MI         |
| ARTCAM_CAMERATYPE_150P       | ARTCAM-150P          |
| ARTCAM_CAMERATYPE_320P       | ARTCAM-320P          |
| ARTCAM_CAMERATYPE_200SH      | ARTCAM-200SH         |
| ARTCAM_CAMERATYPE_098        | ARTCAM-098           |
| ARTCAM_CAMERATYPE_036MI      | ARTCAM-036MI         |
| ARTCAM_CAMERATYPE_500P       | ARTCAM-500P          |
| ARTCAM_CAMERATYPE_150P2      | ARTCAM-150P II       |
| ARTCAM_CAMERATYPE_036MIST    | ARTCAM-036MI-TWIN    |
| ARTCAM_CAMERATYPE_500MI      | ARTCAM-500MI         |
| ARTCAM_CAMERATYPE_T111       | ARTCAM-T111          |
| ARTCAM_CAMERATYPE_T112       | ARTCAM-T112          |
| ARTCAM_CAMERATYPE_150P3      | ARTCAM-150P III      |
| ARTCAM_CAMERATYPE_130MI_MOUT | ARTCAM-130MI-MOUT    |
| ARTCAM_CAMERATYPE_150P3_MOUT | ARTCAM-150P III-MOUT |
| ARTCAM_CAMERATYPE_267KY      | ARTCAM-267KY         |
| ARTCAM_CAMERATYPE_274KY      | ARTCAM-274KY         |
| ARTCAM_CAMERATYPE_SATA       | SATA Camera          |

## ■ ArtCam\_GetLastError

Definition: **LONG** ArtCam\_GetLastError(HACAM *hACam*)

Function: Obtained error

Argument:

HACAM    *hACam*            Handle to discriminate cameras

Function Detail:

When error occurs in return value of function, please call this function to obtain details of error. Error is stored in stack type of data configuration.

Errors can be called in sequential order.

| ERROR CODE                | ERROR DETAIL  |
|---------------------------|---|
| ARTCAMSDK_NOERROR         | Normal  |
| ARTCAMSDK_NOT_INITIALIZE, | Not Initialized   |
| ARTCAMSDK_DISABLEDDEVICE, | Tray to access to unusable device   |
| ARTCAMSDK_CREATETHREAD,   | Failureure to create a thread for image capture                             |
| ARTCAMSDK_CREATEWINDOW,   | Failureure to create a window   |
| ARTCAMSDK_OUTOFMEMORY,    | Not enough memory for image transferring.<br>Or Failureure to obtain memory |
| ARTCAMSDK_CAMERASET,      | Error at camera (device) setting  |
| ARTCAMSDK_CAMERASIZE,     | Error at camera (device) size setting                                       |
| ARTCAMSDK_CAPTURE,        | Failureure at image capture   |
| ARTCAMSDK_PARAM,          | Wrong argument  |
| ARTCAMSDK_DIRECTSHOW,     | DirectShow Initializing error   |
| ARTCAMSDK_UNSUPPORTED,    | This function is not supported  |
| ARTCAMSDK_UNKNOWN,        | Unidentified error  |
| ARTCAMSDK_CAPTURELOST,    | Lost device   |
| ARTCAMSDK_FILENOTFOUND,   | Cannot find specified file  |
| ARTCAMSDK_FPGASET,        | Error at FPGA setting   |

## ■ ArtCam Initialize

Definition: **HACAM** ArtCam\_Initialize(HWND *hWnd*)

Function: Initialize library

Argument:

        HWND        *hWnd*                Handle to discriminate cameras

Function Detail:

Initialize library.

Call this function first when you use this library

Once this function is succeeded, handle for camera identification is obtained in return value. On the other hand, if it is Failed, NULL or 0 is returned.

By setting window handle to hWnd, [WM\\_ERROR](#) is sent to window procedure when an error occurs.

Also whenever this function is called, the last parameter setting is read from registry. Each parameter setting is saved under the below registry key.  
(Some parameters are not saved)

*HKEY\_CURRENT\_USER\Software\Artray\ArtCam[MODEL NAME]\Sdk*

## ■ ArtCam Release

Definition: **BOOL** ArtCam\_Release(HACAM *hACam*)

Function: Release library

Argument:

        HACAM        *hACam*                Handle to discriminate cameras

Function Detail:

Release all plugged cameras, and initialize all data within class.

Call this function when you end application or stop operation of cameras.

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

To display image again, call [ArtCam\\_Initialize](#).

Also whenever this function is called, the last parameter setting is read from registry. (Some parameters are not saved)

## ■ ArtCam Preview

Definition: **BOOL** ArtCam\_Preview(HACAM *hACam*)

Function: Display image

Argument: HACAM *hACam* Handle for camera identification

### Function Detail:

Image display is controlled by SDK.

Call [ArtCam\\_Initialize](#) before using this function.

When this function succeeds, create a sub-window within the window specified by [ArtCam\\_SetPreviewWindow](#). Image will be displayed in the sub-window.

If setting is not done by [ArtCam\\_SetPreviewWindow](#), new window will be created, and image will be displayed.

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

## ■ ArtCam Record

Definition: **BOOL** ArtCam\_Record(

HACAM *hACam*, LPCTSTR *lpAviName*, UINT *RecTime*, BOOL *fShow*)

Function: Record to file

Argument:

|         |                         |                                |
|---------|-------------------------|--------------------------------|
| HACAM   | <u><i>hACam</i></u>     | Handle to discriminate cameras |
| LPCTSTR | <u><i>lpAviName</i></u> | Name of file to be saved       |
| UINT    | <u><i>RecTime</i></u>   | Recording time (milli-second)  |
|         |                         | Continuous recording at 0      |
| BOOL    | <u><i>fShow</i></u>     | Display image or not           |

### Function Detail:

When *RecTime* is specified, recording will automatically end as time out. However, device will not be released, and therefore image will still be displayed.

If you like to execute some process at the end of recordings, you need to obtain timing using timer. Regarding *fShow*, hiding image will prevent loss of frames.

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

Remark: This function is exclusively for ArtCamSdk.dll (Direct Show Camera)

## ■ ArtCam\_CallBackPreview

Definition: BOOL ArtCam\_CallBackPreview(

HACAM *hACam*, HWND *hWnd*, LPBYTE *lpImage*, LONG *Size*, BOOL *TopDown*)

Function: Obtain image data while display live video

Argument:

|        |                |   |
|--------|----------------|---|
| HACAM  | <i>hACam</i>   | Handle to discriminate cameras                  |
| HWND   | <i>hWnd</i>    | Window Handle for receiving message             |
| LPBYTE | <i>lpImage</i> | Address of arrangement for receiving image data |
| LONG   | <i>Size</i>    | Arrangement length of lpImage                   |
| BOOL   | <i>TopDown</i> | Determine whether image is up or down           |

Function Detail:

When hWnd is specified to window handle, [WM\\_GRAPHPAINT](#) is sent to specified window procedure.

When lpImage and Size are specified, image is copied to the alignment, which was specified at lpImage before [WM\\_GRAPHPAINT](#).

Image will not be copied unless the size of alignment is equal to or larger than size of image.

Do not insert address of temporary alignment to lpImage.

If bitmap prepared is DDB (top-down), specify Topdown as True. If bitmap is DIB (bottom-up), specify Topdown as False.

Like [ArtCam\\_Preview](#), this function also has automatic display. Procedure for auto-display is same as that of [ArtCam\\_Preview](#).

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

\*1: It is relatively difficult to obtain message with VB. There may be error due to processing speed of VB. Although the function itself can be used, real-time processing by [WM\\_GRAPHPAINT](#) should be avoided.

(With the current sample, that procedure is removed, and timing of display is controlled by timer)



## ■ ArtCam SnapShot

Definition: **BOOL** ArtCam\_SnapShot(

HACAM *hACam*, LPBYTE *lpImage*, LONG *Size*, BOOL *TopDown*)

Function: Obtain image of camera only once

Argument:

|        |                |   |
|--------|----------------|---|
| HACAM  | <i>hACam</i>   | Handle to discriminate cameras                  |
| LPBYTE | <i>lpImage</i> | Address of arrangement for receiving image data |
| LONG   | <i>Size</i>    | Arrangement length of lpImage                   |
| BOOL   | <i>TopDown</i> | Determination of ups and down of image          |

Function Detail:

Obtained only 1 image from a camera by soft trigger.

When function succeeds, obtained data is stored in lpImage.

Image will not be obtained unless the size of alignment is equal to or larger than size of image.

If bitmap prepared is DDB (top-down), specify Topdown as True. If bitmap is DIB (bottom-up), specify Topdown as False.

While [ArtCam\\_GetImage](#) captures a frame in preview mode, ArtCam\_SnapShot captures a frame in non-preview mode.

This function will Failure if preview is displayed with other functions such as [ArtCam\\_Preview](#)

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

\*1: Strobe signal is sent from sensor to camera's BNC pin type if you call the function by some strobo camera (like as ARTCAM-300MI-STR2).

Please refer the manual for more detail of signal timing.

There is not this function for normal camera.

## ■ ArtCam Capture

Definition: **BOOL** ArtCam\_Capture(HACAM hACam)

Function : Initialize camera for continuous snapshot

Argument :

HACAM    *hACam*            Handle to discriminate cameras

Function Detail:

Initialize camera to use [ArtCam SnapShot](#) continuously.

Normally when [ArtCam SnapShot](#) is used, procedure proceeds as following:

Initialize – Obtain – Release

However, if you initialize beforehand with this function, the process of “Initialize” and “Release” will be ignored when [ArtCam SnapShot](#) is called. Hence the image can be obtained with high-speed.

To stop [ArtCam SnapShot](#) and release camera, call [ArtCam Close](#).

The main flow is as following:

Initialize

[ArtCam Capture](#)

Can be used unlimitedly

[ArtCam SnapShot](#)

Release

[ArtCam Close](#)

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

## ■ ArtCam Close

Definition: **BOOL** ArtCam\_Close(HACAM *hACam*)

Function : Release device

Argument :

HACAM    *hACam*            Handle to discriminate cameras

Function Detail :

Stop preview screen, and release device. Use this function to release device when you obtain images with the following functions.

[ArtCam\\_Preview](#)

[ArtCam\\_Record](#)

[ArtCam\\_CallbackPreview](#)

[ArtCam\\_Capture](#)

[ArtCam\\_Trigger](#)

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

## ■ ArtCam Trigger

Definition: **BOOL** ArtCam\_Trigger(HACAM hACam, HWND hWnd, LPBYTE lpImage, LONG Size, BOOL TopDown)

Function: Obtain image of camera in external trigger mode

Argument:

|        |                |   |
|--------|----------------|---|
| HACAM  | <i>hACam</i>   | Handle to discriminate cameras                  |
| HWND   | <i>hWnd</i>    | Window Handle for receiving message             |
| LPBYTE | <i>lpImage</i> | Address of arrangement for receiving image data |
| LONG   | <i>Size</i>    | Arrangement length of lpImage                   |
| BOOL   | <i>TopDown</i> | Determination of up and down of image           |

Function Detail:

Procedure of this function is similar to that of [ArtCam CallbackPreview](#). Timing of capturing depends on camera's clock speed with [ArtCam CallbackPreview](#). With this function, capturing is processed when triggered with external trigger.

When you initialize with this function, updates and obtaining message of image is sent only after the trigger is sent to camera.

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

\*1: Use pulse signal from 0-5V to 0-12V for trigger signal.

Timing from input trigger to take a picture is different from each cameras.

Please refer the manual for more detail.

## ■ WM\_GRAPHPAINT

Definition: `#define WM_GRAPHPAINT WM_APP + 2`

Function: Message is issued when a camera image is updated.

|        |        |             |
|--------|--------|-------------|
| WPARAM | wParam | LPGP_INFO   |
| LPARAM | lParam | Always NULL |

Function Detail:

LPGP\_INFO in which is received by wParam is pointer to the structure that stores image data

```
typedef struct GP_INFO {
    LONG        lSize;
    LONG        lWidth;
    LONG        lHeight;
    LONG        lBpp;
    LONG        lFps;
    LPBYTE      pImage;
} *LPGP_INFO;
```

```
LPGP_INFO lpGPIF = (LPGP_INFO)wParam
```

This message is sent to the callback procedure of the window when Window Handle is set to hWnd at [ArtCam CallbackPreview](#) and [ArtCam Trigger](#).

This message is sent when image is updated.

To obtain image data, assign pointer and array length of alignment to lpImage and Size of [ArtCam CallbackPreview](#). Then image data is stored in specified alignment when this message is sent.

When wParam is NULL, WM\_GRAPHPAINT becomes error.  
wParam and lParam will mean [WM\\_ERROR](#).

WM\_GRAPHPAINT is defined as 0x8002

## ■ WM\_ERROR

Definition: *#define* WM\_GRAPHPAINT WM\_APP + 3

Function: Receive error message

|        |        |            |
|--------|--------|------------|
| WPARAM | wParam | Always 0   |
| LPARAM | lParam | Error Code |

### Function Detail:

When Window Handle is specified at [ArtCam Initialize](#), error code is sent to Window Procedure in case error occurs within SDK.

WM\_ERROR is defined as 0x8003.

Error codes are as below:

| ERROR CODE               | STATUS  |
|--------------------------|---|
| ARTCAMSDK_NOERROR        | Normal  |
| ARTCAMSDK_NOT_INITIALIZE | not initialized   |
| ARTCAMSDK_DISABLEDDEVICE | It was going to access disable device                                       |
| ARTCAMSDK_CREATETHREAD   | Failureure of creating thread for capturing                                 |
| ARTCAMSDK_CREATEWINDOW   | Failureure of creating window   |
| ARTCAMSDK_OUTOFMEMORY    | No enough memory for transferring image<br>Or Failureure of securing memory |
| ARTCAMSDK_CAMERASET      | Error of camera (device) settings   |
| ARTCAMSDK_CAPTURE        | Failureure of cap   |
| ARTCAMSDK_PARAM          | Wrong argument  |
| ARTCAMSDK_DIRECTSHOW     | Error of DirectShow initialization  |
| ARTCAMSDK_UNSUPPORTED    | This function is not supported  |
| ARTCAMSDK_UNKNOWN        | Unknown error   |
| ARTCAMSDK_CAPTURELOST    | Device lost   |
| ARTCAMSDK_FILENOTFOUND   | Cannot find specified file  |
| ARTCAMSDK_FPGASET        | Error at FPGA setting   |

## ■ ArtCam StartPreview

Definition: **BOOL** ArtCam\_StartPreview(HACAM *hACam*)

Function: Start preview

Argument:

HACAM    *hACam*            Handle to discriminate cameras

Function Detail:

Start preview of camera image

This function is used internally for [ArtCam\\_Preview](#), [ArtCam\\_Record](#) and [ArtCam\\_CallBackPreview](#).

This function is only used to regenerate image, in which preview is stop, by calling [ArtCam\\_StopPreview](#).

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

## ■ ArtCam StopPreview

Definition: **BOOL** ArtCam\_StopPreview(HACAM *hACam*)

Function: Stop preview

Argument:

HACAM    *hACam*            Handle to discriminate cameras

Function Detail:

This function stops preview of image.

This function does not release device. Please use this function only when you need to stop preview temporarily.

To display preview again, use [ArtCam\\_StartPreview](#).

This function is only available when preview is displayed with [ArtCam\\_Preview](#) and [ArtCam\\_CallBackPreview](#).

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

## ■ ArtCam SaveImage

Definition: **BOOL** ArtCam\_SaveImage(

HACAM *hACam*, LPCTSTR *lpSaveName*, LONG *FileType*)

Function: Save image of camera

Argument:

|         |                   |                                |
|---------|-------------------|--------------------------------|
| HACAM   | <i>hACam</i>      | Handle to discriminate cameras |
| LPCTSTR | <i>lpSaveName</i> | Name of file to be saved       |
| LONG    | <i>FileType</i>   | Type of save                   |

Function Detail:

Save camera image in computer files

Image to be saved is the last image obtained by image-capturing functions such as [ArtCam\\_Preview](#), [ArtCam\\_CallBackPreview](#), [ArtCam\\_SnapShot](#) & [ArtCam\\_Trigger](#).

Please note that depending on system environment, speed clock of camera and file types, saved image may deteriorate while real-time image is obtained with [ArtCam\\_Preview](#) and [ArtCam\\_CallBackPreview](#).

When this happens, stopping image update temporarily by [ArtCam\\_StopPreview](#) may prevent image deterioration.

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

This function is used to save live image obtained by camera.

To save images that are processed by application, save the images at application.

File type can be selected from BMP, binary (RAW), JPEG (high-quality, standard & low-quality), PNG and TIFF.

You cannot save 16 bits image in JPEG

When you save image in JPEG, it is saved as gray scale of 8 bits bit-depth.

BMP and RAW can be saved in 16 bits. However, pallet info is not saved in file. Therefore image may not be display correctly for softwares that do not have special reading routine.

To save images in 16 bits, use of PNG and TIFF are recommended. With these file Initializes, we recommend you to read the images in Artray's Viewer Software or Adobe Photoshop6.

Please note that not every image-processing application is compatible with 16 bits image.

Regarding files to be saved with this function, we only support on reading procedure on BMP and RAW.

We will not provide support on reading procedures of other file Initializes and saving procedure.

## ■ ArtCam\_GetImage

Definition: **BOOL** ArtCam\_GetImage(

HACAM *hACam*, LPBYTE *lpImage*, LONG *Size*, BOOL *TopDown*)

Function: Obtain image of camera

Argument:

|        |                |   |
|--------|----------------|---|
| HACAM  | <i>hACam</i>   | Handle to discriminate cameras                  |
| LPBYTE | <i>lpImage</i> | Address of arrangement for receiving image data |
| LONG   | <i>Size</i>    | Arrangement length of lpImage                   |
| BOOL   | <i>TopDown</i> | Determination of up and down of image           |

Function Detail:

Obtain image of camera.

When function succeeds, previously obtained data is stored in lpImage.

Image will not be obtained unless the size of alignment is equal to or larger than size of image.

If bitmap prepared is DDB (top-down), specify Topdown as True. If bitmap is DIB (bottom-up), specify Topdown as False.

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

This function is used to obtain image asynchronously while [ArtCam\\_Preview](#) or [ArtCam\\_CallbackPreview](#) is used.

If you only need to obtain 1 frame, use [ArtCam\\_SnapShot](#).

This function assumes that the PC with low specs is used, or language, which has slow processing speed, is used.

To create with C & C++, receive message of image updates by [WM\\_GRAPHPAINT](#)



## ■ ArtCam\_SetCameraDlg

Definition: **BOOL** ArtCam\_SetCameraDlg(HACAM *hACam*, HWND *hWnd*)

Function : Show dialog of camera settings

Argument :

|       |              |                                  |
|-------|--------------|----------------------------------|
| HACAM | <i>hACam</i> | Handle to discriminate cameras   |
| HWND  | <i>hWnd</i>  | Parent window for showing dialog |

Function Detail:

This function displays a dialog box that allows you to alter settings such as size of image and frame rate.

Dialog box displayed varies with the device plugged.

When you call this function while preview is displayed, preview will temporarily stop.

Preview will be displayed again once dialog box is closed.

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

## ■ ArtCam\_SetImageDlg

Definition: **BOOL** ArtCam\_SetImageDlg(HACAM *hACam*, HWND *hWnd*)

Function: Show dialog of filter settings

Argument:

|       |              |                                  |
|-------|--------------|----------------------------------|
| HACAM | <i>hACam</i> | Handle to discriminate cameras   |
| HWND  | <i>hWnd</i>  | Parent window for showing dialog |

Function Detail:

This function displays a dialog box that allows you to alter settings such as brightness, contrast and white balance.

Dialog box displayed varies with the device plugged.

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

## ■ ArtCam\_SetAnalogDlg

Definition: **BOOL** ArtCam\_SetCameraDlg(HACAM *hACam*, HWND *hWnd*)

Function : Show dialog of port/camera settings

Argument :

|       |              |                                  |
|-------|--------------|----------------------------------|
| HACAM | <i>hACam</i> | Handle to discriminate cameras   |
| HWND  | <i>hWnd</i>  | Parent window for showing dialog |

Function Detail:

This function displays a dialog box that allows you to alter settings such as analog port and internal camera device.

Dialog box displayed varies with the device plugged.

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

## ■ ArtCam\_SetPreviewWindow

Definition: **BOOL** ArtCam\_SetPreviewWindow(

HACAM *hACam*, HWND *hWnd*, LONG *Left*, LONG *Top*, LONG *Right*, LONG *Bottom*)

Function : Specify window to display image of camera and specify its range

Argument :

|       |               |   |
|-------|---------------|---|
| HACAM | <i>hACam</i>  | Handle to discriminate cameras                |
| HWND  | <i>hWnd</i>   | Specify handle of window to be displayed      |
| LONG  | <i>Left</i>   | Specify upper-left X-coordinate of rectangle  |
| LONG  | <i>Top</i>    | Specify upper-left Y-coordinate of rectangle  |
| LONG  | <i>Right</i>  | Specify lower-right X-coordinate of rectangle |
| LONG  | <i>Bottom</i> | Specify lower-right Y-coordinate of rectangle |

Function Detail:

When Window handle is specified to *hWnd*, create child window in the window and display in the child window.

When NULL is specified to *hWnd*, create new window.

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

## ■ ArtCam\_SetCaptureWindow

Definition: **BOOL** ArtCam\_SetCaptureWindow(

HACAM *hACam*, LONG *Width*, LONG *Height*, LONG *Fps*)

Function: Specify image size of camera and frame rate

Argument:

|       |               |  |
|-------|---------------|--|
| HACAM | <i>hACam</i>  | Handle to discriminate cameras               |
| LONG  | <i>Width</i>  | Specify width of image in the unit of pixel  |
| LONG  | <i>Height</i> | Specify height of image in the unit of pixel |
| LONG  | <i>Fps</i>    | Specify frame rate                           |

Function Detail:

~For DirectShow camera (ArtCamSdk.dll)~

For Frame, specify frame number calculated by FPS (frame rate per second) × 10.  
If FPS is 30, it will be 300.

~Other~

Frame will be ignored.

Based on Width and Height as operative resolution, most appropriate value among registered will be set.

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

This function is as using DirectShow camera to do record setting.

Other than this, please use ArtCam\_SetCaptureWindowEx

Set up correct pixel size at the function after Initializing by Initialize, otherwise it would be Failed to CallBackPreview, Snapshot functions.

## ■ ArtCam\_SetCaptureWindowEx

Definition: **BOOL** ArtCam\_SetCaptureWindowEx( HACAM *hACam*, LONG *HTotal*,  
LONG *HStart*, LONG *HEffective*, LONG *VTotal*, LONG *VStart*, LONG *VEffective*)

Function: Specify image size of camera (ROIFunction)

Argument:

|       |                   |  |
|-------|-------------------|--|
| HACAM | <i>hACam</i>      | Handle to discriminate cameras                                   |
| LONG  | <i>HTotal</i>     | Specify total horizontal width of camera<br>in the unit of pixel |
| LONG  | <i>HStart</i>     | Specify starting point of horizon                                |
| LONG  | <i>HEffective</i> | Specify effective horizontal width in the unit of<br>pixel       |
| LONG  | <i>VTotal</i>     | Specify vertical total height in the unit of pixel               |
| LONG  | <i>VStart</i>     | Specify starting point of vertical                               |
| LONG  | <i>VEffective</i> | Specify effective vertical height                                |

Function Detail:

Set up capture image size.

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

ROIFunction is a function only for CMOS sensor camera.

You cannot set up image size at CCD sensor camera.

For color image, because of Bayer converting, you need more than 5 pixel active imager size at both horizontal and vertical.

We recommend to set up multiple of 4 for active horizontal pixel and active vertical pixel. Especially, it would not view images properly if you set up other than multiple of 4 to active horizontal pixel.

You cannot use this function for DirectShow camera.

You can change the size at ArtCam\_SetCaptureWindow.

## ■ ArtCam\_GetCaptureWindowEx

Definition : **BOOL** ArtCam\_GetCaptureWindowEx(HACAM *hACam*, LONG\* *HTotal*,  
LONG\* *HStart*, LONG\* *HEffective*, LONG\* *VTotal*, LONG\* *VStart*, LONG\*  
*VEffective*)

Function: Obtain image size of camera

Argument :

|       |                   |   |
|-------|-------------------|---|
| HACAM | <i>hACam</i>      | Handle to discriminate cameras                  |
| LONG* | <i>HTotal</i>     | Returns total width of camera in unit of pixel  |
| LONG* | <i>HStart</i>     | Returns starting point of width                 |
| LONG* | <i>HEffective</i> | Returns operative width of camera               |
| LONG* | <i>VTotal</i>     | Returns total height of camera in unit of pixel |
| LONG* | <i>VStart</i>     | Returns starting point of height                |
| LONG* | <i>VEffective</i> | Returns operative height of camera              |

Function Detail:

~For ArtCamSdk.dll~

Use ArtCam\_Width ArtCam\_Height ArtCam\_Fps

~Other~

Obtain each parameter of camera

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

## ■ ArtCam SetColorMode

Definition: **BOOL** ArtCam\_SetColorMode(HACAM *hACam*, LONG *ColorMode*)

Function : Set color mode for image capturing

Argument :

|       |                  |                                |
|-------|------------------|--------------------------------|
| HACAM | <i>hACam</i>     | Handle to discriminate cameras |
| LONG  | <i>ColorMode</i> | Number of data bits            |

Function Detail:

Specify number of bits.

|    |   |
|----|---|
| 8  | 8bit monochrome image   |
| 16 | 16bit monochrome image (Effective bit is different from each model) |
| 24 | 24bit color image (BGR each 8bit)                                   |
| 32 | 32bit color image (BGRA each 8bit, A is invalid)                    |
| 48 | 48bit color image (BGR each 16bit)                                  |
| 64 | 64bit color image (BGRA each 16bit, A is invalid)                   |

With 16 (10) bits, numerical values vary slightly depending on the environment.

When you create an application, make sure that the application is compatible with 10, 12, 14, & 16.

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

### **Extension Function :**

At “[ArtCamSdk\\_SATA.dll](#)”, set 10,12,14 in argument. And you can set up effective bit number explicitly.

Use this function to change input bit number at LVDS-SATA converter.

When you want to show color (48bit, 64bit color) at 16 bit transfer mode, set up the number below to *ColorMode*.

|             | 48bit color image | 64bit color image |
|-------------|-------------------|-------------------|
| 10bit valid | 42                | 58                |
| 12bit valid | 44                | 60                |
| 14bit valid | 46                | 62                |
| 16bit valid | 48                | 64                |

Returned value of ArtCam\_GetColorMode functions is as same as above.

※If you use DirectShow camera(ArtCamSdk.dll),

Image is fixed at 24 bits color.

You cannot set up color space at this function.

## ■ ArtCam\_GetColorMode

Definition: **LONG** ArtCam\_GetColorMode (HACAM *hACam*)

Function : Obtain current color mode

Argument :

|       |              |                                |
|-------|--------------|--------------------------------|
| HACAM | <i>hACam</i> | Handle to discriminate cameras |
|-------|--------------|--------------------------------|

Function Detail:

Success: Returned image bit number as LONG value (8~64)

Failure: Returned -1

## ■ ArtCam\_SetCrossbar

Definition: **BOOL** ArtCam\_SetCrossbar(HACAM *hACam*, LONG *Input*, LONG *Output*)

Function: Specify analog port to be plugged

Argument:

|       |               |                                |
|-------|---------------|--------------------------------|
| HACAM | <i>hACam</i>  | Handle to discriminate cameras |
| LONG  | <i>Input</i>  | Number of input port           |
| LONG  | <i>Output</i> | Number of output port          |

Function Detail:

You can change connecting analog port.  
Specify an integral from 0 to "*Input*" to switch.  
"*Output*" is extension function and normally specify 0.

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

This function is only for ArtCnv series.

This is only for switching input port of the model in which has several analog connecting ports, such as ArtCnvII-2ch, ArtCnv-HAKO.

Right after switching input port (about 100m/sec), image would be disordered because of obtaining a synchronized analog signal.



## ■ ArtCam\_SetDeviceNumber

Definition: **BOOL** ArtCam\_SetDeviceNumber(HACAM *hACam*, LONG *Number*)

Function: Assign number of device to be plugged

Argument:

|       |               |                                  |
|-------|---------------|----------------------------------|
| HACAM | <i>hACam</i>  | Handle to discriminate cameras   |
| LONG  | <i>Number</i> | Assign device number from 0 to 9 |

Function Detail:

After you call this function and initialize with functions such as ArtCam\_Preview, ArtCam\_Record & ArtCam\_CallBackPreview, image of specified device will be displayed. To confirm device number, use ArtCam\_EnumDevice & ArtCam\_GetDeviceName.

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

## ■ ArtCam\_GetDeviceName

Definition: **BOOL** ArtCam\_GetDeviceName(

HACAM *hACam*, LONG *index*, LPSTR *szDeviceName*, LONG *nSize*)

Function : Obtain name of specified device

Argument :

|       |                     |  |
|-------|---------------------|--|
| HACAM | <i>hACam</i>        | Handle to discriminate cameras                     |
| LONG  | <i>index</i>        | Specify number of device from 0 to 9               |
| LPSTR | <i>szDeviceName</i> | Names of devices are copied, if they are operative |
| LONG  | <i>nSize</i>        | Size of <i>szDeviceName</i>                        |

Function Detail:

Confirm if device specified by index is operative. If it's operative, store the name of device to *szDeviceName*.

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

## ■ ArtCam EnumDevice

Definition: **LONG** ArtCam\_EnumDevice(HACAM *hACam*, TCHAR  
*szDeviceName*[10][256])

Function: Recount names of operative device

Argument:

|       |                     |                                       |
|-------|---------------------|---------------------------------------|
| HACAM | <i>hACam</i>        | Handle to discriminate cameras        |
| TCHAR | <i>szDeviceName</i> | Names of operative devices are copied |

Function Detail:

Utilized device name is stored in *szDeviceName*.

For example, if two ARTCAM-130MI cameras are possible to use,  
Normally,

a string **ArtCam130MI\_0** is stored in *szDeviceName*[0]

a string **ArtCam130MI\_1** is stored in *szDeviceName*[1]

Number specified by [ArtCam\\_SetDeviceNumber](#) is same as alignment number stored  
in *szDeviceName*.

To use device stored in *szDeviceName*[1], specify [ArtCam\\_SetDeviceNumber](#) (1).

If the function is successfully worked, utilized device number is returned as **LONG**  
value.

Please give the strings of [10][256] for second Argument.

If a string is smaller than this, Return value would be returned to 0.

You cannot use this function for VB.NET and C#.NET.

To obtain device name with other languages, please use [ArtCam\\_GetDeviceName](#).

## ■ ArtCam\_SetCameraType

Definition: **BOOL** ArtCam\_SetCameraType(HACAM *hACam*, LONG *Flg*)

Function: Identified connecting SATA camera

Argument:

|       |              |                                |
|-------|--------------|--------------------------------|
| HACAM | <i>hACam</i> | Handle to discriminate cameras |
| LONG  | <i>Flg</i>   | SATA camera type code          |

Function Detail:

Choose a SATA camera in which specified camera type code in *Flg*.  
Call after Initializing ArtCamSdk\_Sata.dl at Initialize function.

Caemra type code is define as below:

| MODEL             | CAMERA TYPE CODE             |
|-------------------|------------------------------|
| ARTSAT-0506LVDS   | ARTCAM_CAMERATYPE_SATA_LVDS  |
| ARTCAM-300MI-SATA | ARTCAM_CAMERATYPE_SATA_300MI |
| ARTCAM-500MI-SATA | ARTCAM_CAMERATYPE_SATA_500MI |
| ARTCAM-MV413-SATA | ARTCAM_CAMERATYPE_SATA_MV413 |
| ARTCAM-800MI-SATA | ARTCAM_CAMERATYPE_SATA_800MI |
| ARTCAM-036MI-SATA | ARTCAM_CAMERATYPE_SATA_036MI |
| ARTCAM-267KY-SATA | ARTCAM_CAMERATYPE_SATA_150P  |

## ■ ArtCam\_GetCameraType

Definition: **LONG** ArtCam\_GetCameraType(HACAM *hACam*, LPBOOL *Error*)

Function: Obtain connecting SATA camera

Argument:

|        |              |                                |
|--------|--------------|--------------------------------|
| HACAM  | <i>hACam</i> | Handle to discriminate cameras |
| LPBOOL | <i>Error</i> | Error information              |

Function Detail:

Obtain connecting SATA camera's camera type code.

Caemra type code is define as below:

| MODEL             | CAMERA TYPE CODE             |
|-------------------|------------------------------|
| ARTSAT-0506LVDS   | ARTCAM_CAMERATYPE_SATA_LVDS  |
| ARTCAM-300MI-SATA | ARTCAM_CAMERATYPE_SATA_300MI |
| ARTCAM-500MI-SATA | ARTCAM_CAMERATYPE_SATA_500MI |
| ARTCAM-MV413-SATA | ARTCAM_CAMERATYPE_SATA_MV413 |
| ARTCAM-800MI-SATA | ARTCAM_CAMERATYPE_SATA_800MI |
| ARTCAM-036MI-SATA | ARTCAM_CAMERATYPE_SATA_036MI |
| ARTCAM-267KY-SATA | ARTCAM_CAMERATYPE_SATA_150P  |

## ■ ArtCam Width

Definition: **LONG** ArtCam\_Width(HACAM *hACam*)

Function: Obtain width of camera image

Argument:

HACAM     *hACam*                    Handle to discriminate cameras

Function Detail:

~DirectShow camera (ArtCamSdk.dll)~

Assigned Width value is returned at [ArtCam\\_SetCaptureWindow](#)

~Cameras that capture size is fixed~

Standard size set within SDK is returned by LONG value.

(ArtCnvSdk.dll, ArtCamSdk\_150P3.dll, ArtCamSdk\_500P.dll etc...)

~Cameras that capture size is flexible~

Assigned Heffective value at [ArtCam\\_SetCaptureWindowEx](#) is returned by LONG value.

## ■ ArtCam Height

Definition: **LONG** ArtCam\_Height(HACAM *hACam*)

Function : Obtain height of camera image

Argument :

HACAM     *hACam*                    Handle to discriminate cameras

Function Detail:

~DirectShow camera (ArtCamSdk.dll)~

Assigned Height value is returned at [ArtCam\\_SetCaptureWindow](#) by LONG value.

~Cameras that capture size is fixed~

Standard size set within SDK is returned by LONG value.

(ArtCnvSdk.dll, ArtCamSdk\_150P3.dll, ArtCamSdk\_500P.dll etc...)

~Cameras that capture size is flexible~

Assigned Veffective value at [ArtCam\\_SetCaptureWindowEx](#) is returned by LONG value.

## ■ ArtCam Fps

Definition: **LONG** ArtCam\_Fps(HACAM *hACam*)

Function : Obtain frame rate of camera

Argument :

HACAM      *hACam*                      Handle to discriminate cameras

Function Detail:

Obtained setting frame rate by LONG value.  
Frame rate is obtained by following: FPS × 10  
If FPS is 30, it will be 300.

This function is only for **ArtCamSdk.dll** (**DirectShow camera**)

## ■ ArtCam GetCameraInfo

Definition: **BOOL** ArtCam\_GetCameraInfo(HACAM *hACam*, LPCAMERAINFO *pInfo*)

Function: Obtain camera information

Argument:

HACAM                      *hACam*                      Handle to discriminate cameras  
LPCAMERAINFO *pInfo*                      Camera information

Function Detail:

Obtaining the information of connecting camera's setting possible value.

CAMERAINFO type structure is defined as below:

```
CAMERAINFO {  
    LONG    lSize;                      // structure's size  
    LONG    lWidth;                     // Camera's effective maximum width  
    LONG    lHeight;                    // Camera's effective maximum height  
    LONG    lGlobalGainMin;            // Lowest value of global gain (cannot use -1 camera)  
    LONG    lGlobalGainMax;            // Maximum value of global gain (cannot use -1 camera)  
    LONG    lColorGainMin;             // Lowest value of color gain (cannot use -1 camera)  
    LONG    lColorGainMax;             // Maximum value of color gain (cannot use -1 camera)  
    LONG    lExposureMin;              // Lowest value of exposure time (cannot use -1 camera)  
    LONG    lExposureMax;              // Maximum value of exposure time (cannot use -1 camera)  
} *LPCAMERAINFO;
```

## ■ ArtCam\_SetIOPort

Definition: **BOOL** ArtCam\_SetIOPort(

HACAM *hACam*, BYTE *byteData*, LONG *longData*, DWORD *Reserve*)

Function : Write data to IO

Argument :

|       |                 |                                |
|-------|-----------------|--------------------------------|
| HACAM | <i>hACam</i>    | Handle to discriminate cameras |
| BYTE  | <i>byteData</i> | Data written in IO (byte data) |
| LONG  | <i>longData</i> | Not in use. Please specify 0.  |
| DWORD | <i>Reserve</i>  | Not in use. Please specify 0.  |

Function Detail:

Write data (8 bit) into I/O port.

Port will be initialized at low level when loading device driver (i.e. loading operating system or plugging USB)

e.g. When "0x0C" is saved into "byteData", both OUT0 and OUT1 ports will be at Hi level.

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

## ■ ArtCam\_GetIOPort

Definition: **BOOL** ArtCam\_GetIOPort(

HACAM *hACam*, LPBYTE *byteData*, LPLONG *longData*, DWORD *Reserve*)

Function: Read data from IO

Argument:

|        |                 |                                  |
|--------|-----------------|----------------------------------|
| HACAM  | <i>hACam</i>    | Handle to discriminate cameras   |
| LPBYTE | <i>byteData</i> | Data read from IO (byte data)    |
| LPLONG | <i>longData</i> | Not in use. Please specify NULL. |
| DWORD  | <i>Reserve</i>  | Not in use. Please specify 0.    |

Function Detail:

Read data (8 bit) from I/O port. At the newest driver (July 11<sup>th</sup>. 2007) Low level (LSB)'s 1 and 2 bits are IN0, and IN1 port.

Input level of port returns 1 when it is Hi in *byteData*.

e.g. When IN0 level is Low and IN1 level is Hi, "0x02" will be in *byteData*.

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

This function is effective only for corresponded to I/O customized camera.

Port is Initialized to Low level at the time device drive is loading (Start OS or connecting USB). Voltage is unstable till driver is loaded.

## ■ ArtCam\_SetSubSample

Definition: **BOOL** ArtCam\_SetSubSample(HACAM *hACam*, LONG *SubSampleMode*)

Function : Set sub-sampling mode

Argument :

|       |                      |                                |
|-------|----------------------|--------------------------------|
| HACAM | <i>hACam</i>         | Handle to discriminate cameras |
| LONG  | <i>SubSampleMode</i> | Sub-sampling mode              |

Function Detail:

This function sets sub-sampling transfer mode.

Thinning out image is transferred. Image is thinned out by value set in *SubSampleMode*.

SUBSAMPLE\_1 All data

SUBSAMPLE\_2 Data equals to half of matrix

SUBSAMPLE\_4 Data equals to quarter of matrix

SUBSAMPLE\_8 Data equals to eighth of matrix

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

When [ArtCam\\_CallBackPreview](#) is used in this function, data less than assigned image size is transferred.

Transfer mode is different at each models.

There is not this function at CCD camera.

## ■ ArtCam\_GetSubSample

Definition: **LONG** ArtCam\_GetSubSample(HACAM *hACam*)

Function : Obtain current sub-sampling mode

Argument :

|       |              |                                |
|-------|--------------|--------------------------------|
| HACAM | <i>hACam</i> | Handle to discriminate cameras |
|-------|--------------|--------------------------------|

Function Detail:

Obtain current pixel skipping transfer mode.

SUBSAMPLE\_1 All data

SUBSAMPLE\_2 Data equals to half of matrix

SUBSAMPLE\_4 Data equals to quarter of matrix

SUBSAMPLE\_8 Data equals to eighth of matrix

Return -1 if the function is Failed.

## ■ ArtCam SetWaitTime

Definition: **BOOL** ArtCam\_SetWaitTime(HACAM *hACam*, LONG *WaitTime*)

Function: Assign WaitTime

Argument:

|       |                 |                                |
|-------|-----------------|--------------------------------|
| HACAM | <i>hACam</i>    | Handle to discriminate cameras |
| LONG  | <i>WaitTime</i> | WaitTime                       |

Function Detail:

This function assigns waiting time for obtaining video from [ArtCam\\_Preview](#) and [ArtCam\\_CallBackPreview](#).

Specified wait time between frame by mm/sec. Default is 10.

Success: Returned TRUE or 1,

Failure: Returned FALSE or 0.

Frame rate will be increased when you assign a small value in Wait Time.

Missing will be decreased. CPU's using rate will be increased.

Please specify between 5 to 20 as average number.

Frame rate will decrease when you assign a large value for *Wait Time*

## ■ ArtCam GetWaitTime

Definition: **LONG** ArtCam\_GetWaitTime(HACAM *hACam*)

Function : Obtain WaitTime

Argument :

|       |              |                                |
|-------|--------------|--------------------------------|
| HACAM | <i>hACam</i> | Handle to discriminate cameras |
|-------|--------------|--------------------------------|

Function Detail:

Success: Obtain current Wait Time by LONG value to RETURN value.

Failure: Return -1 to RETURN value.



## ■ ArtCam\_SetMirrorV

Definition: **BOOL** ArtCam\_SetMirrorV(HACAM *hACam*, BOOL *Flg*)

Function: Set flip vertical mirroring function

Argument:

|       |              |                                |
|-------|--------------|--------------------------------|
| HACAM | <i>hACam</i> | Handle to discriminate cameras |
| BOOL  | <i>Flg</i>   | Reverse flag                   |

Function Detail:

With camera's hardware function, you can transfer data in flip vertical. Setting *Flg* to True will enable mirroring function, while false will disable the function.

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

Each models has different default flg.

## ■ ArtCam\_GetMirrorV

Definition: **BOOL** ArtCam\_GetMirrorV(HACAM *hACam*)

Function : Obtain conditions of flip vertical mirroring function

Argument :

|       |              |                                |
|-------|--------------|--------------------------------|
| HACAM | <i>hACam</i> | Handle to discriminate cameras |
|-------|--------------|--------------------------------|

Function Detail:

Confirm if flip vertical mirroring function is enabled or not.

Mirroring function enabled: True

Mirroring function disabled: False

Each models has different default flg.

## ■ ArtCam\_SetMirrorH

Definition: **BOOL** ArtCam\_SetMirrorH(HACAM *hACam*, **BOOL** *Flg*)

Function : Set flip horizontal mirroring function

Argument :

|       |              |                                |
|-------|--------------|--------------------------------|
| HACAM | <i>hACam</i> | Handle to discriminate cameras |
| BOOL  | <i>Flg</i>   | Reverse flag                   |

Function Detail:

With camera's hardware function, you can transfer data in flip horizontal. Setting Flg to True will enable mirroring function, while false will disable the function.

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

Each models has different default flg.

## ■ ArtCam\_GetMirrorH

Definition: **BOOL** ArtCam\_GetMirrorH(HACAM *hACam*)

Function : Obtain current conditions of flip horizontal mirroring function

Argument:

|       |              |                                |
|-------|--------------|--------------------------------|
| HACAM | <i>hACam</i> | Handle to discriminate cameras |
|-------|--------------|--------------------------------|

Function Detail :

With camera's hardware function, you can transfer data in flip horizontal.

Mirroring function enabled: True

Mirroring function disabled: False

Each models has different default flg.

## ■ ArtCam\_SetHalfClock

Definition: **BOOL** ArtCam\_SetHalfClock(HACAM *hACam*, LONG *Value*)

Function : Halve clock speed of camera

Argument :

|       |              |                                |
|-------|--------------|--------------------------------|
| HACAM | <i>hACam</i> | Handle to discriminate cameras |
| LONG  | <i>Value</i> | Flag for half clock            |

Function Detail:

Clock speed of camera can be halved. Halving clock speed will halve frame rate. Halve clock is effective when specified 1 on *Value*. In validate at 0.

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

Use this function when:

- Does not require high frame rate
- Connect several cameral
- Use low spec PC
- USB transferring speed is not enough and an image is disordered.
- Use 10 bits transfer mode

This function does not allow direct switching.

Having set this function in advance, clock switching will be reflected when you initialize using image capturing functions.

Depending on models, clock switching may take up to several seconds.

## ■ ArtCam\_GetHalfClock

Definition: **LONG** ArtCam\_GetHalfClock(HACAM *hACam*, LPBOOL *Error*)

Function : Obtain condition of camera clock

Argument :

|        |              |                                |
|--------|--------------|--------------------------------|
| HACAM  | <i>hACam</i> | Handle to discriminate cameras |
| LPBOOL | <i>Error</i> | Error information              |

Function Detail:

Obtain current condition of camera clock speed by LONG value

Effective half clock: 1

Invalid half clock: 0.

Success: TRUE on *Error*

Failure: FALSE on *Error*

## ■ ArtCam\_SetAutoIris

Definition: **BOOL** ArtCam\_SetAutoIris(HACAM *hACam*, LONG *Value*)

Function : Set condition of auto-iris

Argument :

|       |              |                                |
|-------|--------------|--------------------------------|
| HACAM | <i>hACam</i> | Handle to discriminate cameras |
| LONG  | <i>Value</i> | Flag for auto-iris             |

Function Detail:

Set up Auto Iris (Auto brightness revision)'s effective/invalid.

specify in *Value*:

|                 |                                      |
|-----------------|--------------------------------------|
| <i>Value</i> =0 | Invalid <i>Auto Iris</i>             |
| <i>Value</i> =1 | Effective Auto Iris by Shutter Speed |
| <i>Value</i> =2 | Effective Auto Iris by Global Gain   |

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

There are some difference depend on using environment by each model.  
We recommend to avoid using this function with filter because if filter of Sharpness or Brightness is effective, this function would not work properly.

## ■ ArtCam\_GetAutoIris

Definition: **LONG** ArtCam\_GetAutoIris(HACAM *hACam*, LPBOOL *Error*)

Function : Obtain condition of auto-iris

Argument :

|        |              |                                |
|--------|--------------|--------------------------------|
| HACAM  | <i>hACam</i> | Handle to discriminate cameras |
| LPBOOL | <i>Error</i> | Error information              |

Function Detail:

Obtain current condition of auto-iris (Auto brightness revision) by LONG value.

Success: Invalid=0

Exposure time settings=1

Gain settings=2

Success: TRUE on *Error*

Failure: FALSE on *Error*

## ■ ArtCam\_SetSamplingRate

Definition: **BOOL** ArtCam\_SetSamplingRate(HACAM *hACam*, LONG *Value*)

Function : Set frame rate and capturing size

Argument :

|       |              |                                |
|-------|--------------|--------------------------------|
| HACAM | <i>hACam</i> | Handle to discriminate cameras |
| LONG  | <i>Value</i> | Capturing mode                 |

Function Detail:

Set analog signal's frame rate and capturing size

Set 0~3 on *Value*. Set up capture mode as below (NTSC)

|                 |         |          |
|-----------------|---------|----------|
| <i>Value</i> =0 | 720×470 | 30 frame |
| <i>Value</i> =1 | 720×480 | 15 frame |
| <i>Value</i> =2 | 640×470 | 30 frame |
| <i>Value</i> =3 | 640×480 | 15 frame |

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

This function is only for NTSC-USB2.0 converter ARTCNVII (ArtCnvSdk.dll).

Does not stretch an image.

If specified size signal is not input, there might be black or green line on four corners.

## ■ ArtCam\_GetSamplingRate

Definition: **LONG** ArtCam\_GetSamplingRate(HACAM *hACam*, LPBOOL *Error*)

Function: Pbtain frame rate and capturing size

Argument:

|        |              |                                |
|--------|--------------|--------------------------------|
| HACAM  | <i>hACam</i> | Handle to discriminate cameras |
| LPBOOL | <i>Error</i> | Error information              |

Function Detail:

Obtain frame rate and capturing size

RETURN value would be obtained by 0~3 LONG value.

Obtained value is same value as ArtCam\_SetSamplingRate *Value*

Success: TRUE on *Error*

Failure: FALSE on *Error*

## ■ ArtCam\_GetVideoFormat

Definition: LONG ArtCam\_GetVideoFormat(HACAM *hACam*, LPBOOL *Error*)

Function : Obtain type of image signal of plugged camera

Argument :

|        |              |                                |
|--------|--------------|--------------------------------|
| HACAM  | <i>hACam</i> | Handle to discriminate cameras |
| LPBOOL | <i>Error</i> | Error information              |

Function Detail:

Obtain type of image signal of plugged camera

RETURN value is obtained by 0~3 LONG value.

Initialized obtained value and image signal is as below:

|   |       |
|---|-------|
| 0 | NTSC  |
| 1 | PAL   |
| 2 | PALM  |
| 3 | SECAM |

Success: TRUE on *Error*

Failure: FALSE on *Error*

## ■ ArtCam\_WriteSromID

Definition : **BOOL** ArtCam\_WriteSromID(HACAM *hACam*, LONG *Address*, LONG *Value*)

Function : Register sub-code

Argument :

|       |                |                                |
|-------|----------------|--------------------------------|
| HACAM | <i>hACam</i>   | Handle to discriminate cameras |
| LONG  | <i>Address</i> | Address to be written          |
| LONG  | <i>Value</i>   | Data to be written             |

Function Detail:

Write data in 8 Byte memory space (EEPROM) of a camera.  
Please use this function to distinguish several cameras.

It is possible to set *Address* at 0-255.

It is possible to set *value* at 0-255.

Please note that the number more than above data will be rounded down.

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

## ■ ArtCam\_ReadSromID

Definition : **LONG** ArtCam\_ReadSromID(HACAM *hACam*, LONG *Address*, LPBOOL *Error*)

Function : Read sub-code

Argument :

|        |                |                                |
|--------|----------------|--------------------------------|
| HACAM  | <i>hACam</i>   | Handle to discriminate cameras |
| LONG   | <i>Address</i> | Address to be read             |
| LPBOOL | <i>Error</i>   | Error information              |

Function Detail:

Read data from 8 Byte memory space (EEPROM) of a camera.  
Set 0~7 on *Address*, and this value would be obtained by LONG value.

Once register ID in camera with ArtCam\_WriteSromID, it is possible to manage more than one camera separately if you compare the number.

Success: TRUE on *Error*

Failure: FALSE on *Error*

## ■ ArtCam\_WriteRegister

Definition: **BOOL** ArtCam\_WriteRegister(HACAM *hACam*, BYTE *Address*, DWORD *Value*)

Function: Write to a sensor register\_

Argument:

|       |                |                                |
|-------|----------------|--------------------------------|
| HACAM | <i>hACam</i>   | Handle to discriminate cameras |
| BYTE  | <i>Address</i> | Writing address                |
| DWORD | <i>Value</i>   | Writing data                   |

Function Detail:

Writing data on camera sensor's register

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

We do not open the detail of register setting on public.

This function is for some customized cameras.

Please avoid to change a register value on normal camera. Unexpected trouble would be occurred.

## ■ ArtCam\_ReadRegister

Definition: **DWORD** ArtCam\_ReadRegister(HACAM *hACam*, BYTE *Address*, LPBOOL *Error*)

Function: Read sensor register value

Argument:

|        |                |                                |
|--------|----------------|--------------------------------|
| HACAM  | <i>hACam</i>   | Handle to discriminate cameras |
| BYTE   | <i>Address</i> | Reading address                |
| LPBOOL | <i>Error</i>   | Error information              |

Function Detail:

Read register value or a camera sensor's specified address.

Success: TRUE on *Error*

Failure: FALSE on *Error*

We do not open the register setting detail on public.

This function is only for some customized cameras.



## ■ ArtCam\_SetFilterValue

Definition: **BOOL** ArtCam\_SetFilterValue(HACAM *hACam*, LONG *FilterType*, LONG *Value*)

Function: Set image filter information

Argument:

|       |                   |                                |
|-------|-------------------|--------------------------------|
| HACAM | <i>hACam</i>      | Handle to discriminate cameras |
| LONG  | <i>FilterType</i> | Type of filter to be set       |
| LONG  | <i>Value</i>      | Number to be set               |

Function Detail:

This function allows you to directly set values, which can be set with [ArtCam\\_SetImageDlg](#).

Regarding *FilterType*, please refer to defined file of each language.

\\。

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

## ■ ArtCam\_GetFilterValue

Definition: **LONG** ArtCam\_GetFilterValue(  
HACAM *hACam*, LONG *FilterType*, LPBOOL *Error*)

Function: Obtain image filter information

Argument:

|        |                   |                                |
|--------|-------------------|--------------------------------|
| HACAM  | <i>hACam</i>      | Handle to discriminate cameras |
| LONG   | <i>FilterType</i> | Type of filter to be set       |
| LPBOOL | <i>Error</i>      | Error information              |

Function Detail:

This function allows you to obtain value of parameter that can be set [ArtCam\\_SetImageDlg](#) and [ArtCam\\_SetAnalogDlg](#).

When you set NULL for *Error*, error info will not be obtained.

Regarding *FilterType*, please refer to defined file of each language.

Success: TRUE on *Error* and returned setting number on *Filter Type* to LONG value.

Failure: FALSE on *Error*

## ■ ArtCam Set\*\*\*

Definition: **BOOL** ArtCam\_Set\*\*\*(HACAM *hACam*, LONG *Value*)

Function: Set image filter information

Argument:

|       |              |                                |
|-------|--------------|--------------------------------|
| HACAM | <i>hACam</i> | Handle to discriminate cameras |
| LONG  | <i>Value</i> | Value to be set                |

Function Detail:

Wrapper function of [ArtCam\\_SetFilterValue](#)

This function will be called when second argument of [ArtCam\\_SetFilterValue](#) is set

For example, if you want to change Global Gain to 30,

Instead of doing `ArtCam_SetFilterValue(hACam, ARTCAM_FILTERTYPE_GLOBAL_GAIN, 30)`,  
set to `ArtCam_SetGlobalGain(hACam,30)`.

## ■ ArtCam Get\*\*\*

Definition: **LONG** ArtCam\_Get\*\*\*(HACAM *hACam*, LPBOOL *Error*)

Function: Obtain image filter information

Argument:

|        |              |                                |
|--------|--------------|--------------------------------|
| HACAM  | <i>hACam</i> | Handle to discriminate cameras |
| LPBOOL | <i>Error</i> | Error information              |

Function Detail:

Wrapper function of [ArtCam\\_GetFilterValue](#)

This function will be called when second argument of [ArtCam\\_GetFilterValue](#) is set

## ■ ArtCam\_SetSyncV

Definition: **BOOL** ArtCam\_SetSyncV(HACAM *hACam*, BOOL *Flg*)

Function: Set the VD's polarity

Argument:

|       |              |                                |
|-------|--------------|--------------------------------|
| HACAM | <i>hACam</i> | Handle to discriminate cameras |
| BOOL  | <i>Flg</i>   | VD's polarity                  |

Function Detail:

Exclusive function for LVDS converter.

Sampling image data while:  
Set *TRUE* at *Flg* while input signal *VD is High*.  
Set *FALSE* at *Flg* while input signal *VD is Low*.

Image data sampling is latched by HD's AND operation.  
Please use it with ArtCam\_SetSyncH (page 44)

Success: Returned TRUE or 1  
Failure: Returned FALSE or 0

## ■ ArtCam\_GetSyncV

Definition: **BOOL** ArtCam\_GetSyncV(HACAM *hACam*, LPBOOL *Error*)

Function: Get set VD polarity

Argument:

|        |              |                                |
|--------|--------------|--------------------------------|
| HACAM  | <i>hACam</i> | Handle to discriminate cameras |
| LPBOOL | <i>Error</i> | Error information              |

Function Detail:

Exclusive function for LVDS converter.

Sampling image data while:  
If returned value is TRUE while input signal's VD is High.  
If returned value is FALSE while input signal's VD is Low.

You do not receive error information if you set NULL on Error.  
About FilterType, please refer the graph on page 45 or check definition file of each language.

When this function is succeed, TRUE is shown on Error  
and polarity is returned by BOOL value.  
When this function is failed, FALSE is shown on Error.

## ■ ArtCam\_SetSyncH

Definition: **BOOL** ArtCam\_SetSyncV(HACAM *hACam*, BOOL *Flg*)

Function: Set HD's polarity

Argument:

|       |              |                                |
|-------|--------------|--------------------------------|
| HACAM | <i>hACam</i> | Handle to discriminate cameras |
| BOOL  | <i>Flg</i>   | HD's polarity                  |

Function Detail:

Exclusive function for LVDS converter.

Sampling image data while:

Set *TRUE* at *Flg* while input signal *VD* is *High*.

Set *FALSE* at *Flg* while input signal *VD* is *Low*.

Image data sampling is latched by VD's AND operation.

Please use it with ArtCam\_SetSyncV function(page 43)

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

## ■ ArtCam\_GetSyncH

Definition: **BOOL** ArtCam\_GetSyncH(HACAM *hACam*, LPBOOL *Error*)

Function: Get set HD's polarity

Argument:

|        |              |                                |
|--------|--------------|--------------------------------|
| HACAM  | <i>hACam</i> | Handle to discriminate cameras |
| LPBOOL | <i>Error</i> | Error Information              |

Function Detail:

Exclusive function for LVDS converter.

Sampling image data while:

If returned value is TRUE while input signal's HD is High.

If returned value is FALSE while input signal's HD is Low.

You do not receive error information if you set NULL on Error.

About FilterType, please refer the graph on page 45 or check definition file of each language.

When this function is succeed, TRUE is shown on Error and polarity is returned by BOOL value.

When this function is failed, FALSE is shown on Error.

## Image Filter Setting Possible Value (For All Cameras)

※Exclude ARTCNV II and ARTUST series

| ARTCAM_FILTERTYPE_BRIGHTNESS |                              |      |          |        |
|------------------------------|------------------------------|------|----------|--------|
| Set Brightness               | Min:                         | -255 | Max: 255 | Def: 0 |
| Setter: ArtCam_SetBrightness | Getter: ArtCam_GetBrightness |      |          |        |

| ARTCAM_FILTERTYPE_CONTRAST |                            |      |          |        |
|----------------------------|----------------------------|------|----------|--------|
| Set Contrast               | Min:                       | -127 | Max: 127 | Def: 0 |
| Setter: ArtCam_SetContrast | Getter: ArtCam_GetContrast |      |          |        |

| ARTCAM_FILTERTYPE_HUE |                       |      |          |        |
|-----------------------|-----------------------|------|----------|--------|
| Set Hue               | Min:                  | -360 | Max: 360 | Def: 0 |
| Setter: ArtCam_SetHue | Getter: ArtCam_GetHue |      |          |        |

| ARTCAM_FILTERTYPE_SATURATION |                              |      |          |        |
|------------------------------|------------------------------|------|----------|--------|
| Set Saturation               | Min:                         | -255 | Max: 255 | Def: 0 |
| Setter: ArtCam_SetSaturation | Getter: ArtCam_GetSaturation |      |          |        |

| ARTCAM_FILTERTYPE_SHARPNESS |                             |   |         |        |
|-----------------------------|-----------------------------|---|---------|--------|
| Set Sharpness               | Min:                        | 0 | Max: 30 | Def: 0 |
| Setter: ArtCam_SetSharpness | Getter: ArtCam_GetSharpness |   |         |        |

※Frame rate might be down because it would use more CPU performance.

| ARTCAM_FILTERTYPE_BAYER_GAIN_R / BAYER_GAIN_G / BAYER_GAIN_B  |                                  |   |               |          |
|---|----------------------------------|---|---------------|----------|
| Set Red/Green/Blue Bayer  | Min:                             | 0 | Max: 400(200) | Def: 100 |
| Setter: ArtCam_SetBayerGainRed  | Getter: ArtCam_GetBayerGainRed   |   |               |          |
| Setter: ArtCam_SetBayerGainGreen  | Getter: ArtCam_GetBayerGainGreen |   |               |          |
| Setter: ArtCam_SetBayerGainBlue   | Getter: ArtCam_GetBayerGainBlue  |   |               |          |
| ※ Bayer value is for change the color balance by a software. Normally you cannot set up green Bayer.<br>If you set up auto white balance(BAYER_GAIN_AUTO), this value would be changed.<br>※ There are 200 and 400 for Max depends on models. If moving is unstable when you set up more than 201 because of PC's spec, please use the value up to 200. |                                  |   |               |          |

| ARTCAM_FILTERTYPE_BAYER_GAIN_AUTO |                                 |      |            |
|-----------------------------------|---------------------------------|------|------------|
| Set ON/OFF of Auto White Balance  | Data:                           | BOOL | Def: FALSE |
| Setter: ArtCam_SetBayerGainAuto   | Getter: ArtCam_GetBayerGainAuto |      |            |

| ARTCAM_FILTERTYPE_BAYER_GAIN_RGB |
|----------------------------------|
|----------------------------------|

|   |                                |              |               |
|---|--------------------------------|--------------|---------------|
| Set RGB Bayer Value at once   | Min: 0                         | Max: 0xfffff | Def: 0x646464 |
| Setter: ArtCam_SetBayerGainRGB  | Getter: ArtCam_GetBayerGainRGB |              |               |
| ※ Set 0~255 value one time to R/G/B Bayer bvalue. This function is normally not in use. |                                |              |               |

| ARTCAM_FILTERTYPE_GAMMA  |                         |          |          |
|--|-------------------------|----------|----------|
| Set Gamma Value ( $\gamma$ 1.0=100)                                  | Min: 0                  | Max: 200 | Def: 100 |
| Setter: ArtCam_SetGamma  | Getter: ArtCam_GetGamma |          |          |
| ※Frame rate might be down because it would use more CPU performance. |                         |          |          |

| ARTCAM_FILTERTYPE_GLOBAL_GAIN                                |                              |           |           |
|--|------------------------------|-----------|-----------|
| Set Global Gain  | Min: ****                    | Max: **** | Def: **** |
| Setter: ArtCam_SetGlobalGain                                 | Getter: ArtCam_GetGlobalGain |           |           |
| ※Setting value and default value is different at each sensor |                              |           |           |

| ARTCAM_FILTERTYPE_COLOR_GAIN_R / GAIN_G1 / GAIN_G2 / GAIN_B                                 |                                      |
|---|--------------------------------------|
| Set Gain by Each Color  | Setting Range Is Same as Global Gain |
| Setter: ArtCam_SetColorGainRed  | Getter: ArtCam_GetColorGainRed       |
| Setter: ArtCam_SetColorGainGreen1   | Getter: ArtCam_GetColorGainGreen1    |
| Setter: ArtCam_SetColorGainGreen2   | Getter: ArtCam_GetColorGainGreen2    |
| Setter: ArtCam_SetColorGainBlue   | Getter: ArtCam_GetColorGainBlue      |
| ※This is special function for CMOS camera. Normally this is as same as global gain's value. |                                      |

| ARTCAM_FILTERTYPE_EXPOSURETIME                               |                                |           |           |
|--|--------------------------------|-----------|-----------|
| Set Shutter Speed  | Min: ****                      | Max: **** | Def: **** |
| Setter: ArtCam_SetExposureTime                               | Getter: ArtCam_GetExposureTime |           |           |
| ※Setting value and default value is different at each sensor |                                |           |           |

| ARTCAM_FILTERTYPE_BAYERMODE                               |                              |        |           |
|---|------------------------------|--------|-----------|
| Change Bayer Pattern                                      | Min: 0                       | Max: 3 | Def: **** |
| Setter: ArtCam_SetBayerMode                               | Getter: ArtCam_GetGlobalGain |        |           |
| ※Def to output correct color is different as each sensor. |                              |        |           |

## ■ Grayscale Filter Setting Possible Value (DLLVer.1280 or Up)

| ARTCAM_FILTERTYPE_GRAY_MODE   |                            |        |        |
|---|----------------------------|--------|--------|
| Set Grayscale Mode  | Min: 0                     | Max: 2 | Def: 0 |
| Setter: ArtCam_SetGrayMode  | Getter: ArtCam_GetGrayMode |        |        |
| 0 = GRAY_NONE // Invalid Still Bayer arrangement  |                            |        |        |
| 1 = GRAY_BAYERCONVERT // To Bayer Arranement Add calculation by GRAY GAIN and GRAY OFFSET |                            |        |        |
| 2 = GRAY_GRAYSCALE // After change color, leave anly luminance information.               |                            |        |        |

| ARTCAM_FILTERTYPE_GRAY_GAIN_R / GAIN_G1 / GAIN_G2 / GAIN_B |                                  |          |          |
|--|----------------------------------|----------|----------|
| Control each color's gain by a software                    | Min: 0                           | Max: 400 | Def: 128 |
| Setter: ArtCam_SetGrayGainRed                              | Getter: ArtCam_GetGrayGainRed    |          |          |
| Setter: ArtCam_SetGrayGainGreen1                           | Getter: ArtCam_GetGrayGainGreen1 |          |          |
| Setter: ArtCam_SetGrayGainGreen2                           | Getter: ArtCam_GetGrayGainGreen2 |          |          |
| Setter: ArtCam_SetGrayGainBlue                             | Getter: ArtCam_GetGrayGainBlue   |          |          |

| ARTCAM_FILTERTYPE_GRAY_OFFSET_R / OFFSET_G1 / OFFSET_G2 / OFFSET_B |         |                            |                   |
|--|---------|----------------------------|-------------------|
| Control each color's offset by a software                          | Min:    | -255                       | Max: 255   Def: 0 |
| Setter: ArtCam_SetGrayOffsetRed                                    | Getter: | ArtCam_GetGrayOffsetRed    |                   |
| Setter: ArtCam_SetGrayOffsetGreen1                                 | Getter: | ArtCam_GetGrayOffsetGreen1 |                   |
| Setter: ArtCam_SetGrayOffsetGreen2                                 | Getter: | ArtCam_GetGrayOffsetGreen2 |                   |
| Setter: ArtCam_SetGrayOffsetBlue                                   | Getter: | ArtCam_GetGrayOffsetBlue   |                   |

## **Image Filter Setting Possible Value (ARTCNVII)**

| ARTCAM_FILTERTYPE_BRIGHTNESS |         |                      |                     |
|------------------------------|---------|----------------------|---------------------|
| Set Brightness               | Min:    | 0                    | Max: 255   Def: 128 |
| Setter: ArtCam_SetBrightness | Getter: | ArtCam_GetBrightness |                     |

| ARTCAM_FILTERTYPE_CONTRAST |         |                    |                     |
|----------------------------|---------|--------------------|---------------------|
| Set Contrast               | Min:    | 0                  | Max: 255   Def: 128 |
| Setter: ArtCam_SetContrast | Getter: | ArtCam_GetContrast |                     |

| ARTCAM_FILTERTYPE_HUE |         |               |                   |
|-----------------------|---------|---------------|-------------------|
| Set Hue               | Min:    | 0             | Max: 255   Def: 0 |
| Setter: ArtCam_SetHue | Getter: | ArtCam_GetHue |                   |

| ARTCAM_FILTERTYPE_SATURATION |         |                      |                     |
|------------------------------|---------|----------------------|---------------------|
| Set Saturation               | Min:    | 0                    | Max: 255   Def: 128 |
| Setter: ArtCam_SetSaturation | Getter: | ArtCam_GetSaturation |                     |

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**ARTRAY Camera / Capture Module Software Developer Kit**

Dynamic Link Library for Windows XP

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