



eYS3D
Microelectronics

eYs3D Windows SDK

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Chapter 1

Introduction

This document describes the usage of Application Programming Interfaces of eYs3D Windows SDK

What's inside the SDK

Table 1.1 File List

Folder	Subfolder	Filename	Description
bin	Win32	All files	Sample executables on Win32 platform
	x64	All files	Sample executables on Windows 64-bits platform
eSPDI	include	eSPDI_Common.h	Basic API declaration header
		eSPDI_DM.h	Depth Map specific API declaration header
		eSPDI_ErrCode.h	Error code definitions
	Win32	eSPDI_DM.dll	eSPDI dynamical linked library for Win32 platform
		eSPDI_DM.lib	eSPDI static linked library for Win32 platform
	x64	eSPDI_DM.dll	eSPDI dynamical linked library for Windows 64-bits
		eSPDI_DM.lib	eSPDI static linked library for Windows 64-bits
doc	html	index.html	This documentation
DMPreview			A sample VC++ project demonstrating how to open multiple devices in an application

Chapter 2

Data Structure Index

2.1 Data Structures

Here are the data structures with brief descriptions:

DEVINFORMATIONEX	9
eSPCtrl_RectLogData	
ESPCtrl_RectLogData	10
ParaLUT	
ParaLUT	11
tagDEVINFORMATION	
DEVINFORMATION	13

Chapter 3

File Index

3.1 File List

Here is a list of all documented files with brief descriptions:

eSPDI_Common.h	EYs3D SDK API export functions, data structure and variable definition	17
eSPDI_DM.h	EYs3D SDK API export functions, data structure and variable definition for depth map module .	47
eSPDI_ErrCode.h	Definition of eYs3D SDK error code Copyright: This file copyright (C) 2017 by	55

Chapter 4

Data Structure Documentation

4.1 DEVINFORMATIONEX

Data Fields

- unsigned short [wPID](#)
- unsigned short [wVID](#)
- char [strDevName](#) [512]
- unsigned short [nChipID](#)
- unsigned short [nDevType](#)
- unsigned short [wUsbNode](#)

4.1.1 Detailed Description

extended device information class

4.1.2 Field Documentation

4.1.2.1 nChipID

unsigned short nChipID

chip ID, 0x18 for AXES1, 0x1C for KIWI, 0x15 for PUMA

4.1.2.2 nDevType

unsigned short nDevType

chip enum value, see `APC_DEVICE_TYPE`

4.1.2.3 strDevName

```
char strDevName[512]
```

device name

4.1.2.4 wPID

```
unsigned short wPID
```

product ID

Table 4.1 PID List

Chip Name	Chip ID	PID
AXES1	0x18	0x0568
		0x0668
		0x0113
		0x0115
		0x0116
KIWI	0x1C	0x0118
PUMA	0x15	0x0112
		0x0120

4.1.2.5 wUsbNode

```
unsigned short wUsbNode
```

USB Node

4.1.2.6 wVID

```
unsigned short wVID
```

vender ID, 0x1E4E for ApcDI device

The documentation for this class was generated from the following file:

- [eSPDI_Common.h](#)

4.2 eSPCtrl_RectLogData

[eSPCtrl_RectLogData](#)

4.2.1 Detailed Description

[eSPCtrl_RectLogData](#)

Rectified log data structure

The documentation for this struct was generated from the following file:

- [eSPDI_Common.h](#)

4.3 ParaLUT

[ParaLUT](#).

Data Fields

- long long [file_ID_header](#)
[00]-[000] File ID header : 2230
- long long [file_ID_version](#)
[01]-[008] File ID version : 4
- double [FOV](#)
[02]-[016] Field of view with degree
- long long [semi_FOV_pixels](#)
[03]-[024] Pixels for semi-FOV
- long long [img_src_cols](#)
[04]-[032] Width for source image (single image)
- long long [img_src_rows](#)
[05]-[040] Height for source image
- double [img_L_src_col_center](#)
[06]-[048] Center of width for L side source image
- double [img_L_src_row_center](#)
[07]-[056] Center of height for L side source image
- double [img_R_src_col_center](#)
[08]-[064] Center of width for R side source image
- double [img_R_src_row_center](#)
[09]-[072] Center of height for R side source image
- double [img_L_rotation](#)
[10]-[080] Rotation for L side image
- double [img_R_rotation](#)
[11]-[088] Rotation for R side image
- double [spline_control_v1](#)
[12]-[096] Spline control value for row = DIV x 0 pixel, DIV = rows/6
- double [spline_control_v2](#)
[13]-[104] Spline control value for row = DIV x 1 pixel, DIV = rows/6
- double [spline_control_v3](#)
[14]-[112] Spline control value for row = DIV x 2 pixel, DIV = rows/6
- double [spline_control_v4](#)
[15]-[120] Spline control value for row = DIV x 3 pixel, DIV = rows/6

- double [spline_control_v5](#)
[16]-[128] Spline control value for row = DIV x 4 pixel, DIV = rows/6
- double [spline_control_v6](#)
[17]-[136] Spline control value for row = DIV x 5 pixel, DIV = rows/6
- double [spline_control_v7](#)
[18]-[144] Spline control value for row = DIV x 6 pixel, DIV = rows/6
- long long [img_dst_cols](#)
[19]-[152] Width for output image (single image), according to "Original" parameters
- long long [img_dst_rows](#)
[20]-[160] Height for output image, according to "Original" parameters
- long long [img_L_dst_shift](#)
[21]-[168] Output L side image shift in row
- long long [img_R_dst_shift](#)
[22]-[176] Output R side image shift in row
- long long [img_overlay_LR](#)
[23]-[184] Overlay between L/R in pixels, far field, (YUV must be even)
- long long [img_overlay_RL](#)
[24]-[192] Overlay between R/L in pixels, far field, (YUV must be even)
- long long [img_stream_cols](#)
[25]-[200] Output image stream of cols
- long long [img_stream_rows](#)
[26]-[208] Output image stream of rows
- long long [video_stream_cols](#)
[27]-[216] Output video stream of cols
- long long [video_stream_rows](#)
[28]-[224] Output video stream of rows
- long long [usb_type](#)
[29]-[232] 2 for usb2, 3 for usb3
- long long [img_type](#)
[30]-[240] 1 for yuv422, 2 for BGR, 3 for RGB
- long long [lut_type](#)
[31]-[248] Output LUT type: LutModes
- long long [blending_type](#)
[32]-[256] 0 for choosed by function, 1 for alpha-blending, 2 for Laplacian pyramid blending
- double [overlay_ratio](#)
[33]-[264] far field overlay value is equal to $img_overlay_LR(RL) = overlay_value + overlay_ratio$
- long long [serial_number_date0](#)
[34]-[272] 8 bytes, yyyy-mm-dd
- long long [serial_number_date1](#)
[35]-[280] 8 bytes, hh-mm-ss-xxx, xxx for machine number
- double [unit_sphere_radius](#)
[36]-[288] Original : Unit spherical radius for dewarping get x and y
- double [min_col](#)
[37]-[296] Original : Parameters of min position of image width
- double [max_col](#)
[38]-[304] Original : Parameters of max position of image width
- double [min_row](#)
[39]-[312] Original : Parameters of min position of image height
- double [max_row](#)

- [40]-[320] Original : Parameters of max position of image height*
- long long [AGD_LR](#)
- [41]-[328] Err : Average gray-level value discrepancy at LR boundary*
- long long [AGD_RL](#)
- [42]-[336] Err : Average gray-level value discrepancy at RL boundary*
- long long [out_img_resolution](#)
- [43]-[344] Set output resolution eys::ImgResolutionModes*
- long long [out_lut_cols](#)
- [44]-[352] Output side-by-side lut width, according to the set of out_img_resolution*
- long long [out_lut_rows](#)
- [45]-[360] Output lut height, according to the set of out_img_resolution*
- long long [out_lut_cols_eff](#)
- [46]-[368] Output effective pixels in out_lut_cols, 0 is for all*
- long long [out_lut_rows_eff](#)
- [47]-[376] Output effective pixels in out_lut_rows, 0 is for all*
- long long [out_img_cols](#)
- [48]-[384] Output side-by-side image width after dewarping and stitching, according to the set of out_img_resolution*
- long long [out_img_rows](#)
- [49]-[392] Output image height, according to the set of out_img_resolution*
- long long [out_overlay_LR](#)
- [50]-[340] Output L/R overlay value, according to the set of out_img_resolution*
- long long [out_overlay_RL](#)
- [51]-[408] Output R/L overlay value, according to the set of out_img_resolution*
- long long [reserve](#) [44]
- [52]-[416] Reserve 44 parameter to use*

4.3.1 Detailed Description

[ParaLUT](#).

Spherical look-up table conversion parameters

The documentation for this struct was generated from the following file:

- [eSPDI_Common.h](#)

4.4 tagDEVINFORMATION

DEVINFORMATION.

Data Fields

- unsigned short [wPID](#)
- unsigned short [wVID](#)
- char * [strDevName](#)
- unsigned short [nChipID](#)
- unsigned short [nDevType](#)
- unsigned short [wUsbNode](#)

4.4.1 Detailed Description

DEVINFORMATION.

device information

4.4.2 Field Documentation

4.4.2.1 nChipID

unsigned short nChipID

chip ID, 0x18 for AXES1, 0x1C for KIWI, 0x15 for PUMA

4.4.2.2 nDevType

unsigned short nDevType

chip enum value,

See also

[APC_DEVICE_TYPE](#)

4.4.2.3 strDevName

char* strDevName

pointer to device name stored inside the SDK

4.4.2.4 wPID

unsigned short wPID

product ID

Table 4.2 PID List

Chip Name	Chip ID	PID
AXES1	0x18	0x0568
		0x0668
		0x0113
		0x0115
		0x0116
KIWI	0x1C	0x0118
PUMA	0x15	0x0112
		0x0120

4.4.2.5 wUsbNode

unsigned short wUsbNode

USB Node

4.4.2.6 wVID

unsigned short wVID

vender ID, 0x1E4E for ApcDI device

The documentation for this struct was generated from the following file:

- [eSPDI_Common.h](#)

Chapter 5

File Documentation

5.1 eSPDI_Common.h File Reference

eYs3D SDK API export functions, data structure and variable definition

Data Structures

- struct [eSPCtrl_RectLogData](#)
eSPCtrl_RectLogData
- struct [ParaLUT](#)
ParaLUT.
- struct [tagDEVINFORMATION](#)
DEVINFORMATION.
- class [DEVINFORMATIONEX](#)

Typedefs

- typedef struct [eSPCtrl_RectLogData](#) [eSPCtrl_RectLogData](#)
eSPCtrl_RectLogData
- typedef struct [ParaLUT](#) [PARALUT](#)
ParaLUT.
- typedef struct [tagDEVINFORMATION](#) [DEVINFORMATION](#)
DEVINFORMATION.

Enumerations

- enum [APC_DEVICE_TYPE](#) { [OTHERS](#) = 0 , [AXES1](#) , [PUMA](#) , [PLUM](#) , [GRAPE_FPGA](#) }
- enum [USERDATA_SECTION_INDEX](#) {
[USERDATA_SECTION_0](#) = 0 , [USERDATA_SECTION_1](#) , [USERDATA_SECTION_2](#) , [USERDATA_SECTION_3](#)
 ,
[USERDATA_SECTION_4](#) , [USERDATA_SECTION_5](#) , [USERDATA_SECTION_6](#) , [USERDATA_SECTION_7](#) ,
[USERDATA_SECTION_8](#) , [USERDATA_SECTION_9](#) , [USERDATA_SECTION_10](#) , [USERDATA_SECTION_NUM](#)
 }
• enum [SENSOR_TYPE_NAME](#) {
[APC_SENSOR_TYPE_H22](#) = 0 , [APC_SENSOR_TYPE_OV7740](#) , [APC_SENSOR_TYPE_AR0134](#) ,
[APC_SENSOR_TYPE_AR0135](#) ,
[APC_SENSOR_TYPE_AR0144](#) , [APC_SENSOR_TYPE_OV9714](#) , [APC_SENSOR_TYPE_OV9282](#) ,
[APC_SENSOR_TYPE_AR0330](#) ,
[APC_SENSOR_TYPE_AR1335](#) , [APC_SENSOR_TYPE_H65](#) , [APC_SENSOR_TYPE_AR0522](#) , [APC_SENSOR_TYPE_OV2740](#) ,
[APC_SENSOR_TYPE_OC0SA10](#) , [APC_SENSOR_TYPE_UNKOWN](#) = 0xffff }

Functions

- int APC_API [APC_Init](#) (void **ppHandleApcDI, bool bIsLogEnabled)
entry point of eYs3D camera SDK. This API allocates resource and find all the eSPI camera devices connected to the system.
- int APC_API [APC_Init2](#) (void **ppHandleApcDI, bool bIsLogEnabled, bool bAutoRestart)
entry point of eYs3D camera SDK. This API allocates resource and find all the eSPI camera devices connected to the system.
- int APC_API [APC_RegisterDeviceEvents](#) (void *pHandleApcDI, APC_DeviceEventFn cbFunc, void *pData)
Register the USB device plug or unplug events. Any USB capture device attachment or detachment events will call the callback function cbFunc.
- void APC_API [APC_Release](#) (void **ppHandleApcDI)
release all resource that APC_Init had allocated
- int APC_API [APC_FindDevice](#) (void *pHandleApcDI)
find out all eYs3D USB devices by PID, VID and ChipID, also remember device types
- int APC_API [APC_RefreshDevice](#) (void *pHandleApcDI)
refresh all eYs3D UVC devices
- int APC_API [APC_GetDeviceNumber](#) (void *pHandleApcDI)
get eYs3D USB device numbers
- int APC_API [APC_GetSlaveSensorRegister](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, int nId, unsigned short address, unsigned short *pValue, int flag, int nSensorMode)
get value from sensor register
- int APC_API [APC_GetSensorRegister](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, int nId, unsigned short address, unsigned short *pValue, int flag, int nSensorMode)
get value from sensor register
- int APC_API [APC_GetFWRegister](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, unsigned short address, unsigned short *pValue, int flag)
get firmware register value
- int APC_API [APC_SetFWRegister](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, unsigned short address, unsigned short nValue, int flag)
set firmware register value
- int APC_API [APC_GetSlaveHWRegister](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, unsigned short address, unsigned short *pValue, int flag)
get hardware register value
- int APC_API [APC_GetHWRegister](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, unsigned short address, unsigned short *pValue, int flag)
get hardware register value
- int APC_API [APC_SetSlaveHWRegister](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, unsigned short address, unsigned short nValue, int flag)
set hardware register
- int APC_API [APC_SetHWRegister](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, unsigned short address, unsigned short nValue, int flag)
set hardware register
- int APC_API [APC_GetFwVersion](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, char *pszFwVersion, int nBufferSize, int *pActualLength)
get the firmware version of device, the version is a string
- int APC_API [APC_GetPidVid](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, unsigned short *pPidBuf, unsigned short *pVidBuf)
get PID(product ID) and VID(vendor ID) of device
- int APC_API [APC_SetPidVid](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, unsigned short *pPidBuf, unsigned short *pVidBuf)
set PID and VID to device

- int APC_API [APC_GetSlaveLogData](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, BYTE *buffer, int BufferLength, int *pActualLength, int index)
get log data from flash
- int APC_API [APC_GetLogData](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, BYTE *buffer, int BufferLength, int *pActualLength, int index)
get log data from flash
- int APC_API [APC_SetSlaveLogData](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, BYTE *buffer, int BufferLength, int *pActualLength, int index)
set log data to flash
- int APC_API [APC_SetLogData](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, BYTE *buffer, int BufferLength, int *pActualLength, int index)
set log data to flash
- int APC_API [APC_SetUserData](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, BYTE *buffer, int BufferLength, [USERDATA_SECTION_INDEX](#) usi)
set user data to flash
- int APC_API [APC_ReadFlashData](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, FLASH_DATA_TYPE fdt, BYTE *pBuffer, unsigned long int nLengthOfBuffer, unsigned long int *pActualBufferLen)
read firmware code(.bin) form flash The firmware code is the combination of boot loader, firmware body and plug-in data. This input buffer length has to match with the flash data type
- int APC_API [APC_OpenDevice](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, int colorStreamIndex, int depthStreamIndex, int depthStreamSwitch, int iFps, APC_ImgCallbackFn callbackFn, void *pCallbackParam, int pid=-1)
open camera device with image callback support
- int APC_API [APC_GetColorImage](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, BYTE *pBuf, unsigned long int *pImageSize, int *pSerial=NULL)
get color image
- int APC_API [APC_CloseDevice](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo)
close device and stop video render
- int APC_API [APC_GetDeviceResolutionList](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, int nMaxCount0, APC_STREAM_INFO *pStreamInfo0, int nMaxCount1, APC_STREAM_INFO *pStreamInfo1)
get the device resolution list
- bool APC_API [APC_Is360Device](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo)
check module is spherical device or not
- int APC_API [APC_GetSerialNumberFromLog](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, char *pSerialNum, int nBufferSize, int *pActualLength)
get the module serial number
- int APC_API [APC_SetCurrentIRValue](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, WORD wType)
set current infrared radiation(IR) value
- int APC_API [APC_GetCurrentIRValue](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, WORD *pwType)
get current infrared radiation(IR) value
- int APC_API [APC_GetIRMinValue](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, WORD *pwType)
get minimum IR value the module support
- int APC_API [APC_SetIRMaxValue](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, WORD wType)
set maximum IR value the module support
- int APC_API [APC_GetIRMaxValue](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, WORD *pwType)
get maximum IR value the module support
- int APC_API [APC_SetIRMode](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, WORD wType)
set IR mode, left, right or both
- int APC_API [APC_GetIRMode](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, WORD *pwType)
set IR mode, left, right or both
- int APC_API [APC_EnableSensorIF](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, bool blsEnable)
turn on/off sensor IF function

- int APC_API [APC_SetSensorTypeName](#) (void *pHandleApcDI, [SENSOR_TYPE_NAME](#) stn)
select which sensor to operate
- int APC_API [APC_EnableAE](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo)
enable auto exposure function of ISP
- int APC_API [APC_DisableAE](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo)
disable auto exposure function of ISP
- int APC_API [APC_EnableAWB](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo)
enable auto white balance function of ISP
- int APC_API [APC_DisableAWB](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo)
disable auto white balance of ISP
- int APC_API [APC_GetGPIOValue](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, int nGPIOIndex, BYTE *pValue)
get general purpose IO value
- int APC_API [APC_SetGPIOValue](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, int nGPIOIndex, BYTE nValue)
set GPIO value
- int APC_API [APC_SetGPIOCtrl](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, int nGPIOIndex, BYTE nValue)
set GPIO control address
- int APC_API [APC_GetPUPPropVal](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, int nId, int *pValue)
get processing unit property value [https://msdn.microsoft.com/en-us/library/windows/hardware/ff568122\(85\).aspx](https://msdn.microsoft.com/en-us/library/windows/hardware/ff568122(85).aspx) The PROPSETID_VIDCAP_VIDEOPROCAMP property set controls devices that can adjust image color attributes of analog or digital signals.
- int APC_API [APC_SetPUPPropVal](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, int nId, int nValue)
get processing unit property value [https://msdn.microsoft.com/en-us/library/windows/hardware/ff568122\(85\).aspx](https://msdn.microsoft.com/en-us/library/windows/hardware/ff568122(85).aspx) [https://msdn.microsoft.com/en-us/library/windows/hardware/ff566089\(v=vs.85\).aspx](https://msdn.microsoft.com/en-us/library/windows/hardware/ff566089(v=vs.85).aspx)
- int APC_API [APC_GetCTPropVal](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, int nId, int *pValue)
set control terminal property value [https://msdn.microsoft.com/en-us/library/windows/hardware/ff567802\(85\).aspx](https://msdn.microsoft.com/en-us/library/windows/hardware/ff567802(85).aspx) The PROPSETID_VIDCAP_CAMERACONTROL property set controls camera device settings. The controls it provides are a subset of the ITU T.RDC standard.
- int APC_API [APC_SetCTPropVal](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, int nId, int nValue)
get control terminal property value [https://msdn.microsoft.com/en-us/library/windows/hardware/ff567802\(85\).aspx](https://msdn.microsoft.com/en-us/library/windows/hardware/ff567802(85).aspx) [https://msdn.microsoft.com/en-us/library/windows/hardware/ff566089\(v=vs.85\).aspx](https://msdn.microsoft.com/en-us/library/windows/hardware/ff566089(v=vs.85).aspx)
- int APC_API [APC_GetAutoExposureMode](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, unsigned short *mode)
misc function : get auto exposure mode
- int APC_API [APC_SetAutoExposureMode](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, unsigned short mode)
misc function : set auto exposure mode
- int APC_API [APC_GetFlexibleGyroData](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, int length, BYTE *pGyroData)
get IMU(Gyro) data
- int APC_API [APC_GetFlexibleGyroLength](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, unsigned short *GyroLen)
get the IMU(Gyro) data length
- int APC_API [APC_SetHuffmanTableData](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, const char *filename, bool bLogFile)
set huffman table data for jpeg encode
- int APC_API [APC_SetQuantizationTableData](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, const char *filename)
set quantication table data for jpeg encode

- int APC_API [APC_SetPlumAR0330](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, bool bEnable)
Set Plum Sensor AR0330.
- int APC_API [APC_EnableGPUAcceleration](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, bool enable)
enable depth filter with GPU acceleration or not
- APC_API char * [APC_GetDepthFilterVersion](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo)
get depth filter version

5.1.1 Detailed Description

eYs3D SDK API export functions, data structure and variable definition

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5.1.2 Typedef Documentation

5.1.2.1 DEVINFORMATION

```
typedef struct tagDEVINFORMATION DEVINFORMATION
```

DEVINFORMATION.

device information

5.1.2.2 eSPCtrl_RectLogData

```
typedef struct eSPCtrl_RectLogData eSPCtrl_RectLogData
```

[eSPCtrl_RectLogData](#)

Rectified log data structure

5.1.2.3 PARALUT

```
typedef struct ParaLUT PARALUT
```

[ParaLUT](#).

Spherical look-up table conversion parameters

5.1.3 Enumeration Type Documentation

5.1.3.1 APC_DEVICE_TYPE

```
enum APC\_DEVICE\_TYPE
```

chip enum value

Enumerator

OTHERS	Other
AXES1	AXIS1
PUMA	PUMA

5.1.3.2 SENSOR_TYPE_NAME

enum [SENSOR_TYPE_NAME](#)

Enumerator

APC_SENSOR_TYPE_H22	H22
APC_SENSOR_TYPE_OV7740	OV7740
APC_SENSOR_TYPE_AR0134	AR0134
APC_SENSOR_TYPE_AR0135	AR0135
APC_SENSOR_TYPE_AR0144	AR0144
APC_SENSOR_TYPE_OV9714	OV9714
APC_SENSOR_TYPE_OV9282	OV9282
APC_SENSOR_TYPE_AR0330	AR0330
APC_SENSOR_TYPE_AR1335	AR1335

5.1.3.3 USERDATA_SECTION_INDEX

enum [USERDATA_SECTION_INDEX](#)

Enumerator

USERDATA_SECTION_0	Section 0
USERDATA_SECTION_1	Section 1
USERDATA_SECTION_2	Section 2
USERDATA_SECTION_3	Section 3
USERDATA_SECTION_4	Section 4
USERDATA_SECTION_5	Section 5
USERDATA_SECTION_6	Section 6
USERDATA_SECTION_7	Section 7
USERDATA_SECTION_8	Section 8
USERDATA_SECTION_9	Section 9
USERDATA_SECTION_10	Section 10
USERDATA_SECTION_NUM	Total Section Number

5.1.4 Function Documentation

5.1.4.1 APC_CloseDevice()

```
int APC_CloseDevice (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo )
```

close device and stop video render

Parameters

<i>pHandleApcDI</i>	the pointer to the initilized ApcDI SDK instance
<i>pDevSelInfo</i>	pointer of device select index

Returns

success:APC_OK, others:see [eSPDI_ErrCode.h](#)

5.1.4.2 APC_DisableAE()

```
int APC_DisableAE (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo )
```

disable auto exposure function of ISP

Parameters

<i>pHandleApcDI</i>	CApcDI handler
<i>pDevSelInfo</i>	pointer of device select index

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.3 APC_DisableAWB()

```
int APC_DisableAWB (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo )
```

disable auto white balance of ISP

Parameters

<i>pHandleApcDI</i>	CApcDI handler
<i>pDevSelInfo</i>	pointer of device select index

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.4 APC_EnableAE()

```
int APC_EnableAE (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo )
```

enable auto exposure function of ISP

Parameters

<i>pHandleApcDI</i>	CApcDI handler
<i>pDevSelInfo</i>	pointer of device select index

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.5 APC_EnableAWB()

```
int APC_EnableAWB (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo )
```

enable auto white balance function of ISP

Parameters

<i>pHandleApcDI</i>	CApcDI handler
<i>pDevSelInfo</i>	pointer of device select index

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.6 APC_EnableGPUAcceleration()

```
int APC_API APC_EnableGPUAcceleration (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    bool enable )
```

enable depth filter with GPU acceleration or not

Parameters

<i>pHandleApcDI</i>	the pointer to the initilized ApcDI SDK instance
<i>pDevSelInfo</i>	pointer of device select index
<i>enable</i>	true:enable, fales:diable

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.7 APC_FindDevice()

```
int APC_FindDevice (
    void * pHandleApcDI )
```

find out all eYs3D USB devices by PID, VID and ChiplD, also remember device types

Parameters

<i>pHandleApcDI</i>	the pointer to the initilized ApcDI SDK instance
---------------------	--

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.8 APC_GetCTPropVal()

```
int APC_GetCTPropVal (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    int nId,
    int * pValue )
```

set control terminal property value <https://msdn.microsoft.com/en-us/library/windows/hardware/ff567885> .aspx The PROPSETID_VIDCAP_CAMERACONTROL property set controls camera device settings. The controls it provides are a subset of the ITU T.RDC standard.

The KSPROPERTY_VIDCAP_CAMERACONTROL enumeration in Ksmedia.h specifies the properties of this set.

Support for this property set is optional and should be implemented only by minidrivers of devices that offer camera control settings. For more information, see the ITU website.

Prior to USB video class, this enumeration contained the following properties: KSPROPERTY_CAMERACONTROL↵
_EXPOSURE KSPROPERTY_CAMERACONTROL_FOCUS KSPROPERTY_CAMERACONTROL_IRIS KSPROPERTY↵
_CAMERACONTROL_ZOOM KSPROPERTY_CAMERACONTROL_PAN KSPROPERTY_CAMERACONTROL↵
_ROLL KSPROPERTY_CAMERACONTROL_TILT

[https://msdn.microsoft.com/en-us/library/windows/hardware/ff566089\(v=vs.85\).aspx](https://msdn.microsoft.com/en-us/library/windows/hardware/ff566089(v=vs.85).aspx)

Parameters

<i>*pHandleApcDI</i>	CApcDI handler
<i>pDevSelInfo</i>	pointer of device select index
<i>nId</i>	specifies the member of the property set
<i>pValue</i>	pointer of store CT property value

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.9 APC_GetCurrentIRValue()

```
int APC_GetCurrentIRValue (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    WORD * pwType )
```

get current infrared radiation(IR) value

Parameters

<i>pHandleApcDI</i>	CApcDI handler
<i>pDevSelInfo</i>	pointer of device select index
<i>pwType</i>	value of current IR

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.10 APC_GetDepthFilterVersion()

```
char *APC_API APC_GetDepthFilterVersion (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo )
```

get depth filter version

Parameters

<i>pHandleApcDI</i>	the pointer to the initialized ApcDI SDK instance
<i>pDevSelInfo</i>	pointer of device select index

Returns

success: get version string, others: get N/A string

5.1.4.11 APC_GetDeviceNumber()

```
int APC_GetDeviceNumber (
    void * pHandleApcDI )
```

get eYs3D USB device numbers

Parameters

<i>pHandleApcDI</i>	the pointer to the initialized ApcDI SDK instance
---------------------	---

Returns

number of eYs3D device

5.1.4.12 APC_GetDeviceResolutionList()

```
int APC_GetDeviceResolutionList (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    int nMaxCount0,
    APC_STREAM_INFO * pStreamInfo0,
    int nMaxCount1,
    APC_STREAM_INFO * pStreamInfo1 )
```

get the device resolution list

Parameters

<i>pHandleApcDI</i>	the pointer to the initilized ApcDI SDK instance
<i>pDevSelInfo</i>	pointer of device select index
<i>nMaxCount0</i>	max count of endpoint1 resolutions
<i>pStreamInfo0</i>	resolution infos of endpoint1
<i>nMaxCount1</i>	max count of endpoint2 resolutions
<i>pStreamInfo1</i>	resolutions infos of endpoint2

Returns

success: nCount0*256+nCount1, others: see [eSPDI_ErrCode.h](#)

5.1.4.13 APC_GetFlexibleGyroData()

```
int APC_GetFlexibleGyroData (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    int length,
    BYTE * pGyroData )
```

get IMU(Gyro) data

Parameters

<i>pHandleApcDI</i>	CApcDI handler
<i>pDevSelInfo</i>	pointer of device select index
<i>length</i>	length of IMU data to read, should be get from APC_GetFlexibleGyroLength
<i>pGyroData</i>	data buffer to store IMU data

5.1.4.14 APC_GetFlexibleGyroLength()

```
int APC_GetFlexibleGyroLength (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    unsigned short * GyroLen )
```

get the IMU(Gyro) data length

Parameters

<i>pHandleApcDI</i>	CApcDI handler
<i>pDevSelInfo</i>	pointer of device select index
<i>GyroLen</i>	pointer to store IMU data length

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.15 APC_GetFWRegister()

```
int APC_GetFWRegister (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    unsigned short address,
    unsigned short * pValue,
    int flag )
```

get firmware register value

Parameters

<i>pHandleApcDI</i>	CApcDI handler
<i>pDevSelInfo</i>	pointer of device select index
<i>address</i>	register address
<i>pValue</i>	pointer of value got from register address
<i>flag</i>	address and value data length(2 or 1 byte) ie FG_Address_2Byte FG_Value_2Byte is 2 byte address and 2 byte value #define FG_Address_1Byte 0x01 #define FG_Address_2Byte 0x02 #define FG_Value_1Byte 0x10 #define FG_Value_2Byte 0x20

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.16 APC_GetFwVersion()

```
int APC_GetFwVersion (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    char * pszFwVersion,
    int nBufferSize,
    int * pActualLength )
```

get the firmware version of device, the version is a string

Parameters

<i>pHandleApcDI</i>	CApcDI handler
<i>pDevSelInfo</i>	pointer of device select index
<i>pszFwVersion</i>	firmware version string
<i>nBufferSize</i>	input buffer length to receive FW version
<i>pActualLength</i>	the actual length of FW version in byte

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.17 APC_GetGPIOValue()

```
int APC_GetGPIOValue (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    int nGPIOIndex,
    BYTE * pValue )
```

get general purpose IO value

Parameters

<i>pHandleApcDI</i>	CApcDI handler
<i>pDevSelInfo</i>	pointer of device select index
<i>nGPIOIndex</i>	GPIO index, 1 or 2 is valid
<i>pValue</i>	pointer of GPIO value

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.18 APC_GetHWRegister()

```
int APC_GetHWRegister (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    unsigned short address,
    unsigned short * pValue,
    int flag )
```

get hardware register value

Parameters

<i>pHandleApcDI</i>	CApcDI handler
<i>pDevSelInfo</i>	pointer of device select index
<i>address</i>	register address
<i>pValue</i>	pointer of value got from register address
<i>flag</i>	address and value data length(2 or 1 byte) ie FG_Address_2Byte FG_Value_2Byte is 2 byte address and 2 byte value #define FG_Address_1Byte 0x01 #define FG_Address_2Byte 0x02 #define FG_Value_1Byte 0x10 #define FG_Value_2Byte 0x20

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.19 APC_GetIRMaxValue()

```
int APC_GetIRMaxValue (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    WORD * pWType )
```

get maximum IR value the module support

Parameters

<i>pHandleApcDI</i>	the pointer to the initilized ApcDI SDK instance
<i>pDevSelInfo</i>	pointer of device select index
<i>pWType</i>	pointer strors maximum IR value

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.20 APC_GetIRMinValue()

```
int APC_GetIRMinValue (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    WORD * pWType )
```

get minimum IR value the module support

Parameters

<i>pHandleApcDI</i>	the pointer to the initilized ApcDI SDK instance
<i>pDevSelInfo</i>	pointer of device select index
<i>pWType</i>	pointer strors minimum IR value

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.21 APC_GetLogData()

```
int APC_GetLogData (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    BYTE * buffer,
    int BufferLength,
    int * pActualLength,
    int index )
```

get log data from flash

Parameters

<i>pHandleApcDI</i>	the pointer to the initialized ApcDI SDK instance
<i>pDevSelInfo</i>	pointer of device select index
<i>buffer</i>	buffer to store log data
<i>BufferLength</i>	input buffer length
<i>pActualLength</i>	actual length has written to buffer
<i>index</i>	index to identify log data for corresponding depth

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.22 APC_GetPidVid()

```
int APC_GetPidVid (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    unsigned short * pPidBuf,
    unsigned short * pVidBuf )
```

get PID(product ID) and VID(vendor ID) of device

Parameters

<i>pHandleApcDI</i>	CApcDI handler
<i>pDevSelInfo</i>	pointer of device select index
<i>pPidBuf</i>	4 byte buffer to store PID value
<i>pVidBuf</i>	4 byte buffer to store VID value

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.23 APC_GetPUPropVal()

```
int APC_GetPUPropVal (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    int nId,
    int * pValue )
```

get processing unit property value <https://msdn.microsoft.com/en-us/library/windows/hardware/ff568185>).aspx The PROPSETID_VIDCAP_VIDEOPROCAMP property set controls devices that can adjust image color attributes of analog or digital signals.

The KSPROPERTY_VIDCAP_VIDEOPROCAMP enumeration in ksmedia.h specifies the properties of this set.

Support for this property set is optional and should be implemented only by devices that allow adjustment of brightness, contrast, hue, and other image quality settings.

Prior to USB video class, this enumeration contained the following property items: KSPROPERTY_VIDEOPROCAMP_BACKLIGHT_COMPENSATION KSPROPERTY_VIDEOPROCAMP_BRIGHTNESS KSPROPERTY_VIDEOPROCAMP_COLOREnable KSPROPERTY_VIDEOPROCAMP_CONTRAST KSPROPERTY_VIDEOPROCAMP_GAMMA KSPROPERTY_VIDEOPROCAMP_HUE KSPROPERTY_VIDEOPROCAMP_SATURATION KSPROPERTY_VIDEOPROCAMP_SHARPNESS KSPROPERTY_VIDEOPROCAMP_WHITEBALANCE KSPROPERTY_VIDEOPROCAMP_GAIN

[https://msdn.microsoft.com/en-us/library/windows/hardware/ff566089\(v=vs.85\).aspx](https://msdn.microsoft.com/en-us/library/windows/hardware/ff566089(v=vs.85).aspx) The KSPROPERTY_VIDEOPROCAMP_S structure describes filter-based property settings in the PROPSETID_VIDCAP_VIDEOPROCAMP property set.

Parameters

<i>pHandleApcDI</i>	CApcDI handler
<i>pDevSelInfo</i>	pointer of device select index
<i>nId</i>	specifies the member of the property set
<i>pValue</i>	pointer of store PU property value

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.24 APC_GetSensorRegister()

```
int APC_GetSensorRegister (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    int nId,
    unsigned short address,
    unsigned short * pValue,
    int flag,
    int nSensorMode )
```

get value from sensor register

Parameters

<i>pHandleApcDI</i>	CApcDI handler
<i>pDevSelInfo</i>	pointer of device select index
<i>nId</i>	sensor slave address. see SENSOR_TYPE_NAME enum definition
<i>address</i>	register address
<i>pValue</i>	pointer of value got from register address
<i>flag</i>	address and value data length(2 or 1 byte) ie FG_Address_2Byte FG_Value_2Byte is 2 byte address and 2 byte value #define FG_Address_1Byte 0x01 #define FG_Address_2Byte 0x02 #define FG_Value_1Byte 0x10 #define FG_Value_2Byte 0x20
<i>nSensorMode</i>	sensor mode(sensor A, B or Both) A is 0, B is 1, Both is 2

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.25 APC_GetSlaveHWRegister()

```
int APC_GetSlaveHWRegister (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    unsigned short address,
    unsigned short * pValue,
    int flag )
```

get hardware register value

Parameters

<i>pHandleApcDI</i>	CApcDI handler
<i>pDevSelInfo</i>	pointer of device select index
<i>address</i>	register address
<i>pValue</i>	pointer of value got from register address
<i>flag</i>	address and value data length(2 or 1 byte) ie FG_Address_2Byte FG_Value_2Byte is 2 byte address and 2 byte value #define FG_Address_1Byte 0x01 #define FG_Address_2Byte 0x02 #define FG_Value_1Byte 0x10 #define FG_Value_2Byte 0x20

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.26 APC_GetSlaveLogData()

```
int APC_GetSlaveLogData (
    void * pHandleApcDI,
```

```

PDEVSELINFO pDevSelInfo,
BYTE * buffer,
int BufferLength,
int * pActualLength,
int index )

```

get log data from flash

Parameters

<i>pHandleApcDI</i>	the pointer to the initilized ApcDI SDK instance
<i>pDevSelInfo</i>	pointer of device select index
<i>buffer</i>	buffer to store log data
<i>BufferLength</i>	input buffer length
<i>pActualLength</i>	actual length has written to buffer
<i>index</i>	index to identify log data for corresponding depth

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.27 APC_GetSlaveSensorRegister()

```

int APC_GetSlaveSensorRegister (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    int nId,
    unsigned short address,
    unsigned short * pValue,
    int flag,
    int nSensorMode )

```

get value from sensor register

Parameters

<i>pHandleApcDI</i>	CApcDI handler
<i>pDevSelInfo</i>	pointer of device select index
<i>nId</i>	sensor slave address. see SENSOR_TYPE_NAME enum definition
<i>address</i>	register address
<i>pValue</i>	pointer of value got from register address
<i>flag</i>	address and value data length(2 or 1 byte) ie FG_Address_2Byte FG_Value_2Byte is 2 byte address and 2 byte value #define FG_Address_1Byte 0x01 #define FG_Address_2Byte 0x02 #define FG_Value_1Byte 0x10 #define FG_Value_2Byte 0x20
<i>nSensorMode</i>	sensor mode(sensor A, B or Both) A is 0, B is 1, Both is 2

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.28 APC_Init()

```
int APC_Init (
    void ** ppHandleApcDI,
    bool bIsLogEnabled )
```

entry point of eYs3D camera SDK. This API allocates resource and find all the eSPI camera devices connected to the system.

Parameters

<i>ppHandleApcDI</i>	a pointer of pointer to receive ApcDI SDK instance
<i>bIsLogEnabled</i>	set to true to generate log file, named log.txt in current folder

Returns

success: none negative integer to indicate numbers of devices found in the system.

5.1.4.29 APC_Init2()

```
int APC_Init2 (
    void ** ppHandleApcDI,
    bool bIsLogEnabled,
    bool bEnableAutoRestart )
```

entry point of eYs3D camera SDK. This API allocates resource and find all the eSPI camera devices connected to the system.

Parameters

<i>ppHandleApcDI</i>	a pointer of pointer to receive ApcDI SDK instance
<i>bIsLogEnabled</i>	set to true to generate log file, named log.txt in current folder
<i>bEnableAutoRestart</i>	set true to auto-restart the device if the device was detached and attached again.

Returns

success: none negative integer to indicate numbers of devices found in the system.

Note

Calls APC_Init or APC_Init2 to initialize the ApcDI SDK. APC_Init2 adds the auto-restart function to the initialization options. If you call APC_Init, the bEnableAutoRestart is set as disabled.

5.1.4.30 APC_Is360Device()

```
bool APC_Is360Device (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo )
```

check module is spherical device or not

Parameters

<i>pHandleApcDI</i>	the pointer to the initialized ApcDI SDK instance
<i>pDevSelInfo</i>	pointer of device select index

Returns

true: module support 360, false: not support

5.1.4.31 APC_OpenDevice()

```
int APC_OpenDevice (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    int colorStreamIndex,
    int depthStreamIndex,
    int depthStreamSwitch,
    int iFps,
    APC_ImgCallbackFn callbackFn,
    void * pCallbackParam,
    int pid = -1 )
```

open camera device with image callback support

Parameters

<i>pHandleApcDI</i>	the pointer to the initialized ApcDI SDK instance										
<i>pDevSelInfo</i>	pointer of device select index										
<i>colorStreamIndex</i>	index of the desired color stream										
<i>depthStreamIndex</i>	index of the desired sdepth tream										
<i>depthStreamSwitch</i>	depth switch for S0, S1 or S2										
<i>iFps</i>	pointer to the desired frame rate, returns the actual frame rate.										
<i>callbackFn</i>	set image callback function										
<i>pCallbackParam</i>	the data to associate with the callback function										
<i>pid</i>	Specify device pid.										
Table 5.34 Image Control Mode <table> <tr> <th>Mode</th><th>Description</th></tr> <tr> <td>0x01</td><td>color and depth frame output synchronously, for depth map module only</td></tr> <tr> <td>0x02</td><td>enable post-process, for Depth Map module only</td></tr> <tr> <td>0x04</td><td>stitch images if this bit is set, for fisheye spherical module only</td></tr> <tr> <td>0x08</td><td>use OpenCL in stitching. This bit effective only when bit-2 is set.</td></tr> </table>		Mode	Description	0x01	color and depth frame output synchronously, for depth map module only	0x02	enable post-process, for Depth Map module only	0x04	stitch images if this bit is set, for fisheye spherical module only	0x08	use OpenCL in stitching. This bit effective only when bit-2 is set.
Mode	Description										
0x01	color and depth frame output synchronously, for depth map module only										
0x02	enable post-process, for Depth Map module only										
0x04	stitch images if this bit is set, for fisheye spherical module only										
0x08	use OpenCL in stitching. This bit effective only when bit-2 is set.										
Generated by Doxygen											

Returns

success:APC_OK, others:see [eSPDI_ErrCode.h](#)

5.1.4.32 APC_ReadFlashData()

```
int APC_ReadFlashData (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    FLASH_DATA_TYPE fdt,
    BYTE * pBuffer,
    unsigned long int nLengthOfBuffer,
    unsigned long int * pActualBufferLen )
```

read firmware code(.bin) form flash The firmware code is the combination of boot loader, firmware body and plug-in data. This input buffer length has to match with the flash data type

Parameters

<i>pHandleApcDI</i>	the pointer to the initilized ApcDI SDK instance
<i>pDevSelInfo</i>	pointer of device select index
<i>fdt</i>	segment type of flash be read
<i>pBuffer</i>	buffer to store firmware code
<i>nLengthOfBuffer</i>	input buffer length
<i>pActualBufferLen</i>	actual length has written to pBuffer

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.33 APC_RefreshDevice()

```
int APC_RefreshDevice (
    void * pHandleApcDI )
```

refresh all eYs3D UVC devices

Parameters

<i>pHandleApcDI</i>	the pointer to the initilized ApcDI SDK instance
---------------------	--

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.34 APC_RegisterDeviceEvents()

```
int APC_RegisterDeviceEvents (
    void * pHandleApcDI,
    APC_DeviceEventFn cbFunc,
    void * pData )
```

Register the USB device plug or unplug events. Any USB capture device attachment or detachment events will call the callback function cbFunc.

Parameters

<i>pHandleApcDI</i>	a pointer to ApcDI SDK instance
<i>cbFunc</i>	a callback function of type #APC_DeviceEventFn that will receive USB capture device events when the device is attached or detached.
<i>pData</i>	user defined data which will send to the callback function

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.35 APC_Release()

```
void APC_Release (
    void ** ppHandleApcDI )
```

release all resource that APC_Init had allocated

Parameters

<i>ppHandleApcDI</i>	pointer of the pointer to the initialized ApcDI SDK instance.
----------------------	---

Returns

none

Note

the pointer to ppHandleApcDI will be set to NULL when this call returns successfully.

5.1.4.36 APC_SetCTPropVal()

```
int APC_SetCTPropVal (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
```

```
int nId,
int nValue )
```

get control terminal property value <https://msdn.microsoft.com/en-us/library/windows/hardware/ff567885.aspx> [https://msdn.microsoft.com/en-us/library/windows/hardware/ff566089\(v=vs.85\).aspx](https://msdn.microsoft.com/en-us/library/windows/hardware/ff566089(v=vs.85).aspx)

Parameters

<i>pHandleApcDI</i>	CApcDI handler
<i>pDevSelInfo</i>	pointer of device select index
<i>nId</i>	specifies the member of the property set
<i>nValue</i>	CT property value to set

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.37 APC_SetCurrentIRValue()

```
int APC_SetCurrentIRValue (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    WORD wType )
```

set current infrared radiation(IR) value

Parameters

<i>pHandleApcDI</i>	CApcDI handler
<i>pDevSelInfo</i>	pointer of device select index
<i>wType</i>	value to set

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.38 APC_SetFWRegister()

```
int APC_SetFWRegister (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    unsigned short address,
    unsigned short nValue,
    int flag )
```

set firmware register value

Parameters

<i>pHandleApcDI</i>	CApcDI handler
<i>pDevSelInfo</i>	pointer of device select index
<i>address</i>	register address
<i>nValue</i>	register value to set
<i>flag</i>	address and value data length(2 or 1 byte) ie FG_Address_1Byte FG_Value_1Byte is 1 byte address and 1 byte value #define FG_Address_1Byte 0x01 #define FG_Address_2Byte 0x02 #define FG_Value_1Byte 0x10 #define FG_Value_2Byte 0x20

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.39 APC_SetGPIOCtrl()

```
int APC_SetGPIOCtrl (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    int nGPIOIndex,
    BYTE nValue )
```

set GPIO control address

Parameters

<i>nGPIOIndex</i>	index of GPIO (1 ~ 4)
<i>nValue</i>	register value to set

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.40 APC_SetGPIOValue()

```
int APC_SetGPIOValue (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    int nGPIOIndex,
    BYTE nValue )
```

set GPIO value

Parameters

<i>pHandleApcDI</i>	CApcDI handler
<i>pDevSelInfo</i>	pointer of device select index
<i>nGPIOIndex</i>	GPIO index, 1 or 2 is valid
<i>nValue</i>	GPIO value to set

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.41 APC_SetHuffmanTableData()

```
int APC_SetHuffmanTableData (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    const char * filename,
    bool bLogFile )
```

set huffman table data for jpeg encode

Parameters

<i>pHandleApcDI</i>	CApcDI handler
<i>pDevSelInfo</i>	pointer of device select index
<i>filename</i>	huffman table file, see jh_vga_422.dat sample file
<i>bLogFile</i>	if true then puma_htable.dat file is generated

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.42 APC_SetHWRegister()

```
int APC_SetHWRegister (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    unsigned short address,
    unsigned short nValue,
    int flag )
```

set hardware register

Parameters

<i>pHandleApcDI</i>	CApcDI handler
<i>pDevSelInfo</i>	pointer of device select index
<i>address</i>	register address
<i>nValue</i>	register value to set
<i>flag</i>	address and value data length(2 or 1 byte) ie FG_Address_1Byte FG_Value_1Byte is 1 byte address and 1 byte value #define FG_Address_1Byte 0x01 #define FG_Address_2Byte 0x02 #define FG_Value_1Byte 0x10 #define FG_Value_2Byte 0x20

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.43 APC_SetIRMaxValue()

```
int APC_SetIRMaxValue (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    WORD wType )
```

set maximum IR value the module support

Parameters

<i>pHandleApcDI</i>	the pointer to the initilized ApcDI SDK instance
<i>pDevSelInfo</i>	pointer of device select index
<i>wType</i>	pointer strors maximum IR value

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.44 APC_SetLogData()

```
int APC_SetLogData (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    BYTE * buffer,
    int BufferLength,
    int * pActualLength,
    int index )
```

set log data to flash

Parameters

<i>pHandleApcDI</i>	the pointer to the initilized ApcDI SDK instance
<i>pDevSelInfo</i>	pointer of device select index
<i>buffer</i>	buffer to store log data
<i>BufferLength</i>	input buffer length
<i>pActualLength</i>	actual length has written to buffer
<i>index</i>	index to identify log data for corresponding depth

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.45 APC_SetPidVid()

```
int APC_SetPidVid (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    unsigned short * pPidBuf,
    unsigned short * pVidBuf )
```

set PID and VID to device

Parameters

<i>pHandleApcDI</i>	CApcDI handler
<i>pDevSelInfo</i>	pointer of device select index
<i>pPidBuf</i>	4 byte PID value buffer to set
<i>pVidBuf</i>	4 byte VID value buffer to set

Returns

success: EtronDI_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.46 APC_SetPUPPropVal()

```
int APC_SetPUPPropVal (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    int nId,
    int nValue )
```

get processing unit property value <https://msdn.microsoft.com/en-us/library/windows/hardware/ff568185.aspx> [https://msdn.microsoft.com/en-us/library/windows/hardware/ff566089\(v=vs.85\).aspx](https://msdn.microsoft.com/en-us/library/windows/hardware/ff566089(v=vs.85).aspx)

Parameters

<i>pHandleApcDI</i>	CApcDI handler
<i>pDevSelInfo</i>	pointer of device select index
<i>nId</i>	specifies the member of the property set
<i>nValue</i>	value to set

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.47 APC_SetQuantizationTableData()

```
int APC_SetQuantizationTableData (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    const char * filename )
```

set quantication table data for jpeg encode

Parameters

<i>pHandleApcDI</i>	CApcDI handler
<i>pDevSelInfo</i>	pointer of device select index
<i>filename</i>	quantization table file, see FS_DEF_010.txt sample file

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.48 APC_SetSensorTypeName()

```
int APC_SetSensorTypeName (
    void * pHandleApcDI,
    SENSOR_TYPE_NAME stn )
```

select which sensor to operate

Parameters

<i>pHandleApcDI</i>	CApcDI handler
<i>stn</i>	sensor type

Returns

APC_OK

5.1.4.49 APC_SetSlaveHWRegister()

```
int APC_SetSlaveHWRegister (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    unsigned short address,
    unsigned short nValue,
    int flag )
```

set hardware register

Parameters

<i>pHandleApcDI</i>	CApcDI handler
<i>pDevSelInfo</i>	pointer of device select index
<i>address</i>	register address
<i>nValue</i>	register value to set
<i>flag</i>	address and value data length(2 or 1 byte) ie FG_Address_1Byte FG_Value_1Byte is 1 byte address and 1 byte value #define FG_Address_1Byte 0x01 #define FG_Address_2Byte 0x02 #define FG_Value_1Byte 0x10 #define FG_Value_2Byte 0x20

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)**5.1.4.50 APC_SetSlaveLogData()**

```
int APC_SetSlaveLogData (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    BYTE * buffer,
    int BufferLength,
    int * pActualLength,
    int index )
```

set log data to flash

Parameters

<i>pHandleApcDI</i>	the pointer to the initilized ApcDI SDK instance
<i>pDevSelInfo</i>	pointer of device select index
<i>buffer</i>	buffer to store log data
<i>BufferLength</i>	input buffer length
<i>pActualLength</i>	actual length has written to buffer
<i>index</i>	index to identify log data for corresponding depth

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.1.4.51 APC_SetUserData()

```
int APC_SetUserData (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    BYTE * buffer,
    int BufferLength,
    USERDATA_SECTION_INDEX usi )
```

set user data to flash

Parameters

<i>pHandleApcDI</i>	the pointer to the initilized ApcDI SDK instance
<i>pDevSelInfo</i>	pointer of device select index
<i>buffer</i>	buffer to store user data
<i>BufferLength</i>	input buffer length
<i>usi</i>	which user index data to select

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.2 eSPDI_DM.h File Reference

eYs3D SDK API export functions, data structure and variable definition for depth map module

Functions

- int APC_API [APC_GetSlaveYOffset](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, BYTE *buffer, int BufferLength, int *pActualLength, int index)
get Y offset data
- int APC_API [APC_GetYOffset](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, BYTE *buffer, int BufferLength, int *pActualLength, int index)
get Y offset data
- int APC_API [APC_GetSlaveRectifyTable](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, BYTE *buffer, int BufferLength, int *pActualLength, int index)
get rectify values from flash
- int APC_API [APC_GetRectifyTable](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, BYTE *buffer, int BufferLength, int *pActualLength, int index)
get rectify values from flash
- int APC_API [APC_GetZDTable](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, BYTE *buffer, int BufferLength, int *pActualLength, PZDTABLEINFO pZDTableInfo)

- get disparity and Z values from flash*
- int APC_API [APC_SetSlaveYOffset](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, BYTE *buffer, int BufferLength, int *pActualLength, int index)
 - set Y offset data*
- int APC_API [APC_SetYOffset](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, BYTE *buffer, int BufferLength, int *pActualLength, int index)
 - set Y offset data*
- int APC_API [APC_SetSlaveRectifyTable](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, BYTE *buffer, int BufferLength, int *pActualLength, int index)
 - set rectify data to flash, see APC_SetRectifyTable except set*
- int APC_API [APC_SetRectifyTable](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, BYTE *buffer, int BufferLength, int *pActualLength, int index)
 - set rectify data to flash, see APC_SetRectifyTable except set*
- int APC_API [APC_SetZDTable](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, BYTE *buffer, int BufferLength, int *pActualLength, PZDTABLEINFO pZDTableInfo)
 - set disparity and Z values to flash, see APC_GetZDTable except get*
- int APC_API [APC_GetRectifyMatLogData](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, eSPCtrl_RectLogData *pData, int index)
 - get rectify log data from flash for Puma IC*
- int APC_API [APC_SetDepthDataType](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, WORD wType)
 - set depth data type, 11 bit for disparity data, 14 bit for Z data notice: only PUMA type IC can support this setting*
- int APC_API [APC_GetDepthDataType](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, WORD *pwType)
 - get current depth data type setting*
- int APC_API [APC_SetHWPostProcess](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo, bool enable)
 - enable or disable internal chip post processing function*
- bool APC_API [APC_IsInterleaveDevice](#) (void *pHandleApcDI, PDEVSELINFO pDevSelInfo)
 - enable or disable interleave function*

5.2.1 Detailed Description

eYs3D SDK API export functions, data structure and variable definition for depth map module

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5.2.2 Function Documentation

5.2.2.1 APC_GetDepthDataType()

```
int APC_GetDepthDataType (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    WORD * pwType )
```

get current depth data type setting

Parameters

<i>pHandleApcDI</i>	the pointer to the initialized ApcDI SDK instance
<i>pDevSelInfo</i>	pointer of device select index
<i>pwType</i>	pointer of current depth data type in device

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.2.2.2 APC_GetRectifyMatLogData()

```
int APC_GetRectifyMatLogData (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    eSPCtrl_RectLogData * pData,
    int index )
```

get rectify log data from flash for Puma IC

Parameters

<i>pHandleApcDI</i>	the pointer to the initialized ApcDI SDK instance
<i>pDevSelInfo</i>	pointer of device select index
<i>pData</i>	rectify log data, its buffer size is 4096 bytes see eSPCtrl_RectLogData for detailed members
<i>index</i>	index to identify rectify log data for corresponding depth

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.2.2.3 APC_GetRectifyTable()

```
APC_GetRectifyTable (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    BYTE * buffer,
    int BufferLength,
    int * pActualLength,
    int index )
```

get rectify values from flash

Parameters

<i>pHandleApcDI</i>	the pointer to the initilized ApcDI SDK instance
<i>pDevSelInfo</i>	pointer of device select index
<i>buffer</i>	buffer to store rectify table data
<i>BufferLength</i>	input buffer length
<i>pActualLength</i>	actual length has written to buffer
<i>index</i>	index to identify rectify table for corresponding depth

Returns

success:APC_OK, others: see [eSPDI_ErrCode.h](#)

5.2.2.4 APC_GetSlaveRectifyTable()

```
APC_GetSlaveRectifyTable (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    BYTE * buffer,
    int BufferLength,
    int * pActualLength,
    int index )
```

get rectify values from flash

Parameters

<i>pHandleApcDI</i>	the pointer to the initilized ApcDI SDK instance
<i>pDevSelInfo</i>	pointer of device select index
<i>buffer</i>	buffer to store rectify table data
<i>BufferLength</i>	input buffer length
<i>pActualLength</i>	actual length has written to buffer
<i>index</i>	index to identify rectify table for corresponding depth

Returns

success:APC_OK, others: see [eSPDI_ErrCode.h](#)

5.2.2.5 APC_GetSlaveYOffset()

```
int APC_GetSlaveYOffset (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    BYTE * buffer,
```

```
int BufferLength,  
int * pActualLength,  
int index )
```

get Y offset data

Parameters

<i>pHandleApcDI</i>	the pointer to the initilized ApcDI SDK instance
<i>pDevSelInfo</i>	pointer of device select index
<i>buffer</i>	buffer to store
<i>BufferLength</i>	length of buffer
<i>pActualLength</i>	actual byte of reading
<i>index</i>	index of Y offset file ID

Returns

success:APC_OK, others:see [eSPDI_ErrCode.h](#)

5.2.2.6 APC_GetYOffset()

```
int APC_GetYOffset (  
    void * pHandleApcDI,  
    PDEVSELINFO pDevSelInfo,  
    BYTE * buffer,  
    int BufferLength,  
    int * pActualLength,  
    int index )
```

get Y offset data

Parameters

<i>pHandleApcDI</i>	the pointer to the initilized ApcDI SDK instance
<i>pDevSelInfo</i>	pointer of device select index
<i>buffer</i>	buffer to store
<i>BufferLength</i>	length of buffer
<i>pActualLength</i>	actual byte of reading
<i>index</i>	index of Y offset file ID

Returns

success:APC_OK, others:see [eSPDI_ErrCode.h](#)

5.2.2.7 APC_GetZDTable()

```
int APC_GetZDTable (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    BYTE * buffer,
    int BufferLength,
    int * pActualLength,
    PZDTABLEINFO pZDTableInfo )
```

get disparity and Z values from flash

1. if depth data type is APC_DEPTH_DATA_14_BITS then just get Z value from depth buffer
2. if depth data type is APC_ZD_TABLE_FILE_SIZE_11_BITS then using depth buffer value as a index to get Z value inside ZD table
3. see GetZValue() of example.c to get Z value from different depth data type

Parameters

<i>pHandleApcDI</i>	the pointer to the initilized ApcDI SDK instance
<i>pDevSelInfo</i>	pointer of device select index
<i>buffer</i>	bufer to store ZD table
<i>BufferLength</i>	input buffer length
<i>pActualLength</i>	actual length has written to buffer
<i>pZDTableInfo</i>	index to identify ZD table and data type for corresponding depth

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.2.2.8 APC_IsInterleaveDevice()

```
bool APC_IsInterleaveDevice (
    void * pHandleEYSD,
    PDEVSELINFO pDevSelInfo )
```

enable or disable interleave function

check module support interleave function or not

Parameters

<i>pHandleApcDI</i>	the pointer to the initilized ApcDI SDK instance
<i>pDevSelInfo</i>	pointer of device select index
<i>enable</i>	set true to enable interleave, or set false to disable interleave

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

Parameters

<i>pHandleApcDI</i>	the pointer to the initilized ApcDI SDK instance
<i>pDevSelInfo</i>	pointer of device select index

Returns

true: support interleave, false: not support

5.2.2.9 APC_SetDepthDataType()

```
APC_SetDepthDataType (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    WORD wType )
```

set depth data type, 11 bit for disparity data, 14 bit for Z data notice: only PUMA type IC can support this setting

Parameters

<i>pHandleApcDI</i>	the pointer to the initilized ApcDI SDK instance
<i>pDevSelInfo</i>	pointer of device select index
<i>wType</i>	depth data type you want to set, see APC_DEPTH_DATA_xxx in APC_O.h \output success: APC_OK, others: see eSPDI_ErrCode.h

5.2.2.10 APC_SetHWPostProcess()

```
int APC_SetHWPostProcess (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    bool enable )
```

enable or disable internal chip post processing function

Parameters

<i>pHandleApcDI</i>	the pointer to the initilized ApcDI SDK instance
<i>pDevSelInfo</i>	pointer of device select index
<i>enable</i>	set true to enable post-process, or set false to disable post-process

Returns

success: APC_OK, others: see [eSPDI_ErrCode.h](#)

5.2.2.11 APC_SetSlaveYOffset()

```
int APC_SetSlaveYOffset (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    BYTE * buffer,
    int BufferLength,
    int * pActualLength,
    int index )
```

set Y offset data

Parameters

<i>pHandleApcDI</i>	the pointer to the initilized ApcDI SDK instance
<i>pDevSelInfo</i>	pointer of device select index
<i>buffer</i>	buffer to store
<i>BufferLength</i>	length of buffer
<i>pActualLength</i>	actual byte of reading
<i>index</i>	index of Y offset file ID

Returns

success:APC_OK, others:see [eSPDI_ErrCode.h](#)

5.2.2.12 APC_SetYOffset()

```
int APC_SetYOffset (
    void * pHandleApcDI,
    PDEVSELINFO pDevSelInfo,
    BYTE * buffer,
    int BufferLength,
    int * pActualLength,
    int index )
```

set Y offset data

Parameters

<i>pHandleApcDI</i>	the pointer to the initilized ApcDI SDK instance
<i>pDevSelInfo</i>	pointer of device select index
<i>buffer</i>	buffer to store
<i>BufferLength</i>	length of buffer
<i>pActualLength</i>	actual byte of reading
<i>index</i>	index of Y offset file ID

Returns

success:APC_OK, others:see [eSPDI_ErrCode.h](#)

5.3 eSPDI_ErrCode.h File Reference

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5.3.1 Detailed Description

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