

2009-06-04

**ARTRAY Thermograph Camera
Software Developer Kit**

---Functions Manual---

Dynamic Link Library for Windows2000,XP

2009.06.04

ARTRAY CO., LTD

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■ ArtThermo GetDllVersion

Definition: **DWORD** ArtThermo_GetDllVersion(*void*)

Function: Get Version Information of Library

Argument: None

Detail:

Get version information and type of DLL.

In returned DWORD(32bit) value, DLL type is stored in upper 16 bit meanwhile DLL version information is stored in lower 16bit.

We recommend you to check version of DLL and SDK when to use a library.

(ARTThermo camera version is 1000)

■ ArtThermo GetLastError

Definition: **LONG** ArtThermo_GetLastError(*void*)

Function: Get Error

Argument: NONE

Detail:

Get an error code when you call this function when error is returned at function's returned value.

Please refer to below for more detail

Error is stored in stack type data configuration.

And you can call error in sequential order.

Error Code	Detail
ARTCAMSDK_NOERROR	Normal
ARTCAMSDK_NOT_INITIALIZE	Not initialized yet
ARTCAMSDK_DISABLEDDEVICE	Error invalid device
ARTCAMSDK_CAPTURE	Fail image scanning
ARTCAMSDK_CAPTURELOST	Lost device
ARTCAMSDK_PARAM	Abnormal argument
ARTCAMSDK_OUTOFMEMORY	Not enough memory for transferring
ARTCAMSDK_CREATETHREAD	Fail to create thread for image scanning
ARTCAMSDK_CAMERASET	Error camera (device) setting
ARTCAMSDK_FILENOTFOUND	Cannot find specified file
ARTCAMSDK_UNSUPPORTED	This function is not supported
ARTCAMSDK_UNKNOWN	Abnormal Termination

■ ArtThermo Initialize

Definition: **BOOL** ArtThermo_Initialize(HWND *hWnd*)

Function: Initialized camera recognition handle

Argument:

 HWND *hWnd* Window handle to get message

Detail:

Take window handle to hWnd as argument and initialized m_hACam member variable of ArtThermo.

m_hACam is camera recognition handle
Use it after loading the library

This function sends image updating message (WM_GRAPHPAINT) or error message (WM_ERROR) towards specified window handle to hWnd

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

■ ArtThermo Release

Definition: **BOOL** ArtThermo_Release(void)

Function: Release camera recognition handle

Argument: NONE

Detail:

Release m_hACam member variable of ArtThermo.
m_hACam is camera recognition handle.

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

■ ArtThermo_SetWindowHandle

Definition: **BOOL** ArtThermo_SetWindowHandle(HWND hWnd)

Function: Specified window to receive message

Argument:

 HWND *hWnd* Window handle to receive message

Detail :

Set up window handle of window to receive message.
Send image updating message (WM_GRAPHPAINT) or error message
(WM_ERROR) towards specified to *hWnd* window that has window handle.

At the time of initializing, it is replaced specified window handle by this function
with specified window handle.

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

■ ArtThermo_SetCameraType

Definition: **BOOL** ArtThermo_SetCameraType (ARTCAM_CAMERATYPE Type)

Function: Specified connected model

Argument:

 ARTCAM_CAMERATYPE Type Library load type

Detail:

Specified connected model of Type as Argument
ARTCAM_CAMERATYPE is DLL's load type

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

■ ArtThermo SetCameraNumber

Definition: **BOOL** ArtThermo_SetCameraNumber (LONG Number)

Function: Specified connected device number

Argument:

LONG	<i>Number</i>	Specified device number from 0 to 7
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Detail:

Specified connected device number

Specified device image is shown after call and perform this function:

ArtThermo_Preview

ArtThermo_OneShot

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

■ ArtThermo IsCameraEnable

Definition:

BOOL ArtThermo_IsCameraEnableW (
LONG index, LPTSTR szDeviceName, LONG nSize)

BOOL ArtThermo_IsCameraEnableA (
LONG index, LPTSTR szDeviceName, LONG nSize)

Function: Get connected camera's name

Argument:

LONG	index	Connected camera's number
LPTSTR	szDeviceName	Received camera name
LONG	nSize	Length of received camera name

Detail:

Received name of connected camera

Save received camera name to szDeviceName

Last letter "W" of function name is Unicode

Last letter "A" of function name is anti-Unicode

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

■ ArtThermo SetParam

Definition: **BOOL** ArtThermo_SetParam (ARTCAM_PARAM Param, LONG Value)

Function: Specified casera's set up value

Argument:

ARTCAM_PARAM	Param	Category of set up camera
LONG	Value	Category set up value

Detail:

Specified camera's set up value

Please refer to below database for more detail of camera set up category.

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

Category	Explanation	GetParam	SetParam	Set effective value
PARAM_WIDTH	Get image width This numeric value is used for creating a field of receiving data	○	×	
PARAM_HEIGHT	Get image height This numeric value is used for creating a field of receiving data	○	×	
PARAM_FPS	Numerical value of magnification of 100 of current frame rate If current frame rate is 30FPS, it becomes 3000	○	×	
PARAM_RECMODE	Recording Mode Not for actual recording. It returns registered value at Rec	○	×	
PARAM_PREVIEW	TRUE if currently scanning FALSE if scan is stopped	○	×	
PARAM_PAUSE	TRUE if currently scanning is paused FALSE is device is stopped during scanning	○	×	
PARAM_REC	TRUE if currently recording FALSE if not recording	○	×	
PARAM_RINGCOUNT	TRUE if currently recording FALSE if not recording	○	×	Above 1
PARAM_WAITTIME	Waiting time between frames Bigger numerical value slow down frame rate Smaller numerical value does not make frame rate over camera's one Default 10	○	○	Above 1
PARAM_WAITNUC	Temporary stop scanning because image is jammed after NUC Specify this time by msec. Default 1000(1 sec.)	○	○	Above 0

SetParam set up category (Continued)

Category	Explanation	GetParam	SetParam	Set effective value
PARAM_AVIMAXSIZE	Limited size to save in 1 file by recording mode(Unit MB) If size is over limited data.avi data_1.avi data_2.avi . . . take consecutive name and save as another file as above Depend on computer spec, above 2GB AVI data would not work Default 2000(MB) = 2GB	○	○	Recognized size of 1~file system
PARAM_COLOR_AUTO	Specify number of auto adjustment times of pseudo colors Adjust this setting from next frame Reflect to an image from next frame after adjustment 0 do not work Above 1 Adjust specified numbers (This value is reduced whenever frame is updated, and auto is released after value becomes 0) Adjust every frame if value is below 0	○	○	All
PARAM_COLOR_MIN	Minimum value to show pseudo color. Becomes black below set numeric value. If PARAM_COLOR_AUTO is on manual mode, you can set up this value.	○	○	Below 0-65535 & PARAM_COLOR_MAX
PARAM_COLOR_MAX	Maximum value to show pseudo color Becomes white above set numeric value If PARAM_COLOR_AUTO is on manual mode, you can set up this value.	○	○	Above 0-65535 & PARAM_COLOR_MIN
PARAM_NUC_AUTO	Switch ON/OFF of auto NUC	○	○	TRUE, FALSE
PARAM_RANGE	Set temperature range	○	○	RANGE_AUTO = 0, RANGE_LO = 1, RANGE_HI =2
PARAM_SHOW_MIRROR	Upside down image view	○	○	
PARAM_DATA_MIRROR	Upside down saved data	○	○	

ArtThermo GetParam

Definition: **LONG** ArtThermo_GetParam(ARTCAM_PARAM Param)

Function: Get set up value of camera

Argument:

ARTCAM_PARAM Param Camera set up category

Detail:

Get camera's set up value

Please refer to above database for more detail of camera set up category.

ArtThermo Nuc

Definition: **BOOL** ArtThermo_Nuc(void)

Function: NucFunction to camera

Argument: NONE

Detail:

NucFunction to camera

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

ArtThermo SetTable

Definition: **BOOL** ArtThermo_SetTableW (LPCTSTR szAviName)

BOOL ArtThermo_SetTableA (LPCTSTR szAviName)

Function: Set up DLL temperature table

Argument:

LPCTSTR szAviName File path or file name

Detail :

Set up DLL temperature table

Last letter "W" of function name is Unicode

Last letter "A" of function name is anti-Unicode

■ ArtThermo Preview

Definition: **BOOL** ArtThermo_Preview(void)

Function: Show images

Argument: NONE

Detail:

Control by SDK and show image from camera.

Please be sure to call ArtThermo_LoadLibrary ArtThermo_Initialize before using this function.

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

■ ArtThermo Close

Definition: **BOOL** ArtThermo_Close(void)

Function: Release device

Argument: NONE

Detail:

Stop showing camera's image and release device.

If you start getting image by ArtThermo_Preview,
Please use this function and release.

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

■ ArtThermo Start

Definition: **BOOL** ArtThermo_Start (void)

Function: Start showing camera's image

Argument: NONE

Detail:

Start showing camera's image

SDK user use this function only when you call ArtThermo_Pause to pause showing camera's image, and play again.

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

■ ArtThermo Pause

Definition: **BOOL** ArtThermo_Pause (void)

Function: Pause showing camera's images

Argument : NONE

Detail:

Stop showing camera's images.

This function does not releae device.

So please use it only when you want to pause images.

When you want to show images again,
please use ArtThermo_Preview

This function is used only when images are shown by ArtThermo_Preview

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

■ ArtThermo_OneShot

Definition: **DWORD** ArtThermo_OneShot (void)

Function: Get 1 image from camera.

Argument : NONE

Detail:

Get 1 image from camera and returned received frame ID.
Pass the received ID to ArtThermo_GetColor / GetRaw / GetTemperature function. And processing received data

■ ArtThermo_GetNewID

Definition: **DWORD** ArtThermo_GetNewID (void)

Function: Get frame ID of received images

Argument : NONE

Detail:

Get frame ID of new images that is from
ArtThermo_OneShot or ArtThermo_Preview.

This function is always with:
ArtThermo_GetRaw
Or ArtThermo_GetTemperature
Or ArtThermo_GetColor

■ ArtThermo GetRaw

Definition: **BOOL** ArtThermo_GetRaw (DWORD ID, LPBYTE pData, DWORD Size)

Function: Get 1 RAW data from ring buffer

DWORD	ID	Get ring buffer ID
LPBYTE	pData	Buffer to get data
DWORD	Size	Buffer size to get

Argument:

Detail:

Get only 1 RAW image by ring buffer
Store received images to pData if function is succeeded
You do not receive images if you do not set up array
that size is as same as camera's image or bigger.

Basic buffer size:

$320 * 240 * 2 \text{ (Byte)}$ [Width * Height * sizeof(WORD)]

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

■ ArtThermo GetTemperature

Definition: **BOOL** ArtThermo_GetTemperature (DWORD ID, float* pData, DWORD Size)

Function: Get 1 temperature data from ring buffer

DWORD	ID	Get ring buffer ID
float*	pData	Buffer to get data
DWORD	Size	Buffer size to get

Argument:

Detail:

Get 1 temperature image by rig buffer

Store received images to pData if function is succeeded
You do not receive images if you do not set up array
that size is as same as camera's image or bigger.

Basic buffer size:

$320 * 240 * 4$ (Byte) [Width * Height * sizeof(float)]

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

■ ArtThermo_GetColor

Definition: **BOOL** ArtThermo_GetColor (DWORD ID, LPBYTE pImage, DWORD Size)

Function: Get 1 color data from ring buffer

DWORD	ID	Get ring buffer ID
LPBYTE	pImage	Buffer to get data
DWORD	Size	Buffer size to get

Argument:

Detail:

Get 1 color data by ring buffer
Store received images to pData if function is succeeded
You do not receive images if you do not set up array
that size is as same as camera's image or bigger.

Basic buffer size:

$320 * 240 * 3$ (Byte) [Width * Height * sizeof(BYTE) * 3]

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

■ ArtThermo Save

Definition : **BOOL** ArtThermo_ SaveW (LPCTSTR szFileName, FILESAVETYPE
FileType)

BOOL ArtThermo_ SaveA (LPCTSTR szFileName, FILESAVETYPE FileType)

Function: Save image from camera to file

LPCTSTR	szFileName	File path or file name
FILESAVETYPE	FileType	Saved file type

Argument :

Detail :

Save image from camera to file

Saved a last image that is from getting image function,
as like ArtThermo_Preview ArtThermo_OneShot

Image might get jammed depend on system environment, motion clock or
saving format if you save images during getting image on real time
by ArtThermo_Preview.

If images are jammed, try to pause image updating by ArtThermo_Stop.
Jammed might be stopped.

Please refer to below database for FILESAVETYPE

Last letter "W" of function name is Unicode

Last letter "A" of function name is anti-Unicode

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

Caution :

This function is to save a RAW data that is gotten from camera.
If you want to save an image that is changed by application,
please save it at application software by itself.

You can save as Bitmap, Binary (RAW), JPEG (High resolution,
normal, low resolution), PNG or TIFF.

We support only BMP RAW scanning to save by this functions.

We will not support other format's scanning and how to save BMP RAW.

Category	Saving format
FILETYPE_IMAGE_BITMAP	Save pseudo color as bitmap
FILETYPE_IMAGE_RAW	Save only pseudo color data
FILETYPE_IMAGE_JPEG_HIGH	Save pseudo color as JPEG (High resolution)
FILETYPE_IMAGE_JPEG_NOMAL	Save pseudo color as JPEG (Normal)
FILETYPE_IMAGE_JPEG_LOW	Save pseudo color as JPEG (Low resolution)
FILETYPE_IMAGE_PNG	Save pseudo color as PNG
FILETYPE_IMAGE_TIFF	Save pseudo color as TIFF
FILETYPE_DATA_RAW	Save sensor data
FILETYPE_DATA_PNG	Save sensor data as PNG
FILETYPE_DATA_TIFF	Save sensor data as TIFF
FILETYPE_T_CHAR	Save temperature data as char
FILETYPE_T_BYTE	Save temperature data as unsigned char
FILETYPE_T_LONG	Save temperature data as long
FILETYPE_T_FLOAT	Save temperature data as float

■ ArtThermo Rec

Definition: **BOOL** ArtThermo_RecW (LPCTSTR szAviName, RECMODE Mode)

BOOL ArtThermo_RecA (LPCTSTR szAviName, RECMODE Mode)

Function: Record to file

Argument:

LPCTSTR	szAviName	File path or file name
RECMODE	Mode	Recorded file type

Detail:

Device is not released and images are showing when camera shows images
Please refer to database below regarding to RECMODE

Last letter "W" of function name is Unicode

Last letter "A" of function name is anti-Unicode

Success: Returned TRUE or 1

Failure: Returned FALSE or 0

Category	Saving format
REC_NONE	Not save slide images
REC_DATA	Save sensor data as RAW sata
REC_IMAGE	Save pseudo color images as AVI format
REC_T	Save temperature data as RAW data

■ WM_GRAPHPAINT

Definition: *#define* WM_GRAPHPAINT WM_APP + 2

Function: This is issued messages when image from camera is updated

WPARAM	wParam	0
LPARAM	lParam	Ring buffer ID

Detail:

lParam receives ID of stored image information

■ WM_ERROR

Definition: `#define WM_GRAPHPAINT WM_APP + 3`

Function: Message when error happens

WPARAM	wParam	Always 0
LPARAM	lParam	Error code

Detail:

Send error code to window procedure if error occurs in SDK when you specify window handle at ArtCam_Initialize

WM_ERROR is defined as 0x8003.

Error code is as below

Error code	Status
ARTCAMSDK_NOERROR	Normal
ARTCAMSDK_NOT_INITIALIZE	Not initialized yet
ARTCAMSDK_DISABLEDDEVICE	Error invalid device
ARTCAMSDK_CREATETHREAD	Fail to create thread for image scanning
ARTCAMSDK_CREATEWINDOW	Fail to create window
ARTCAMSDK_OUTOFMEMORY	Not enough memory for transferring Or fail to secure memory
ARTCAMSDK_CAMERASET	Error camera (device) setting
ARTCAMSDK_CAPTURE	Fail to scan images
ARTCAMSDK_PARAM	Wrong argument
ARTCAMSDK_DIRECTSHOW	Fail to initialize DirectShow
ARTCAMSDK_UNSUPPORTED	This function is not supported
ARTCAMSDK_UNKNOWN	Abnormal Termination

**ARTRAY Thermograph Camera
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