



Windows AV/TV Media Software Development Kit

Software Programming Guide

APPROVAL SHEET

AUTHORIZED SIGNATURE	
YUAN	CUSTOMER

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About SDK:

This SDK provides a powerful list of APIs for customer to develop their own application easily. All cards from YUAN are supported by this SDK with same interface. Therefore, if you had already programmed SC300 card and you want to program other products such as SC310, SC390 ... etc., you can finish the time-consuming work with little effort.

The SDK is based on DirectShow technique to combine with our capture card driver. Before using it, you need put CoInitialize/CoUninitialize into your software to enable/disable Microsoft COM library.

Tasks supported:

(1) Live Data (Uncompressed Data) Handling

If you want to capture the video live data (uncompressed data) from device, such as YUY2 or YV12, you can refer to Chapter 1. This chapter tells you how to capture and control the video live data. Implements only AMESDK_CREATE, AMESDK_SET_STANDARD, AMESDK_SET_FORMAT and AMESDK_RUN, then you will get live data.

(2) Hardware Compression Video Stream Handling

If you want to capture hardware compression video stream, such MPEG4 or H.264, Chapter 2 explains these functions. Implements only AMESDK_CREATE, AMESDK_SET_STANDARD, AMESDK_SET_FORMAT and AMESDK_RUN, then you will get hardware compression video stream.

(3) Audio PCM Stream Handling

If you want to capture audio PCM stream, then please refer to Chapter 3. Implements only AMESDK_CREATE, AMESDK_SET_FORMAT and AMESDK_RUN, then you will get audio PCM stream.

(4) Hardware Compression Audio Stream Handling

Chapter 4 describes the functions to capture audio hardware compression data, such G.721 or G.723. It is not opened publicly. If you have such requirement, please inform us.

The Chapter 1 ~ 4 explains how to access all functions of our hardware board. To depend on different products, we can combine these functions together. For example, SC390 capture card can capture both YUY2 live data and H.264 data stream at the same time; you should reference Chapter 1 and Chapter 2. In addition, there are some example codes at the end of each chapter for you to reference. **Note!! we suggest you can read the product's extra programming guide at the same time, too. More custom properties are described in the document.**

(5) Software Codec (Encoder and Decoder) Handling

Chapter 5 describes the functions for software codec (encoder and decoder) programming such as MPEG4 and H.264 for video and PCM, G.721, G.723, and AAC for audio.

(6) Network Streaming Server and Client Handling

Chapter 6 describes the functions for network streaming server/client programming. RTSP server and client can be setup to broadcast media. With the help of this chapter, media access through network is accomplished. Moreover, after version 1.1.0.121.0, we begin to support HLS and RTMP server into this chapter.

(7) File Record and Playback Handling

Chapter 7 describes the functions for file record/playback programming. All the file accesses for record, such as save, copy, delete, export are all implemented in this chapter. The file accesses for playback, such as seek, step, play rate, are also included.

The SDK package contains library, included file, document, and sample source code, which helps you to build an application to run our capture card. Before running application, you must install CODEC.exe firstly.

The SDK structure is shown as follows.

SDK PACKET:

- **DOC\:** Documents
- **INC\:** Header files
- **LIB\:** LIB & DLL files for VC & NET (VB/C#/J#)
 - **LIB*:** Full Library without Intel Media SDK.
 - **LIB*.GPU:** Full Library with Intel Media SDK.
Note!! Intel doesn't support Windows XP.
 - **LIB*.MINI:** Library for CODEC.MINI developer who uses Chapter1 to Chapter4 for capture function only.
 - **LIB*.CLIENT:** Library for remote client developer.
- **SAMPLES\:** Sample Source Codes
- **HISTORY.TXT** SDK Update History

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8 Exported Functions

for

Analog Video Capture Device

(YUY2/UYVY/YV12)

SUPPORT DEVICE:

PD652, SC100, SC200, SC230, SC280,
SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0,
SC3B0, SC500, SC510, SC580, SC590,

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1.03	AMESDK_RUN
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1.05	AMESDK_AUTO_STANDARD_DETECTION
1.06	AMESDK_GET_STANDARD
1.07	AMESDK_SET_STANDARD
1.08	AMESDK_GET_INPUT
1.09	AMESDK_SET_INPUT
1.10	AMESDK_GET_FORMAT
1.11	AMESDK_SET_FORMAT
1.12	AMESDK_GET_DEINTERLACE
1.13	AMESDK_SET_DEINTERLACE
1.14	AMESDK_GET_MIRROR
1.15	AMESDK_SET_MIRROR
1.16	AMESDK_GET_MODE
1.17	AMESDK_SET_MODE
1.18	AMESDK_GET_FREQUENCY
1.19	AMESDK_SET_FREQUENCY
1.20	AMESDK_GET_LOCK
1.20	AMESDK_GET_SIGNAL_LOCK
1.21	AMESDK_GET_FPS
1.22	AMESDK_GET_CAMERACONTROL_PROPERTY
1.23	AMESDK_SET_CAMERACONTROL_PROPERTY
1.24	AMESDK_GET_VIDEOPROCAMP_PROPERTY
1.25	AMESDK_SET_VIDEOPROCAMP_PROPERTY
1.26	AMESDK_GET_CUSTOM_PROPERTY
1.27	AMESDK_SET_CUSTOM_PROPERTY
1.28	AMESDK_GET_CUSTOM_PROPERTY_EX
1.29	AMESDK_SET_CUSTOM_PROPERTY_EX
1.30	AMESDK_SET_OSD_TEXT
1.31	AMESDK_SET_OSD_PICTURE
1.32	AMESDK_SET_OSD_BUFFER
1.33	AMESDK_OTHER_REFRESH_DISPLAY_WINDOW
1.34	AMESDK_OTHER_SNAPSHOT_BMP / AMESDK_OTHER_SNAPSHOT_BMP_EX
1.35	AMESDK_OTHER_SNAPSHOT_JPG / AMESDK_OTHER_SNAPSHOT_JPG_EX
1.36	AMESDK_OTHER_ZOOM

Exported Functions For Analog Video Capture Device	
1.37	SC100#N4 (CIF) Software Programming Guide
1.38	SC100#N4 (VGA) Software Programming Guide
1.39	SC300#N8 Software Programming Guide
1.40	SC300#D16 Software Programming Guide
1.41	SC300#Q32 Software Programming Guide
1.42	SC280#N4 (LIVE) Software Programming Guide
1.43	SC380#N16 (LIVE) Software Programming Guide

Open Device Workflow in Software View

Programming Step	Related API Functions
CoInitialize	
Create Device	AMESDK_CREATE
Set Device Parameters	AMESDK_SET_INPUT AMESDK_SET_STANDARD AMESDK_SET_FORMAT
Start Capturing	AMESDK_RUN
Stop Capturing	AMESDK_STOP
Delete Device	AMESDK_DESTROY
CoUninitialize	

1.00 AMESDK_CAPTURE_DEVICE_ENUMERATION**1.00 AMESDK_CAPTURE_DEVICE_NAME_ENUMERATION**

To help customer to obtain the device enumeration info, we design 2 helper functions as below:

This function is used to enumerate all capture devices on the platform. You also can obtain the device's serial number from it.

```
BOOL AMESDK_CAPTURE_DEVICE_ENUMERATION( ULONGLONG * * ppVideoDeviceList,
                                         ULONG *      pVideoDeviceSize,
                                         ULONGLONG * * ppVideoEncoderDeviceList,
                                         ULONG *      pVideoEncoderDeviceSize,
                                         ULONGLONG * * ppAudioDeviceList,
                                         ULONG *      pAudioDeviceSize,
                                         ULONGLONG * * ppAudioEncoderDeviceList,
                                         ULONG *      pAudioEncoderDeviceSize
);
```

This function is used to list the names of all capture devices currently known to the user on the platform.

```
BOOL
AMESDK_CAPTURE_DEVICE_NAME_ENUMERATION( ULONGLONG * * ppVideoDeviceList,
                                         ULONG *      pVideoDeviceSize,
                                         ULONGLONG * * ppVideoEncoderDeviceList,
                                         ULONG *      pVideoEncoderDeviceSize,
                                         ULONGLONG * * ppAudioDeviceList,
                                         ULONG *      pAudioDeviceSize,
                                         ULONGLONG * * ppAudioEncoderDeviceList,
                                         ULONG *      pAudioEncoderDeviceSize
);
```

Parameters:

Parameter	IN/OUT	Description
ppVideoDeviceList	OUT	Video Device List. Pointer to the address of all video capture devices.
pVideoDeviceSize	OUT	Video Device Size. Pointer to a variable that stores the quantity of video capture device.
ppVideoEncoderDeviceList	OUT	Video Encoder Device List. Pointer to the address of all video encoder devices.
pVideoEncoderDeviceSize	OUT	Video Encoder Device Size. Pointer to a variable that stores the quantity of video encoder device.
ppAudioDeviceList	OUT	Audio Device List. Pointer to the address of all audio capture devices.
pAudioDeviceSize	OUT	Audio Device Size. Pointer to a variable that stores the quantity of audio capture device.
ppAudioEncoderDeviceList	OUT	Audio Encoder Device List. Pointer to the address of all audio encoder devices.
pAudioEncoderDeviceSize	OUT	Audio Encoder Device Size. Pointer to a variable that stores the quantity of audio encoder device.

Return Values:

BOOL.

Here, for AMESDK_CAPTURE_DEVICE_ENUMERATION, every item of the returned list uses 8 bytes to describe the device's information. The lower 4 bytes are the device's serial number. The upper 4 bytes are driver's product id. For instance, SC300N8 could return the value, 0x0000680212ABF308, from this function.

Although every item of the returned list of the latter is like the above mentioned brief explanation, nevertheless, the returned list it returns is to uses 8 bytes to describe the name of capture device currently known on the platform to the user. Here, AMESDK_CAPTURE_DEVICE_NAME_ENUMERATION can help you to obtain it. For example, SC510N1 will return the value, 0x5365716000504349 ('S' 'A' '7160' 'P' 'C' 'I'), from this function. And then we have to uses the ASCII character that corresponds to that ASCII value, so that the return value actually stands for or mean the device's name "SA7160 PCI". The name will be used by next function AMESDK_CREATE in next topic.

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: To enumerate all capture devices on the platform.

```
ULONGLONG * p_video_device_list = NULL;
ULONGLONG * p_video_encoder_device_list = NULL;
ULONGLONG * p_audio_device_list = NULL;
ULONGLONG * p_audio_encoder_device_list = NULL;
ULONG      n_video_device_list_size = 0;
ULONG      n_video_encoder_device_list_size = 0;
ULONG      n_audio_device_list_size = 0;
ULONG      n_audio_encoder_device_list_size = 0;

AMESDK_CAPTURE_DEVICE_ENUMERATION( &p_video_device_list,
                                   &n_video_device_list_size,
                                   &p_video_encoder_device_list,
                                   &n_video_encoder_device_list_size,
                                   &p_audio_device_list,
                                   &n_audio_device_list_size,
                                   &p_audio_encoder_device_list,
                                   &n_audio_encoder_device_list_size );

for( ULONG i = 0 ; i < n_video_device_list_size ; i++ ) {

    sprintf( "Live#%02x = 0x%llx", i, p_video_device_list[ i ] );
}

for( ULONG i = 0 ; i < n_video_encoder_device_list_size ; i++ ) {

    sprintf( "Encoder#%02x = 0x%llx", i, p_video_encoder_device_list[ i ] );
}
```

1.1 AMESDK_CREATE

The function helps you to open an analog video capture device and also allows you to attach a preview window or register a callback function on it. The callback function will offer you to obtain and to access the whole frame buffer. The data in frame buffer is live data (uncompressed data).

```

DEVICE_HANDLE AMESDK_CREATE( LPTSTR                pszDevName,
                             UINT                 iDevNum,
                             ULONG                 eDevType,
                             HWND                 hDisplayWindow_A,
                             PF_BUFFER_CALLBACK    pBufferCB_A,
                             PVOID                pUserData_A,
                             HWND                 hDisplayWindow_B = NULL,
                             PF_BUFFER_CALLBACK    pBufferCB_B      = NULL,
                             PVOID                pUserData_B      = NULL,
                             HWND                 hDisplayWindow_C = NULL,
                             PF_BUFFER_CALLBACK    pBufferCB_C      = NULL,
                             PVOID                pUserData_C      = NULL,
                             HWND                 hDisplayWindow_D = NULL,
                             PF_BUFFER_CALLBACK    pBufferCB_D      = NULL,
                             PVOID                pUserData_D      = NULL
);

typedef ULONG (DEVICE_HANDLE);

typedef BOOL (* PF_BUFFER_CALLBACK)( double    dSampleTime,
                                     BYTE *    pBuffer,
                                     ULONG     nBufferLen,
                                     BOOL      bIsKeyFrame,
                                     PVOID     pUserData
);
    
```

The function is for advance user to set more parameters by AMESDK_CREATE:

```

DEVICE_HANDLE AMESDK_CREATE_EX(
    LPTSTR          pszDevName,
    UINT            iDevNum,
    ULONG           eDevType,
    HWND            hDisplayWindow_A,
    PF_BUFFER_CALLBACK pBufferCB_A,
    BOOL            bIsAllowOverlayRenderer_A,
    BOOL            bIsEnableEnhancedVideoRenderer_A,
    BOOL            bIsMaintainAspectRatio_A,
    PVOID           pUserData_A,
    HWND            hDisplayWindow_B          = NULL,
    PF_BUFFER_CALLBACK pBufferCB_B            = NULL,
    BOOL            bIsAllowOverlayRenderer_B  = FALSE,
    BOOL            bIsEnableEnhancedVideoRenderer_B = FALSE,
    BOOL            bIsMaintainAspectRatio_B   = FALSE,
    PVOID           pUserData_B               = NULL,
    HWND            hDisplayWindow_C          = NULL,
    BOOL            bIsAllowOverlayRenderer_C  = FALSE,
    BOOL            bIsEnableEnhancedVideoRenderer_C = FALSE,
    BOOL            bIsMaintainAspectRatio_C   = FALSE,
    PF_BUFFER_CALLBACK pBufferCB_C            = NULL,
    PVOID           pUserData_C               = NULL,
    HWND            hDisplayWindow_D          = NULL,
    PF_BUFFER_CALLBACK pBufferCB_D            = NULL,
    BOOL            bIsAllowOverlayRenderer_D  = FALSE,
    BOOL            bIsEnableEnhancedVideoRenderer_D = FALSE,
    BOOL            bIsMaintainAspectRatio_D   = FALSE,
    PVOID           pUserData_D               = NULL
);
    
```

Parameters:

Parameter	IN/OUT	Description
pszDevName	IN	Device Name. To give a device name that is used to create specific device. Currently, we support these device names below: "AH8400 PCI", "CX2581 PCI", "CX2588 PCI", "DC1150 USB", "FH8735 PCI", "TW2809 PCI", "TW5864 PCI", "TW6802 PCI", "SA7160 PCI", "SL6010 PCI".
iDevNum	IN	Device Number. If there are more than one device with the same device name on platform, you can use this parameter to recognize it.
eDevType	IN	Device Type. Always 0 for analog capture device.
hDisplayWindow_A hDisplayWindow_B hDisplayWindow_C hDisplayWindow_D	IN	Display Window. Pointer to one WHND window handle. If it isn't NULL, function will automatically display video on this window. If it is NULL, function will not display video on it. Parameters B, C and D are only used to support multiple channels function, if this device can offer more than one channel input, such as SC300D16 and SC300Q32.
pBufferCB_A pBufferCB_B pBufferCB_C pBufferCB_D	IN	Callback Function. Pointer to one callback function. If it is NULL, function will not return frame buffer to software caller. If it isn't NULL, caller will obtain frame buffer from callback when every frame is arrived. Parameters B, C and D are only used to support multiple channels function, if this device can offer more than one channel input.
bIsAllowOverlayRenderer_A bIsAllowOverlayRenderer_B bIsAllowOverlayRenderer_C bIsAllowOverlayRenderer_D	IN	Overlay Renderer. It is one flag to enable the overlay property on DirectShow's Video Renderer Filter. When this function is enabled, the Thum Draw function will be disabled.
bIsEnableEnhancedVideoRenderer_A bIsEnableEnhancedVideoRenderer_B bIsEnableEnhancedVideoRenderer_C bIsEnableEnhancedVideoRenderer_D	IN	Enhanced Video Renderer. Developer can use it to open new DirectShow's EVR renderer on Win7 platform. Default is VRM renderer in our SDK.
bIsMaintainAspectRatio_A bIsMaintainAspectRatio_B bIsMaintainAspectRatio_C bIsMaintainAspectRatio_D	IN	Aspect Ratio. The property allows you to keep input's aspect ratio on attached window during displaying. The boundary will be fill by black image.

<p> pUserData_A pUserData_B pUserData_C pUserData_D </p>	<p>IN</p>	<p>User Data. Pointer to one data pointer. The parameters will be passed through callback. Parameters B, C and D are only used to support multiple channels function, if this device can offer more than one channel input.</p>
---	-----------	--

Return Value:

If AMESDK_CREATE is successful, it will return one DEVICE_HANDLE. If it is fail, it will return error code. As one of below:

- 0x80000000 - Parameter, pszDevName, is wrong.
- 0x80000001 - Unknown error.
- 0x80000002 - Device queue is full already.

Supported Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

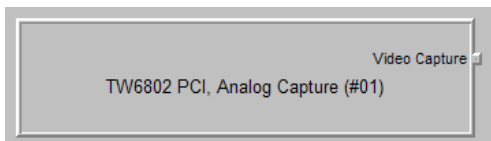
```
HWND hWnd = CreateWindowEx( ... );
```

```
BOOL bcb( double dSampleTime, BYTE * pBuffer, ULONG nBufferLen, BOOL bIsKeyFrame,
          PVOID pUserData )
{
    ...

    return TRUE;
}
```

EX1: Don't need to display video and to get frame buffer from callback function.

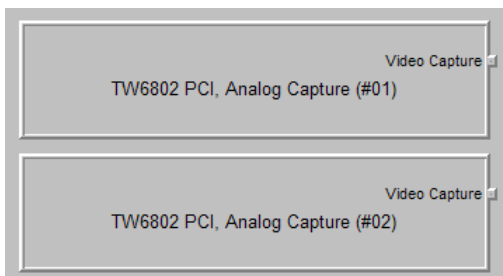
```
hDev = AMESDK_CREATE( "TW6802 PCI", 0, 0, NULL, NULL, NULL );
```



EX2: If you have two devices on one PC, you can use parameter #2 to open 2nd device.

```
hDev0 = AMESDK_CREATE( "TW6802 PCI", 0, 0, NULL, NULL, NULL );
```

```
hDev1 = AMESDK_CREATE( "TW6802 PCI", 1, 0, NULL, NULL, NULL );
```



EX3: To display video on your attached window by SDK engine.

```
hDev = AMESDK_CREATE( "TW6802 PCI", 0, 0, hWnd, NULL, NULL );
```



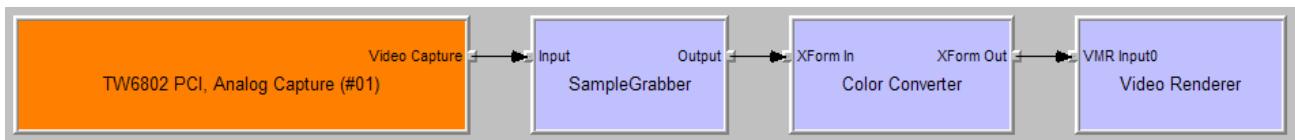
EX4: To register the callback function on the device.

```
hDev = AMESDK_CREATE( "TW6802 PCI", 0, 0, NULL, &bcb, this );
```



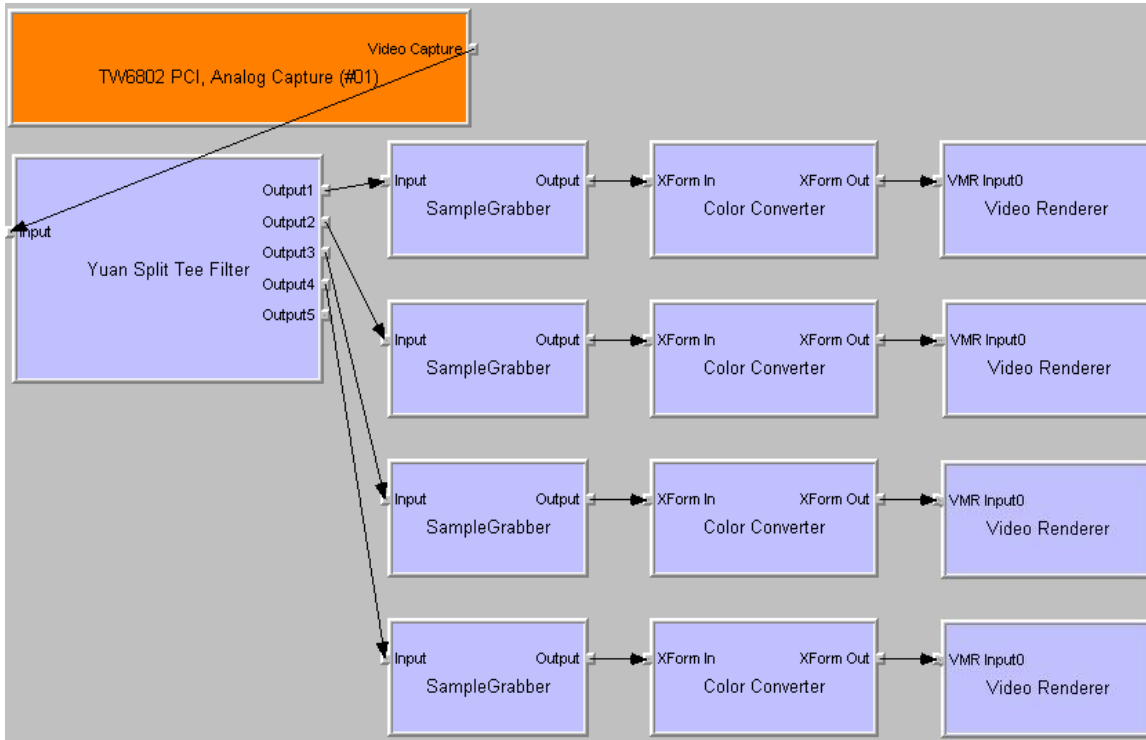
EX5: To display video on your attached window and register a callback function on the device.

```
hDev = AMESDK_CREATE( "TW6802 PCI", 0, 0, hWnd, &bcb, this );
```



EX6: To support multiple (4) channels on one device (for switching card only).

```
hDev = AMESDK_CREATE( "TW6802 PCI", 0, 0, hWnd_A, &bcb_A, NULL,
                    hWnd_B, &bcb_B, NULL,
                    hWnd_C, &bcb_C, NULL,
                    hWnd_D, &bcb_D, NULL
);
```



Remarks:

The input string is corresponded to different product series as below:

"AH8400 PCI": SC290, SC390

"CX2581 PCI": SC310

"CX2588 PCI": SC340

"DC1150 USB": PD652, SC100

"FH8735 PCI": SC2A0, SC3A0, SC580

"TW2809 PCI": SC590

"TW5864 PCI": SC2B0, SC3B0

"TW6802 PCI": SC200, SC300, SC230, SC330

"SA7160 PCI": SC500, SC510

"SL6010 PCI": SC280, SC380

Please reference last sections in this chapter to obtain more sample tutorials.

1.02 AMESDK_DESTROY

To call this function will close your device and release all device resources. This function also will stop the device automatically, if it is running.

```
BOOL AMESDK_DESTROY( DEVICE_HANDLE hDevHandle );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device that is to be destroyed.

Return Value:

BOOL

Supported Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Destroy and stop the device.

```
AMESDK_DESTROY( hDev );
```

1.03 AMESDK_RUN

This function is used to change the status of device into running state.

```
BOOL AMESDK_RUN( DEVICE_HANDLE hDevHandle );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose status is to be changed to running status.

Return Value:

BOOL

Supported Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Run the device.

```
AMESDK_RUN( hDev );
```

1.04 AMESDK_STOP

This function is used to stop the device.

```
BOOL AMESDK_STOP( DEVICE_HANDLE hDevHandle );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device that is to be stopped.

Return Value:

BOOL

Supported Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Stop the device.

```
AMESDK_STOP( hDev );
```

1.05 AMESDK_AUTO_STANDARD_DETECTION

This function is used to detect video standard automatically. To use this function, you must make sure the video signal has already been connected with our capture card. Note!! The function doesn't change any device property on hardware board. It is just one helper function to help you to obtain current input signal standard.

```
BOOL AMESDK_EXPORT AMESDK_AUTO_STANDARD_DETECTION( DEVICE_HANDLE hDevHandle,
                                                    ULONG *          pStandard
                                                    );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose standard is to be retrieved.
pStandard	OUT	Video Standard. Pointer to a variable that stores the standard.

Return Value:

BOOL

Supported Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Auto detect current video standard.

```
AMESDK_AUTO_STANDARD_DETECTION( hDev, &nStandard );
```

1.06 AMESDK_GET_STANDARD

This function is used to get current video standard.

```

BOOL AMESDK_GET_STANDARD( DEVICE_HANDLE  hDevHandle,
                           ULONG *       pStandard
);

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose standard is to be retrieved.
pStandard	OUT	Video Standard. Pointer to a variable that stores the standard. It cannot be NULL.
		SUPPORT STANDARD (60Hz): KS_AnalogVideo_NTSC_M (0x00000001) KS_AnalogVideo_NTSC_M_J (0x00000002) KS_AnalogVideo_NTSC_433 (0x00000004) KS_AnalogVideo_PAL_M (0x00000200) KS_AnalogVideo_PAL_60 (0x00000800) SUPPORT STANDARD (50Hz): KS_AnalogVideo_PAL_B (0x00000010) KS_AnalogVideo_PAL_D (0x00000020) KS_AnalogVideo_PAL_G (0x00000040) KS_AnalogVideo_PAL_H (0x00000080) KS_AnalogVideo_PAL_I (0x00000100) KS_AnalogVideo_PAL_N (0x00000400) KS_AnalogVideo_PAL_N_COMBO (0x00100000) KS_AnalogVideo_SECAM_B (0x00001000) KS_AnalogVideo_SECAM_D (0x00002000) KS_AnalogVideo_SECAM_G (0x00004000) KS_AnalogVideo_SECAM_H (0x00008000) KS_AnalogVideo_SECAM_K (0x00010000) KS_AnalogVideo_SECAM_K1 (0x00020000) KS_AnalogVideo_SECAM_L (0x00040000) KS_AnalogVideo_SECAM_L1 (0x00080000)

Return Value:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Get the current video standard.

```
AMESDK_GET_STANDARD( hDev, &nStandard );
```

1.07 AMESDK_SET_STANDARD

This function is used to set/change video standard. It should be set or updated video standard before calling AMESDK_RUN().

```

BOOL AMESDK_SET_STANDARD( DEVICE_HANDLE  hDevHandle,
                           ULONG          nStandard
                           );
    
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose standard is to be set/changed.
nStandard	IN	Video Standard. Specifies the standard.
		SUPPORT STANDARD (60Hz): KS_AnalogVideo_NTSC_M (0x00000001) KS_AnalogVideo_NTSC_M_J (0x00000002) KS_AnalogVideo_NTSC_433 (0x00000004) KS_AnalogVideo_PAL_M (0x00000200) KS_AnalogVideo_PAL_60 (0x00000800) SUPPORT STANDARD (50Hz): KS_AnalogVideo_PAL_B (0x00000010) KS_AnalogVideo_PAL_D (0x00000020) KS_AnalogVideo_PAL_G (0x00000040) KS_AnalogVideo_PAL_H (0x00000080) KS_AnalogVideo_PAL_I (0x00000100) KS_AnalogVideo_PAL_N (0x00000400) KS_AnalogVideo_PAL_N_COMBO (0x00100000) KS_AnalogVideo_SECAM_B (0x00001000) KS_AnalogVideo_SECAM_D (0x00002000) KS_AnalogVideo_SECAM_G (0x00004000) KS_AnalogVideo_SECAM_H (0x00008000) KS_AnalogVideo_SECAM_K (0x00010000) KS_AnalogVideo_SECAM_K1 (0x00020000) KS_AnalogVideo_SECAM_L (0x00040000) KS_AnalogVideo_SECAM_L1 (0x00080000)

Return Value:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Set the video standard to NTSC M.

```
AMESDK_SET_STANDARD( hDev, 0x00000001 ); // KS_AnalogVideo_NTSC_M
```

EX2: Set the video standard to PAL B.

```
AMESDK_SET_STANDARD( hDev, 0x00000010 ); // KS_AnalogVideo_PAL_B
```


1.08 AMESDK_GET_INPUT

This function is used to get current video input.

```

    BOOL AMESDK_GET_INPUT( DEVICE_HANDLE  hDevHandle,
                           ULONG *        pInput
    );

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose input is to be retrieved.
pInput	OUT	Video Input. Pointer to a variable that stores the input. It cannot be NULL.
		SUPPORT INPUTS: Composite / HDMI (0x00000000) SVideo / DVI-D (0x00000001) Tuner / Components (0x00000002) / DVI-A (0x00000003) / SDI (0x00000004) / Composite (0x00000005) / SVideo (0x00000006)

Return Value:

BOOL

Support Devices:

PCTV: PD652

SECU: SC500, SC510, SC580, SC590

Examples:

EX1: Get the current video input.

```
AMESDK_GET_INPUT( hDev, &nInput );
```

Remarks:

For SC500, SC510, SC580, and SC590 series, please reference their Extra Programming Guide in SDK packet in detail.

1.09 AMESDK_SET_INPUT

This function is used to set/change video input.

```
BOOL AMESDK_SET_INPUT( DEVICE_HANDLE hDevHandle,  
                        ULONG          nInput  
);
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose input is to be set/changed.
nInput	IN	Video Input. Specifies the input.
		SUPPORT INPUTS: Composite / HDMI (0x00000000) SVideo / DVI-D (0x00000001) Tuner / Components (0x00000002) / DVI-A (0x00000003) / SDI (0x00000004) / Composite (0x00000005) / SVideo (0x00000006)

Return Value:

BOOL

Support Devices:

PCTV: PD652

SECU: SC500, SC510, SC580, SC590

Examples:

EX1: Set the video input to Composite.

```
AMESDK_SET_INPUT( hDev, 0x00000000 );
```

EX2: Set the video input to SVideo.

```
AMESDK_SET_INPUT( hDev, 0x00000001 );
```

EX3: Set the video input to Tuner.

```
AMESDK_SET_INPUT( hDev, 0x00000002 );
```

Remarks:

For SC500, SC510, SC580, and SC590 series, please reference their Extra Programming Guide in SDK packet in detail.

1.10 AMESDK_GET_FORMAT

This function is used to get current video format. Note!! The function is not used to obtain current input signal format, for input format detection, please reference extra programming guide in SDK's DOC folder.

```

BOOL AMESDK_GET_FORMAT( DEVICE_HANDLE    hDevHandle,
                        ULONG *          pColorSpace,
                        ULONG *          pWidth,
                        ULONG *          pHeight,
                        ULONG *          pBitCount,
                        DOUBLE *         pFrameRate
);

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose format is to be retrieved.
pColorSpace	OUT	Video Color Space. Pointer to a variable that stores the color space, in MAKEFOURCC. It cannot be NULL.
pWidth	OUT	Video Width. Pointer to a variable that stores the width, in pixels. It cannot be NULL.
pHeight	OUT	Video Height. Pointer to a variable that stores the height, in pixels. It cannot be NULL.
pBitCount	OUT	Video BitCount. Pointer to a variable that stores the bit count. It cannot be NULL.
pFrameRate	OUT	Video FrameRate. Pointer to a variable that stores the frame rate, in fps. It cannot be NULL.

Return Value:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Get the current video format (colorspace, width, height, bit count, and frame rate).

```
AMESDK_GET_FORMAT( hDev, &nColorSpace, &nWidth, &nHeight, &nBitCount, &dFrameRate );
```

Remarks: ●: STANDARD, ○: OPTION

FORMAT (NTSC)	PD652 (YUY2)	SC100 (YUY2)	SC200 SC230 SC300 SC330 (YUY2)	SC310 SC340 (YUY2)	SC280 SC380 (UYVY)	SC290 SC390 (UYVY)	SC2A0 SC3A0 (YV12)	SC2B0 SC3B0 (YV12)
720×480×16×30.00	●	○	●	●			●	●
704×480×16×30.00	●	○	●	●	●	●	●	●
640×480×16×30.00	●	●	●	●				
720×240×16×30.00/60.00	●	○	●	●			●	●
704×240×16×30.00/60.00	●	○	●	●			●	●
640×240×16×30.00/60.00	●	○	●	●				
360×240×16×30.00/60.00	●	○	●	●				
352×240×16×30.00/60.00	●	○	●	●	●	●	●	●
320×240×16×30.00/60.00	●	○	●	●				
256×240×16×30.00/60.00	●	●						
180×120×16×30.00/60.00	●	○						
176×120×16×30.00/60.00	●	○						
160×120×16×30.00/60.00	●	○						

FORMAT (PAL)	PD652 (YUY2)	SC100 (YUY2)	SC200 SC230 SC300 SC330 (YUY2)	SC310 SC340 (YUY2)	SC280 SC380 (UYVY)	SC290 SC390 (UYVY)	SC2A0 SC3A0 (YV12)	SC2B0 SC3B0 (YV12)
720×576×16×25.00	●	○	●	●			●	●
704×576×16×25.00	●	○	●	●	●	●	●	●
640×576×16×25.00	●	●	●	●				
720×288×16×25.00/50.00	●	○	●	●			●	●
704×288×16×25.00/50.00	●	○	●	●			●	●
640×288×16×25.00/50.00	●	○	●	●				
360×288×16×25.00/50.00	●	○	●	●				
352×288×16×25.00/50.00	●	○	●	●	●	●	●	●
320×288×16×25.00/50.00	●	○	●	●				
256×288×16×25.00/50.00	●	●						
180×144×16×25.00/50.00	●	○						
176×144×16×25.00/50.00	●	○						
160×144×16×25.00/50.00	●	○						

FORMAT	SC500 (YUY2)	SC510 (YUY2)	SC580 (YV12)	SC590 (YV12)
720×480i×60.00	●	●	●	●
720×576i×50.00	●	●	●	●
720×480p×60.00	●	●	●	●
720×576p×50.00	●	●	●	●
1280×720p×60.00	●	●	●	●
1280×720p×50.00	●	●	●	●
1280×720p×30.00	●	●	●	●
1280×720p×25.00	●	●	●	●
1280×720p×24.00	●	●	●	●
1920×1080i×60.00	●	●	●	●
1920×1080i×50.00	●	●	●	●
1920×1080p×60.00	●	●	●	●
1920×1080p×50.00	●	●	●	●
1920×1080p×30.00	●	●	●	●
1920×1080p×25.00	●	●	●	●
1920×1080p×24.00	●	●	●	●
640×384p×60.00	●	●	●	●
640×400P×60.00	●	●	●	●
640×480p×60.00	●	●	●	●
800×600p×60.00	●	●	●	●
1024×768p×60.00	●	●	●	●
1280×768p×60.00	●	●	●	●
1280×800p×60.00	●	●	●	●
1280×960p×60.00	●	●	●	●
1280×1024p×60.00	●	●	●	●
1360×768p×60.00	●	●	●	●
1440×900p×60.00	●	●	●	●
720×240p×60.00	●	●	●	●
720×288p×50.00	●	●	●	●

1.11 AMESDK_SET_FORMAT

This function is used to set/change video format. It should be set or updated video format before calling AMESDK_RUN().

```
BOOL AMESDK_SET_FORMAT( DEVICE_HANDLE    hDevHandle,
                        ULONG             nColorSpace,
                        ULONG             nWidth,
                        ULONG             nHeight,
                        ULONG             nBitCount,
                        DOUBLE            dFrameRate
                        );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose format is to be set/changed.
nColorSpace	IN	Video ColorSpace. Specifies the colorspace, in MAKEFOURCC.
nWidth	IN	Video Width. Specifies the width, in pixels.
nHeight	IN	Video Height. Specifies the height, in pixels.
nBitCount	IN	Video BitCount. Specifies the bit count.
dFrameRate	IN	Video FrameRate. Specifies the frame rate, in fps.

Return Value:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Set the video format, YUY2 × 720 × 480 × 16 bits × 30.00 fps.

```
AMESDK_SET_FORMAT( hDev, MAKEFOURCC('Y', 'U', 'Y', '2'), 720, 480, 16, 30.00 );
```

EX2: Set the video format, UYVY × 352 × 288 × 16 bits × 25.00 fps.

```
AMESDK_SET_FORMAT( hDev, MAKEFOURCC('U', 'Y', 'V', 'Y'), 352, 288, 16, 25.00 );
```

Remarks: ●: STANDARD, ○: OPTION

FORMAT (NTSC)	PD652 (YUY2)	SC100 (YUY2)	SC200 SC230 SC300 SC330 (YUY2)	SC310 SC340 (YUY2)	SC280 SC380 (UYVY)	SC290 SC390 (UYVY)	SC2A0 SC3A0 (YV12)	SC2B0 SC3B0 (YV12)
720×480×30.00	●	○	●	●			●	●
704×480×30.00	●	○	●	●	●	●	●	●
640×480×30.00	●	●	●	●				
720×240×30.00/60.00	●	○	●	●			●	●
704×240×30.00/60.00	●	○	●	●			●	●
640×240×30.00/60.00	●	○	●	●				
360×240×30.00/60.00	●	○	●	●				
352×240×30.00/60.00	●	○	●	●	●	●	●	●
320×240×30.00/60.00	●	○	●	●				
256×240×30.00/60.00	●	●						
180×120×30.00/60.00	●	○						
176×120×30.00/60.00	●	○						
160×120×30.00/60.00	●	○						

FORMAT (PAL)	PD652 (YUY2)	SC100 (YUY2)	SC200 SC230 SC300 SC330 (YUY2)	SC310 SC340 (YUY2)	SC280 SC380 (UYVY)	SC290 SC390 (UYVY)	SC2A0 SC3A0 (YV12)	SC2B0 SC3B0 (YV12)
720×576×25.00	●	○	●	●			●	●
704×576×25.00	●	○	●	●	●	●	●	●
640×576×25.00	●	●	●	●				
720×288×25.00/50.00	●	○	●	●			●	●
704×288×25.00/50.00	●	○	●	●			●	●
640×288×25.00/50.00	●	○	●	●				
360×288×25.00/50.00	●	○	●	●				
352×288×25.00/50.00	●	○	●	●	●	●	●	●
320×288×25.00/50.00	●	○	●	●				
256×288×25.00/50.00	●	●						
180×144×25.00/50.00	●	○						
176×144×25.00/50.00	●	○						
160×144×25.00/50.00	●	○						

FORMAT	SC500 (YUY2)	SC510 (YUY2)	SC580 (YV12)	SC590 (YV12)
720×480i×60.00	●	●	●	●
720×576i×50.00	●	●	●	●
720×480p×60.00	●	●	●	●
720×576p×50.00	●	●	●	●
1280×720p×60.00	●	●	●	●
1280×720p×50.00	●	●	●	●
1280×720p×30.00	●	●	●	●
1280×720p×25.00	●	●	●	●
1280×720p×24.00	●	●	●	●
1920×1080i×60.00	●	●	●	●
1920×1080i×50.00	●	●	●	●
1920×1080p×60.00	●	●	●	●
1920×1080p×50.00	●	●	●	●
1920×1080p×30.00	●	●	●	●
1920×1080p×25.00	●	●	●	●
1920×1080p×24.00	●	●	●	●
640×384p×60.00	●	●	●	●
640×400P×60.00	●	●	●	●
640×480p×60.00	●	●	●	●
800×600p×60.00	●	●	●	●
1024×768p×60.00	●	●	●	●
1280×768p×60.00	●	●	●	●
1280×800p×60.00	●	●	●	●
1280×960p×60.00	●	●	●	●
1280×1024p×60.00	●	●	●	●
1360×768p×60.00	●	●	●	●
1440×900p×60.00	●	●	●	●
720×240p×60.00	●	●	●	●
720×288p×50.00	●	●	●	●

1.12 AMESDK_GET_DEINTERLACE

This function is used to check whether the deinterlace function is enabled.

```

BOOL AMESDK_GET_DEINTERLACE( DEVICE_HANDLE    hDevHandle,
                               ULONG *          pDeinterlace,
                               ULONG            nSubChannelNumber = 0
                               );
    
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be retrieved.
pDeinterlace	OUT	Deinterlace Status. Pointers to a variable that stores the status of deinterlace function. It cannot be NULL. The range of value is 0,1,7 (7 Algorithms). The value 0 is to disable deinterlace function. The 7 is the best quality algorithm. For all algorithms description, please contact with us directly. It will not be opened in this document.
nSubChannelNumber	IN	Sub Channel Number. The range of value is from 0 to 3.

Return Values:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Get the current status of deinterlace function.

```
AMESDK_GET_DEINTERLACE( hDev, &nDeinterlace );
```

1.13 AMESDK_SET_DEINTERLACE

This function is used to set/change deinterlace function. Note!! The function is used for display engine only. It doesn't access original raw data from callback function. Customer who wants to record one progressive video frame need use our deinterlacer engine. The deinterlacer engine is independently described on Chapter9.

Our SDK separate deinterlace function into preview mode and independent deinterlace library. It can help user to develop one flexible software about CPU performance.

```
BOOL AMESDK_SET_DEINTERLACE( DEVICE_HANDLE    hDevHandle,
                             ULONG             nDeinterlace,
                             ULONG             nSubChannelNumber = 0
                             );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be changed.
nDeinterlace	IN	Deinterlace Status. Specifies the method of deinterlace function. The range of value is 0, 1, 7 (7 Algorithms). The value 0 is to disable deinterlace function. For the algorithm description, please contact with us directly. It will not be opened in this document.
nSubChannelNumber	IN	Sub Channel Number. The range of value is from 0 to 3.

Return Values:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Enable the deinterlace function in the best quality method.

```
BOOL AMESDK_SET_DEINTERLACE( hDev, 7 );
```

EX2: Disable the deinterlace function.

```
BOOL AMESDK_SET_DEINTERLACE( hDev, 0 );
```

1.14 AMESDK_GET_MIRROR

This function is used to check whether the mirror function is enabled.

```

BOOL AMESDK_GET_MIRROR(  DEVICE_HANDLE    hDevHandle,
                          BOOL *          pHorizontalMirror,
                          BOOL *          pVerticalMirror,
                          ULONG           nSubChannelNumber = 0
);

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be retrieved.
pHorizontalMirror	OUT	Horizontal Mirror Status. Pointers to a variable that stores the status of mirror function. It cannot be NULL.
pVerticalMirror	OUT	Vertical Mirror Status. Pointers to a variable that stores the status of mirror function. It cannot be NULL.
nSubChannelNumber	IN	Sub Channel Number. The range of value is from 0 to 3.

Return Values:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Get the current status of mirror function.

```
AMESDK_GET_MIRROR( hDev, &bHorizontalMirror, &bVerticalMirror );
```

1.15 AMESDK_SET_MIRROR

This function is used to set/change mirror function. When mirror function is enabled, the horizontal or vertical video frame is inverted on display window. Same as deinterlacing, the function is used for display engine only.

```
BOOL AMESDK_SET_MIRROR(  DEVICE_HANDLE    hDevHandle,
                          BOOL              bHorizontalMirror,
                          BOOL              bVerticalMirror,
                          ULONG             nSubChannelNumber = 0
);
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be changed.
bHorizontalMirror	IN	Horizontal Mirror Status. Specifies the method of mirror function. The value FALSE is to disable mirror function.
bVerticalMirror	IN	Vertical Mirror Status. Specifies the method of mirror function. The value FALSE is to disable mirror function.
nSubChannelNumber	IN	Sub Channel Number. The range of value is from 0 to 3.

Return Values:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Enable the horizontal mirror function on display window.

```
BOOL AMESDK_SET_MIRROR( hDev, TRUE, FALSE );
```

EX2: Enable the horizontal and vertical mirror functions on display window.

```
BOOL AMESDK_SET_MIRROR( hDev, TRUE, TRUE );
```

1.16 AMESDK_GET_MODE

This function is used to get current analog tuner mode.

```
BOOL AMESDK_GET_MODE(  DEVICE_HANDLE  hDevHandle,
                        ULONG *         pMode
);
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose tuner mode is to be retrieved.
pMode	OUT	Analog Tuner Mode. Pointers to a variable that stores the analog tuner mode. It cannot be NULL.
		SUPPORT MODES: AMTUNER_MODE_DEFAULT (0x00000000) AMTUNER_MODE_TV (0x00000001) AMTUNER_MODE_FM_RADIO (0x00000002) AMTUNER_MODE_AM_RADIO (0x00000004)

Return Value:

BOOL

Supported Devices:

PCTV: PD652

Examples:

EX1: Get the device mode.

```
AMESDK_GET_MODE( hDev, &nMode );
```

1.17 AMESDK_SET_MODE

This function is used to set/change analog tuner mode.

```
BOOL AMESDK_SET_MODE(  DEVICE_HANDLE  hDevHandle,
                        ULONG           nMode
                        );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose analog tuner mode is to be set/changed.
nMode	IN	Analog Tuner Mode. Specifies the analog tuner mode.
		SUPPORT MODES:
		AMTUNER_MODE_DEFAULT (0x00000000)
		AMTUNER_MODE_TV (0x00000001)
		AMTUNER_MODE_FM_RADIO (0x00000002)
		AMTUNER_MODE_AM_RADIO (0x00000004)

Return Value:

BOOL

Supported Devices:

PCTV: PD652

Examples:

EX1: Set the device mode to analog TV.

```
AMESDK_SET_MODE( hDev, AMTUNER_MODE_TV );
```

EX2: Set the device mode to FM radio.

```
AMESDK_SET_MODE( hDev, AMTUNER_MODE_FM_RADIO );
```

EX3: Set the device mode to AM radio.

```
AMESDK_SET_MODE( hDev, AMTUNER_MODE_AM_RADIO );
```

1.18 AMESDK_GET_FREQUENCY

This function is used to get current analog tuner frequency.

```
BOOL AMESDK_GET_FREQUENCY(  DEVICE_HANDLE  hDevHandle,
                             ULONG *        nFrequency
                             );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose frequency is to be retrieved.
nFrequency	OUT	Analog Tuner Frequency. Pointer to a variable that stores the analog tuner frequency, in Hz. It cannot be NULL.

Return Values:

BOOL

Support Devices:

PCTV: PD652

Examples:

EX1: Get the current analog tuner frequency.

```
AMESDK_GET_FREQUENCY( hDev, &nFrequency );
```

1.19 AMESDK_SET_FREQUENCY

This function is used to set/change analog tuner frequency.

```

    BOOL AMESDK_SET_FREQUENCY(  DEVICE_HANDLE  hDevHandle ,
                                ULONG           nFrequency
    );

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose analog tuner frequency is to be set/changed.
nFrequency	IN	Analog Tuner Frequency. Specifies the analog tuner frequency, in Hz.

Return Values:

BOOL

Support Devices:

PCTV: PD652

Examples:

EX1: Set the analog tuner to different frequencies.

```
AMESDK_SET_FREQUENCY( hDev, 473143000 );
```

```
AMESDK_SET_FREQUENCY( hDev, 545000000 );
```

```
AMESDK_SET_FREQUENCY( hDev, 666000000 );
```

1.20 AMESDK_GET_LOCK

1.20 AMESDK_GET_SIGNAL_LOCK

This function is used to determine whether the signal is locked. The difference between both below functions is a return value from nLock. The 'nLock' parameter from AMESDK_GET_LOCK () can include more channel signal status than AMESDK_GET_SIGNAL_LOCK (). If you just need check one channel signal status, we recommend using AMESDK_GET_SIGNAL_LOCK () to get one channel signal status. It is a simpler and easier function.

```

BOOL AMESDK_GET_LOCK(  DEVICE_HANDLE  hDevHandle,
                        ULONG *        nLock
);

BOOL AMESDK_GET_SIGNAL_LOCK(  DEVICE_HANDLE  hDevHandle,
                              ULONG *        nLock
);

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose signal status is to be retrieved.
nLock	OUT	Signal Status. Pointer to a variable that stores the signal status (LOCK:1/UNLOCK:0). It cannot be NULL. The status of each channel is represented by one bit of nLock. Refer to extra programming guide for details.

Return Values:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Get the current signal status.

```
AMESDK_GET_LOCK( hDev, &nLock );           // 0 = UNLOCK / 1 = LOCK
```

EX2: Get the current signal status.

```
AMESDK_GET_SIGNAL_LOCK( hDev, &nLock );
```

Remarks:

For more AMESDK_GET_LOCK information, please reference product's Extra Programming Guide in SDK packet. For example, SC300 user should reference this document and "SC200 & SC300 Extra Programming Guide" document both at the same time.

1.21 AMESDK_GET_FPS

This function is used to determine current fps (frames per second).

```
BOOL AMESDK_GET_FPS( DEVICE_HANDLE    hDevHandle,
                     ULONG *          pFps,
                     ULONG             nSubChannelNumber = 0
                     );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose fps info is to be retrieved.
pFps	OUT	Frames per Second. Pointer to a variable that stores the fps per channel.
nSubChannelNumber	IN	Sub Channel Number. The range of value is from 0 to 3.

Return Values:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Get the current fps.

```
AMESDK_GET_FPS( hDev, &nFps );
```

1.22 AMESDK_GET_CAMERACONTROL_PROPERTY

This function is used to get current Microsoft's Camera Control properties.

```

BOOL AMESDK_GET_CAMERACONTROL_PROPERTY( DEVICE_HANDLE    hDevHandle,
                                         ULONG             nProperty,
                                         ULONG *           pValue,
                                         ULONG             nSubChannelNumber = 0
);
    
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be retrieved.
nProperty	IN	Property. Specifies the property that will be gotten from the device. As one of below: SUPPORT PROPERTIES: CameraControl_Pan (0x00000000) CameraControl_Tilt (0x00000001) CameraControl_Roll (0x00000002) CameraControl_Zoom (0x00000003) CameraControl_Exposure (0x00000004) CameraControl_Iris (0x00000005) CameraControl_Focus (0x00000006)
pValue	OUT	Property Value. Pointer to a variable that stores the specify property value. It cannot be NULL. The range of value is from 0 to 255.
nSubChannelNumber	IN	Sub Channel Number. The range of value is from 0 to 3.

Return Values:

BOOL

Support Devices:

None

Examples:

EX1: Get the current CameraControl Zoom property.

```
AMESDK_GET_CAMERACONTROL_PROPERTY( hDev, 0x00000003, &nZoom );
```

EX2: Get the current CameraControl Focus property.

```
AMESDK_GET_CAMERACONTROL_PROPERTY( hDev, 0x00000006, &nFocus );
```

1.23 AMESDK_SET_CAMERACONTROL_PROPERTY

This function is used to set/change Microsoft's CameraControl property.

```
BOOL AMESDK_SET_CAMERACONTROL_PROPERTY( DEVICE_HANDLE    hDevHandle,
                                         ULONG             nProperty,
                                         ULONG             nValue,
                                         ULONG             nSubChannelNumber = 0
                                         );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be changed.
nProperty	IN	Property. Specifies the property that is to set to the device. As one of below: SUPPORT PROPERTIES: CameraControl_Pan (0x00000000) CameraControl_Tilt (0x00000001) CameraControl_Roll (0x00000002) CameraControl_Zoom (0x00000003) CameraControl_Exposure (0x00000004) CameraControl_Iris (0x00000005) CameraControl_Focus (0x00000006)
nValue	IN	Property Value. Specifies the property value. The range of value is from 0 to 255.
nSubChannelNumber	IN	Sub Channel Number. The range of value is from 0 to 3.

Return Values:

BOOL

Support Devices:

None

Examples:

EX1: Set the CameraControl Zoom property.

```
AMESDK_SET_CAMERACONTROL_PROPERTY( hDev, 0x00000003, nZoom );
```

EX2: Set the CameraControl Focus property.

```
AMESDK_SET_CAMERACONTROL_PROPERTY( hDev, 0x00000006, nFocus );
```

1.24 AMESDK_GET_VIDEOPROCAMP_PROPERTY

This function is used to get current Microsoft's VideoProcAmp properties.

```

BOOL AMESDK_GET_VIDEOPROCAMP_PROPERTY( DEVICE_HANDLE hDevHandle,
                                         ULONG          nProperty,
                                         ULONG *        pValue,
                                         ULONG          nSubChannelNumber = 0
);

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be retrieved.
nProperty	IN	Property. Specifies the property that will be gotten from the device. As one of below: SUPPORT PROPERTIES: VideoProcAmp_Brightness (0x00000000) VideoProcAmp_Contrast (0x00000001) VideoProcAmp_Hue (0x00000002) VideoProcAmp_Saturation (0x00000003) VideoProcAmp_Sharpness (0x00000004) VideoProcAmp_Gamma (0x00000005) VideoProcAmp_ColorEnable (0x00000006) VideoProcAmp_WhiteBalance (0x00000007) VideoProcAmp_BacklightCompensation (0x00000008) VideoProcAmp_Gain (0x00000009)
pValue	OUT	Property Value. Pointer to a variable that stores the specify property value. It cannot be NULL. The range of value is from 0 to 255.
nSubChannelNumber	IN	Sub Channel Number. The range of value is from 0 to 3.

Return Values:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Get the current VideoProcAmp Brightness property.

```
AMESDK_GET_VIDEOPROCAMP_PROPERTY( hDev, 0x00000000, &nBrightness );
```

EX2: Get the current VideoProcAmp Hue property.

```
AMESDK_GET_VIDEOPROCAMP_PROPERTY( hDev, 0x00000002, &nHue );
```

1.25 AMESDK_SET_VIDEOPROCAMP_PROPERTY

This function is used to set/change Microsoft's VideoProcAmp property.

```

BOOL AMESDK_SET_VIDEOPROCAMP_PROPERTY( DEVICE_HANDLE hDevHandle,
                                         ULONG          nProperty,
                                         ULONG          nValue,
                                         ULONG          nSubChannelNumber = 0
);
    
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be changed.
nProperty	IN	Property. Specifies the property that will be set to the device. As one of below: SUPPORT PROPERTIES: VideoProcAmp_Brightness (0x00000000) VideoProcAmp_Contrast (0x00000001) VideoProcAmp_Hue (0x00000002) VideoProcAmp_Saturation (0x00000003) VideoProcAmp_Sharpness (0x00000004) VideoProcAmp_Gamma (0x00000005) VideoProcAmp_ColorEnable (0x00000006) VideoProcAmp_WhiteBalance (0x00000007) VideoProcAmp_BacklightCompensation (0x00000008) VideoProcAmp_Gain (0x00000009)
nValue	IN	Property Value. Specifies the property value. The range of value is from 0 to 255.
nSubChannelNumber	IN	Sub Channel Number. The range of value is from 0 to 3.

Return Values:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
 SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Set the VideoProcAmp Brightness property.

```
AMESDK_SET_VIDEOPROCAMP_PROPERTY( hDev, 0x00000000, nBrightness );
```

EX2: Set the VideoProcAmp Contrast property.

```
AMESDK_SET_VIDEOPROCAMP_PROPERTY( hDev, 0x00000001, nContrast );
```

EX3: Set the VideoProcAmp Hue property.

```
AMESDK_SET_VIDEOPROCAMP_PROPERTY( hDev, 0x00000002, nHue );
```

1.26 AMESDK_GET_CUSTOM_PROPERTY

This function is used to get some custom device properties.

```

BOOL AMESDK_GET_CUSTOM_PROPERTY( DEVICE_HANDLE    hDevHandle,
                                ULONG              nProperty,
                                ULONG *            pValue
                                );

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be retrieved.
nProperty	IN	Property. Specifies the property that will be gotten from the device. As one of below: SUPPORT PROPERTIES: CUSTOM_GET_DEVICE_SERIAL_NUMBER (000) CUSTOM_XET_PROCESSOR_TECHNOLOGY (001) CUSTOM_GET_REMOTE_CONTROL_CODE (004) CUSTOM_XET_ANALOG_VIDEO_INPUT (201) CUSTOM_GET_ANALOG_VIDEO_MACROVISION (202) CUSTOM_XET_ANALOG_VIDEO_AGC_LEVEL (204) CUSTOM_XET_ANALOG_VIDEO_SWITCH_SPEED (205) CUSTOM_XET_ANALOG_VIDEO_SWITCH_CHANNEL_TABLE (206) CUSTOM_XET_ANALOG_VIDEO_SWITCH_RESOLUTION_TABLE (207) CUSTOM_XET_ANALOG_VIDEO_SCALE_OUTPUT (209) CUSTOM_XET_ANALOG_VIDEO_FRAME_RATE (208) CUSTOM_XET_ANALOG_VIDEO_RESOLUTION (210) CUSTOM_XET_ANALOG_VIDEO_DEMISE_TYPE (212) CUSTOM_XET_ANALOG_VIDEO_QUEUE_BUFFER_SIZE (216) CUSTOM_XET_ANALOG_VIDEO_DENOISE_TYPE (217) CUSTOM_XET_ANALOG_VIDEO_COLOR_RANGE (231) CUSTOM_XET_ANALOG_AUDIO_STEREO_SYSTEM (250) CUSTOM_XET_ANALOG_AUDIO_VOLUME (251) CUSTOM_XET_ANALOG_PIN_TOPOLOGY (252) CUSTOM_XET_ANALOG_SAMPLE_FREQUENCY (253) CUSTOM_GET_DIGITAL_BANDWIDTH (300) CUSTOM_GET_DIGITAL_FREQUENCY (301) CUSTOM_GET_DIGITAL_SNR (302) CUSTOM_GET_DIGITAL_BER (303) CUSTOM_GET_DIGITAL_PER (304) CUSTOM_XET_PREVIEW_VIDEO_RESOLUTION (350) CUSTOM_XET_GPIO_DIRECTION (940) CUSTOM_XET_GPIO_DATA (941)
pValue	OUT	Property Value. Pointer to a variable that stores the specify property value. It cannot be NULL. The range of value is dependent on its property.

Return Values:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Get an unique device serial number. (0x00000000 ~ 0xFFFFFFFF)

```
AMESDK_GET_CUSTOM_PROPERTY( hDev, 0, &nSerialNumber );
```

EX2: Get the latest remote control code. (0x00 ~ 0xFF)

```
AMESDK_GET_CUSTOM_PROPERTY( hDev, 4, &IrCode );
```

Remarks:

For more custom property programming, please reference product's Extra Programming Guide in SDK packet. For example, SC300 user should reference this document and "SC200 & SC300 Extra Programming Guide" document both at the same time.

1.27 AMESDK_SET_CUSTOM_PROPERTY

This function is used to set/change some custom device properties.

```

BOOL AMESDK_SET_CUSTOM_PROPERTY( DEVICE_HANDLE    hDevHandle,
                                ULONG              nProperty,
                                ULONG              nValue
                                );

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be changed.
nProperty	IN	Property. Specifies the property that will be set to the device. As one of below: SUPPORT PROPERTIES: CUSTOM_XET_PROCESSOR_TECHNOLOGY (001) CUSTOM_XET_ANALOG_VIDEO_INPUT (201) CUSTOM_XET_ANALOG_VIDEO_AGC_LEVEL (204) CUSTOM_XET_ANALOG_VIDEO_SWITCH_SPEED (205) CUSTOM_XET_ANALOG_VIDEO_SWITCH_CHANNEL_TABLE (206) CUSTOM_XET_ANALOG_VIDEO_SWITCH_RESOLUTION_TABLE (207) CUSTOM_XET_ANALOG_VIDEO_SCALE_OUTPUT (209) CUSTOM_XET_ANALOG_VIDEO_FRAME_RATE (208) CUSTOM_XET_ANALOG_VIDEO_RESOLUTION (210) CUSTOM_XET_ANALOG_VIDEO_DEMISE_TYPE (212) CUSTOM_XET_ANALOG_VIDEO_QUEUE_BUFFER_SIZE (216) CUSTOM_XET_ANALOG_VIDEO_DENOISE_TYPE (217) CUSTOM_XET_ANALOG_VIDEO_COLOR_RANGE (231) CUSTOM_XET_ANALOG_AUDIO_STEREO_SYSTEM (250) CUSTOM_XET_ANALOG_AUDIO_VOLUME (251) CUSTOM_XET_ANALOG_PIN_TOPOLOGY (252) CUSTOM_XET_ANALOG_SAMPLE_FREQUENCY (253) CUSTOM_XET_PREVIEW_VIDEO_RESOLUTION (350) CUSTOM_SET_OSD_LINE (920) CUSTOM_SET_OSD_COLOR (929) CUSTOM_SET_SOFTWARE_WATCHDOG_RESET (930) CUSTOM_SET_SOFTWARE_WATCHDOG_DURATION (931) CUSTOM_XET_GPIO_DIRECTION (940) CUSTOM_XET_GPIO_DATA (941)
nValue	IN	Property Value. Specifies the property value. The range of value is dependent on its property.

Return Values:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Set the hardware video deinterlace type in driver.

```
AMESDK_SET_CUSTOM_PROPERTY( hDev, 200, nVideoDeinterlaceType );
```

EX2: Set the video input of device.

```
AMESDK_SET_CUSTOM_PROPERTY( hDev, 201, nVideoInput );
```

EX3: Set the AGC value. (0x000 ~ 0x1FF)

```
AMESDK_SET_CUSTOM_PROPERTY( hDev, 204, nAGC );
```

EX4: Enable and reset the software watchdog circuit. (0x00 ~ 0x01)

```
AMESDK_SET_CUSTOM_PROPERTY( hDev, 930, 0x01 );
```

EX5: Set the switching speed of algorithm. (0x00 ~ 0x01)

```
AMESDK_SET_CUSTOM_PROPERTY( hDev, 205, 0 /*SLOW*/ );
```

```
AMESDK_SET_CUSTOM_PROPERTY( hDev, 205, 1 /*FAST*/ );
```

Remark:

For more custom property programming, please reference product's Extra Prgoramming Guide in SDK packet. For example, SC300 user should reference this document and "SC200 & SC300 Extra Programming Guide" document both at the same time.

1.28 AMESDK_GET_CUSTOM_PROPERTY_EX

This function is used to get some custom device properties.

```
BOOL AMESDK_GET_CUSTOM_PROPERTY_EX(  DEVICE_HANDLE    hDevHandle,
                                     ULONG              nProperty,
                                     BYTE *             pValue,
                                     ULONG              nBytes
                                     );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be retrieved.
nProperty	IN	Property. Specifies the property that will be gotten from the device. As one of below: SUPPORT PROPERTIES: CUSTOM_XET_ANALOG_VIDEO_SWITCH_TABLE (206) (12 BYTES) CUSTOM_XET_DIGITAL_ENCRYPT_KEY (310) (16 BYTES)
pValue	OUT	Property Value. Pointer to a variable that stores the specify property value. It cannot be NULL. The range of value is dependent on its property.
nBytes	IN	Property Size. Specifies the size of property value.

Return Values:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
 SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Get current switch table. (12 BYTES)

```
AMESDK_GET_CUSTOM_PROPERTY_EX( hDev, 206, pSwitchTable, 12 );
```

Remark:

For more custom property programming, please reference product's Extra Prgoramming Guide in SDK packet. For example, SC300 user should reference this document and "SC200 & SC300 Extra Programming Guide" document both at the same time.

1.29 AMESDK_SET_CUSTOM_PROPERTY_EX

This function is used to set/change some custom device properties.

```

BOOL AMESDK_SET_CUSTOM_PROPERTY_EX(  DEVICE_HANDLE    hDevHandle,
                                     ULONG              nProperty,
                                     BYTE *              pValue,
                                     ULONG              nBytes
);

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be changed.
nProperty	IN	Property. Specifies the property that will be set to the device. As one of below: SUPPORT PROPERTIES: CUSTOM_XET_ANALOG_VIDEO_SWITCH_TABLE (206) (12 BYTES) CUSTOM_XET_DIGITAL_ENCRYPT_KEY (310) (16 BYTES) CUSTOM_SET_OSD_TEXT_STRING (921) (64 BYTES)
pValue	IN	Property Value. Specifies the property value. The range of value is dependent on its property.
nBytes	IN	Property Size. Specifies the size of property value.

Return Values:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Setup the switch table. (12 BYTES)

```
AMESDK_SET_CUSTOM_PROPERTY_EX( hDev, 206, pSwitchTable, 12 );
```

Remark:

For more custom property programming, please reference product's Extra Prgoramming Guide in SDK packet. For example, SC300 user should reference this document and "SC200 & SC300 Extra Programming Guide" document both at the same time.

1.30 AMESDK_SET_OSD_TEXT

The function allows user can create a text field objects used for on screen display of information. Besides, if you want to get a text field object auto calculated actual width and height value; you should set height and width parameter as 0.

```

BOOL AMESDK_SET_OSD_TEXT(    DEVICE_HANDLE    hDevHandle,
                             UINT                iOsdNum,
                             INT                 x,
                             INT                 y,
                             INT                 w,
                             INT                 h,
                             CHAR *              pszString,
                             CHAR *              pszFontFamilyName,
                             ULONG               nFontStyle,
                             ULONG               nFontSize,
                             DWORD               dwFontColor,
                             DWORD               dwBackgroundColor,
                             ULONG               nTransparent,
                             ULONG               nSubChannelNumber = 0
);

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device is used for on screen display of information.
iOsdNum	IN	Layer Number. Specify the i-th layer number of OSD output. The range of value is from 0 to 16.
x	IN	X-Coordinate. Specify the x-coordinate of the upper-left corner of OSD output.
y	IN	Y Coordinate. Specify the y-coordinate of the upper-left corner of OSD output.
w	IN	Horizontal Width. Specify the horizontal width of OSD output, if width is 0, AMESDK will auto calculate width.
h	IN	Vertical Height, Specify the vertical height of OSD output, if height is 0, AMESDK will auto calculate height.
pszString	IN	String Value. Specify to display the text of OSD output.
pszFontFamilyName	IN	Font Family Name. Specify to display the text of OSD output.

nFontStyle	IN	Font Style. Specify the font name used to display the text of OSD output. Available values: FONT STYLE REGULAR = 0x00000000 FONT STYLE BOLD = 0x00000001 FONT STYLE ITALIC = 0x00000002 FONT STYLE BOLDITALIC = 0x00000003 FONT STYLE UNDERLINE = 0x00000004 FONT STYLE STRIKEOUT = 0x00000008
nFontSize	IN	Font Size. Specify the font style used to display the text of OSD output.
dwFontColor	IN	Font Color. Specify the font size used to display the text of OSD output.
dwBackgroundColor	IN	Background Color. Specify the font color used to display the text of OSD output.
nTransparent	IN	Transparent. Specify the global transparent value for this OSD object.
nSubChannelNumber	IN	Sub Channel Number. The range of value is from 0 to 3.

Return Values:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
 SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Create a text field objects used for on screen display of information.

```
AMESDK_SET_OSD_TEXT( hDev, 0, 0, 0, 0, 0,
                    "CH01", "Arial", "Bold",
                    12, 0xFF000000, 0xFFFFFFFF, 128, 0 );
```

Remarks:

The parameter dwFontColor and dwBackgroundColor are at ARGB color space, so they are included of Alpha vlaue. Please note the MSB byte.

1.31 AMESDK_SET_OSD_PICTURE

The function allows user can create a static image objects used for on screen display of information. Besides, if you want to get a text field object auto calculated actual width and height value; you should set height and width parameter as 0.

```

BOOL AMESDK_SET_OSD_PICTURE( DEVICE_HANDLE    hDevHandle,
                               UINT            iOsdNum,
                               INT             x,
                               INT             y,
                               INT             w,
                               INT             h,
                               CHAR *          pszFilePathName,
                               ULONG           nTransparent,
                               ULONG           nSubChannelNumber = 0
                               );

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device is used for on screen display of information.
iOsdNum	IN	Layer Number. Specify the i-th layer number of OSD output. The range of value is from 0 to 16.
x	IN	X-Coordinate. Specify the x-coordinate of the upper-left corner of OSD output.
y	IN	Y Coordinate. Specify the y-coordinate of the upper-left corner of OSD output.
w	IN	Horizontal Width. Specify the horizontal width of OSD output, if width is 0, AMESDK will auto calculate width.
h	IN	Vertical Height, Specify the vertical height of OSD output, if height is 0, AMESDK will auto calculate height.
pszFilePathName	IN	Picture Path. Specify the file name to display image OSD output, support a file extension of "BMP" as 24 or 32-bit, "JPG" and "PNG".
nTransparent	IN	Transparent. Specify the global transparent value for this OSD object.
nSubChannelNumber	IN	Sub Channel Number. The range of value is from 0 to 3.

Return Values:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Create a static image objects used for on screen display of information.

```
AMESDK_SET_OSD_PICTURE( hDev, 0, 0, 0, 0, 0, "C:\\\\SAMPLE.PNG", 128, 0 );
```

1.32 AMESDK_SET_OSD_BUFFER

The function allows user can create a frame buffer objects used for on screen display of information. The function's purpose is used to point directly to a valid frame buffer whose entire pixel data, which is stored in available color space, and display it. Beside, you also can adjust the width and height parameters to scale the OSD output.

```

BOOL AMESDK_SET_OSD_BUFFER(  DEVICE_HANDLE    hDevHandle,
                              UINT              iOsdNum,
                              INT               x,
                              INT               y,
                              INT               w,
                              INT               h,
                              ULONG             nColorSpaceType,
                              BYTE *            pFrameBuffer,
                              ULONG             nFrameWidth,
                              ULONG             nFrameHeight,
                              ULONG             nFramePitch,
                              ULONG             nTransparent,
                              ULONG             nSubChannelNumber = 0
                              );
    
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device is used for on screen display of information.
iOsdNum	IN	Layer Number. Specify the i-th layer number of OSD output. The range of value is from 0 to 255.
x	IN	X-Coordinate. Specify the x-coordinate of the upper-left corner of OSD output.
y	IN	Y Coordinate. Specify the y-coordinate of the upper-left corner of OSD output.
w	IN	Horizontal Width. Specify the horizontal width of OSD output, if width is 0, AMESDK will auto calculate width.
h	IN	Vertical Height. Specify the vertical height of OSD output, if height is 0, AMESDK will auto calculate height.
nColorSpaceType	IN	Color Space Type. Specify encoder color space type. Available values: RGB24 = 0 // 0xBBGGRR BGR24 = 1 // 0xRRGGBB ARGB32 = 2 // 0xAABBGRR

		ABGR32 = 3 // 0xAARRGGBB YUY2 = MAKEFOURCC('Y', 'U', 'Y', '2') UYVY = MAKEFOURCC('U', 'Y', 'V', 'Y') YV12 = MAKEFOURCC('Y', 'V', '1', '2') I420 = MAKEFOURCC('I', '4', '2', '0')
pFrameBuffer	IN	Frame Buffer. Specify a raw data of frame contained in a buffer.
nFrameWidth	IN	Frame Width. Specify the horizontal width of frame contained in a buffer.
nFrameHeight	IN	Frame Height. Specify the vertical height of frame contained in a buffer
nFramePitch	IN	Frame Pitch. Specify the distance in bytes between the start of one scan line to the next. If it is 0, we will auto calculate it by width and color space format
nTransparent	IN	Transparent. Specify the global transparent value for this OSD object.
nSubChannelNumber	IN	Sub Channel Number. The range of value is from 0 to 3.

* The performance of BGR type is slower than RGB in our alpha blending algorithm.

Return Values:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Create a static image objects used for on screen display of information.

```
AMESDK_SET_OSD_BUFFER( hDev, 0, 0, 0, 1920, 1080,  
                        MAKEFOURCC('Y','U','Y','2'),  
                        pFrameBuffer,  
                        800, 600, 800 * 2, 128, 0 );
```


1.33 AMESDK_OTHER_REFRESH_DISPLAY_WINDOW

This function is used to refresh display window size to fit the attached window size. If the size of attached window, which is used as the HWND parameter in AMESDK_CREATE() function, is changed by your software, you should call this function right away.

```

BOOL AMESDK_OTHER_REFRESH_DISPLAY_WINDOW( DEVICE_HANDLE  hDevHandle,
                                           ULONG          nSubChannelNumber = 0
);
    
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose display window size is to be changed.
nSubChannelNumber	IN	Sub Channel Number. The range of value is from 0 to 3.

Return Values:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Refresh display video size after changing size of attached window.

```
hDev = AMESDK_CREATE( "TW6802 PCI", 0, 0, hWnd, NULL, NULL );
```

```
...
```

```
MoveWindow( hWnd, 0, 0, 1024, 768, NULL );
```

```
AMESDK_OTHER_REFRESH_DISPLAY_WINDOW( hDev );
```

1.34 AMESDK_OTHER_SNAPSHOT_BMP**1.34 AMESDK_OTHER_SNAPSHOT_BMP_EX**

This function is used to snapshot a BITMAP picture from the device to disk.

```
BOOL AMESDK_OTHER_SNAPSHOT_BMP(  DEVICE_HANDLE    hDevHandle,
                                CHAR *             pszFilePathName,
                                ULONG              nSubChannelNumber = 0
                                );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be retrieved.
pszFilePathName	IN	Property. Specifies the file path that is used to save the picture.
nSubChannelNumber	IN	Sub Channel Number. The range of value is from 0 to 3.

Beside last function, we also offer 2 low-level helper functions to allow customer to snapshot BMP from one specific buffer directly. This function can make user to write a BITMAP picture from using buffer data in pFrameBuffer to disk. In addition, user also can select to use cropping or not to write a BITMAP picture, the crop function is used to resize the buffer data to the selected area then scale into the actual BITMAP picture size.

```

    BOOL AMESDK_OTHER_SNAPSHOT_BMP_EX(    DEVICE_HANDLE    hDevHandle,
                                           CHAR *            pszFilePathName,
                                           BYTE *            pFrameBuffer,
                                           ULONG              nColorSpaceType,
                                           ULONG              nWidth,
                                           ULONG              nHeight,
                                           ULONG              nBitCount

```

```
);
```

```

    BOOL AMESDK_OTHER_SNAPSHOT_BMP_EX(    DEVICE_HANDLE    hDevHandle,
                                           CHAR *            pszFilePathName,
                                           BYTE *            pFrameBuffer,
                                           ULONG              nColorSpaceType,
                                           ULONG              nWidth,
                                           ULONG              nHeight,
                                           ULONG              nBitCount,
                                           UINT              nCropX,
                                           UINT              nCropY,
                                           UINT              nCropW,
                                           UINT              nCropH,
                                           UINT              nDstW,
                                           UINT              nDstH

```

```
);
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be retrieved.
pszFilePathName	IN	Property. Specifies the file path that is used to save the picture.
pFrameBuffer	IN	Pointer of video frame buffer.
nColorSpaceType	IN	Buffer ColorSpace. Specifies the colorspace, in MAKEFOURCC.
nWidth	IN	Buffer Width. Pointer to a variable that stores the width, in pixels. It cannot be NULL.
nHeight	IN	Buffer Height. Pointer to a variable that stores the height, in pixels. It cannot be NULL.
nBitCount	IN	Buffer BitCount. Pointer to a variable that stores the bit count. It cannot be NULL.
nCropX	IN	Crop-x Coordinate. The X-Coordinate of the crop on the buffer data.
nCropY	IN	Crop-y Coordinate. The Y-Coordinate of the crop on the buffer data.
nCropW	IN	Crop Width. the width of the crop on the buffer data.
nCropH	IN	Crop Height .the height of the crop on the buffer data.
nDstW	IN	Scale Width. The horizontal width of the picture size.
nDstH	IN	Scale Height. The vertical height of the picture size.

Return Values:

If the function succeeds, the return value is nonzero.

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Snapshot one BITMAP picture from device.

```
AMESDK_OTHER_SHAPSHOT_BMP( hDev, "C:\\\\SC\\\\200805201.BMP" );
```

EX2: Snapshot one BITMAP picture from using buffer data.

```
AMESDK_OTHER_SNAPSHOT_BMP_EX( hDev, "C:\\20070408.BMP",  
                                po, 0x32595559, 1920, 1080, 16 );
```

EX3: Snapshot one BITMAP picture from cropping and scaling buffer data.

```
AMESDK_OTHER_SNAPSHOT_BMP_EX( hDev, "C:\\20070408.BMP",  
                                po, 0x32595559, 1920, 1080, 16,  
                                0, 0, 640, 360, 1280, 720 );
```

1.35 AMESDK_OTHER_SNAPSHOT_JPG**1.35 AMESDK_OTHER_SNAPSHOT_JPG_EX**

This function is used to snapshot a JPEG picture from the device to disk.

```
BOOL AMESDK_OTHER_SNAPSHOT_JPG(  DEVICE_HANDLE    hDevHandle,
                                  CHAR *             pszFilePathName,
                                  ULONG               nQuality = 80,
                                  ULONG               nSubChannelNumber = 0
                                  );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be retrieved.
pszFilePathName	IN	Property. Specifies the file path that is used to save the picture.
nQuality	IN	Quality. Specifies the compressed quality. The range of value is from 0 to 255.
nSubChannelNumber	IN	Sub Channel Number. The range of value is from 0 to 3.

Beside last function, we also offer 3 low-level helper functions to allow customer to snapshot JPG picture from one specific buffer directly. This function can make user to write a JPG picture to disk or return the address of the JPG picture pointer from using buffer data in pFrameBuffer. In addition, user also can select to use cropping or not to write a JPEG picture, the crop function is used to resize the buffer data to the selected area then scale into the actual JPEG picture size.

```

BOOL AMESDK_OTHER_SNAPSHOT_JPG_EX(  DEVICE_HANDLE    hDevHandle,
                                     CHAR *            pszFilePathName,
                                     BYTE *            pFrameBuffer,
                                     ULONG              nColorSpaceType,
                                     ULONG              nWidth,
                                     ULONG              nHeight,
                                     ULONG              nBitCount,
                                     ULONG              nQuality = 80
);
    
```

```

BOOL AMESDK_OTHER_SNAPSHOT_JPG_EX(  DEVICE_HANDLE    hDevHandle,
                                     BYTE *            pStreamBuffer,
                                     ULONG *            pStreamBufferSize,
                                     BYTE *            pFrameBuffer,
                                     ULONG              nColorSpaceType,
                                     ULONG              nWidth,
                                     ULONG              nHeight,
                                     ULONG              nBitCount,
                                     ULONG              nQuality = 80
);
    
```

```

BOOL AMESDK_OTHER_SNAPSHOT_JPG_EX(  DEVICE_HANDLE  hDevHandle,
                                     CHAR *          pszFilePathName,
                                     BYTE *          pFrameBuffer,
                                     ULONG           nColorSpaceType,
                                     ULONG           nWidth,
                                     ULONG           nHeight,
                                     ULONG           nBitCount,
                                     UINT            nCropX,
                                     UINT            nCropY,
                                     UINT            nCropW,
                                     UINT            nCropH,
                                     UINT            nDstW,
                                     UINT            nDstH,
                                     ULONG           nQuality = 80
);

```


Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be retrieved.
pszFilePathName	IN	Property. Specifies the file path that is used to save the picture.
pStreamBuffer	OUT	Pointer to the address of the JPG picture.
pStreamBufferSize	IN/OUT	Pointer to a ULONG variable of the buffer size allocated by user and receives the actual number of bytes from the stream buffer.
pFrameBuffer	IN	Pointer of video frame buffer.
nColorSpaceType	IN	Buffer ColorSpace. Specifies the colorspace, in MAKEFOURCC.
nWidth	IN	Buffer Width. Pointer to a variable that stores the width, in pixels. It cannot be NULL.
nHeight	IN	Buffer Height. Pointer to a variable that stores the height, in pixels. It cannot be NULL.
nBitCount	IN	Buffer BitCount. Pointer to a variable that stores the bit count. It cannot be NULL.
nCropX	IN	Crop-x Coordinate. The X-Coordinate of the crop on the buffer data.
nCropY	IN	Crop-y Coordinate. The Y-Coordinate of the crop on the buffer data.
nCropW	IN	Crop Width. the width of the crop on the buffer data.
nCropH	IN	Crop Height. the height of the crop on the buffer data.
nDstW	IN	Scale Width. The horizontal width of the picture size.
nDstH	IN	Scale Height. The vertical height of the picture size.
nQuality	IN	Quality. Specifies the compressed quality. The range of value is from 0 to 100.

Return Values:

If the function succeeds, the return value is nonzero.

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Snapshot one JPEG picture from device in the best quality.

```
AMESDK_OTHER_SNAPSHOT_JPG( hDev, " C:\\\\SC\\\\200805201.JPG", 100 );
```

EX2: Snapshot one JPEG picture from using buffer data in the best quality.

```
AMESDK_OTHER_SNAPSHOT_JPG_EX(    hDev, "C:\\\\20070408.JPG",  
                                po, 0x32595559, 1920, 1080, 16, 100 );
```

EX3: Take the address of the JPG picture pointer in the best quality.

```
AMESDK_OTHER_SNAPSHOT_JPG_EX(    hDev, pStreamBuffer, &nStreamBufferSize,  
                                po, 0x32595559, 1920, 1080, 16, 100 );
```

EX4: Snapshot one JPEG picture from cropping and scaling buffer data in the best quality.

```
AMESDK_OTHER_SNAPSHOT_JPG_EX(    hDev, "C:\\\\20070408.JPG",  
                                po, 0x32595559, 1920, 1080, 16,  
                                0, 0, 640, 360, 1280, 720, 100 );
```

1.36 AMESDK_OTHER_ZOOM

This function is used to zoom in/out video.

```
BOOL AMESDK_OTHER_ZOOM( DEVICE_HANDLE    hDevHandle,
                        ULONG              nLeftPos = 0,
                        ULONG              nTopPos = 0,
                        double             dRate = 1.0,
                        ULONG              nSubChannelNumber = 0
                        );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be changed.
nLeftPos	IN	Left Position. Left position of zooming
nTopPos	IN	Top Position. Top position of zooming
dRate	IN	Zoom Rate. Zooming rate 1.0 ~ 10.0
nSubChannelNumber	IN	Sub Channel Number. The range of value is from 0 to 3.

Return Values:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Set zoom rate to 1.0.

```
AMESDK_OTHER_ZOOM( hDev, 0, 0, 1.0 );
```

1.37 SC100#N4 (CIF) Software Programming Guide

REFERENCE DEVICES: SC100#N4 (CIF)

```

DEVICE_HANDLE hDev[ 4 ]; // USING 4 DEVICES TO SUPPORT 4 CHANNELS

BOOL HwInitialize( ... )
{
    // CREATE DEVICES
    //
    hDev[ 0 ] = AMESDK_CREATE( "DC1150 USB", 0, 0, hWnd0, &bc0, NULL ); // CH00
    hDev[ 1 ] = AMESDK_CREATE( "DC1150 USB", 1, 0, hWnd1, &bc1, NULL ); // CH01
    hDev[ 2 ] = AMESDK_CREATE( "DC1150 USB", 2, 0, hWnd2, &bc2, NULL ); // CH02
    hDev[ 3 ] = AMESDK_CREATE( "DC1150 USB", 3, 0, hWnd3, &bc3, NULL ); // CH03

    if( (hDev[ 0 ] & 0x80000000) ||
        (hDev[ 1 ] & 0x80000000) ||
        (hDev[ 2 ] & 0x80000000) ||
        (hDev[ 3 ] & 0x80000000) ) { // CHECK ERROR FLAG

        HwUninitialize();

        return FALSE;
    }

    AMESDK_SET_STANDARD( hDev[ 0 ], KS_AnalogVideo_NTSC_M ); // SET STANDARD
    0 ... 3
    AMESDK_SET_STANDARD( hDev[ 3 ], KS_AnalogVideo_NTSC_M );

    AMESDK_SET_FORMAT( hDev[ 0 ], 256, 240, 16, 30.00 ); // SET FORMAT
    0 ... 3
    AMESDK_SET_FORMAT( hDev[ 3 ], 256, 240, 16, 30.00 );

    AMESDK_RUN( hDev[ 0 ] ); // RUN DEVICES
    0 ... 3
    AMESDK_RUN( hDev[ 3 ] );
}

```

```
BOOL HwUninitialize( ... )
{
    AMESDK_DESTROY( hDev[ 0 ] ); // STOP & CLOSE DEVICES
    AMESDK_DESTROY( hDev[ 1 ] );
    AMESDK_DESTROY( hDev[ 2 ] );
    AMESDK_DESTROY( hDev[ 3 ] );
}
```

1.38 SC100#N4 (VGA) Software Programming Guide**REFERENCE DEVICES: SC100#N4 (VGA)**

```
DEVICE_HANDLE hDev[ 2 ]; // USING 2 DEVICES TO SUPPORT 4 CHANNELS

BOOL HwInitialize( ... )
{
    // CREATE DEVICES
    //
    hDev[ 0 ] = AMESDK_CREATE( "DC1150 USB", 0, 0, hWnd00, &bcb00, NULL, // CH00
                               hWnd01, &bcb01, NULL, // CH01
    );
    hDev[ 1 ] = AMESDK_CREATE( "DC1150 USB", 2, 0, hWnd02, &bcb02, NULL, // CH02
                               hWnd03, &bcb03, NULL, // CH03
    );
    if( (hDev[ 0 ] & 0x80000000) ||
        (hDev[ 1 ] & 0x80000000) ) { // CHECK ERROR FLAG

        HwUninitialize();

        return FALSE;
    }

    AMESDK_SET_STANDARD( hDev[ 0 ], KS_AnalogVideo_NTSC_M ); // SET STANDARD
    AMESDK_SET_STANDARD( hDev[ 1 ], KS_AnalogVideo_NTSC_M );

    AMESDK_SET_FORMAT( hDev[ 0 ], 640, 480, 16, 30.00 ); // SET FORMAT
    AMESDK_SET_FORMAT( hDev[ 1 ], 640, 480, 16, 30.00 );

    AMESDK_RUN( hDev[ 0 ] ); // RUN DEVICES
    AMESDK_RUN( hDev[ 1 ] );
}
```

```
BOOL HwUninitialize( ... )
{
    AMESDK_DESTROY( hDev[ 0 ] ); // STOP & CLOSE DEVICES
    AMESDK_DESTROY( hDev[ 1 ] );
}
```

1.39 SC300#N8 Software Programming Guide

REFERENCE DEVICES: SC300#N4/#N8

```

DEVICE_HANDLE hDev[ 8 ]; // USING 8 DEVICES TO SUPPORT 8 CHANNELS

BOOL HwInitialize( ... )
{
    // CREATE DEVICES
    //
    hDev[ 0 ] = AMESDK_CREATE( "TW6802 PCI", 0, 0, hWnd0, &bcb0, NULL ); // CH00
    hDev[ 1 ] = AMESDK_CREATE( "TW6802 PCI", 1, 0, hWnd1, &bcb1, NULL ); // CH01
    hDev[ 2 ] = AMESDK_CREATE( "TW6802 PCI", 2, 0, hWnd2, &bcb2, NULL ); // CH02
    hDev[ 3 ] = AMESDK_CREATE( "TW6802 PCI", 3, 0, hWnd3, &bcb3, NULL ); // CH03
    hDev[ 4 ] = AMESDK_CREATE( "TW6802 PCI", 4, 0, hWnd4, &bcb4, NULL ); // CH04
    hDev[ 5 ] = AMESDK_CREATE( "TW6802 PCI", 5, 0, hWnd5, &bcb5, NULL ); // CH05
    hDev[ 6 ] = AMESDK_CREATE( "TW6802 PCI", 6, 0, hWnd6, &bcb6, NULL ); // CH06
    hDev[ 7 ] = AMESDK_CREATE( "TW6802 PCI", 7, 0, hWnd7, &bcb7, NULL ); // CH07

    if( (hDev[ 0 ] & 0x80000000) ||
        (hDev[ 1 ] & 0x80000000) ||
        (hDev[ 2 ] & 0x80000000) ||
        (hDev[ 3 ] & 0x80000000) ||
        (hDev[ 4 ] & 0x80000000) ||
        (hDev[ 5 ] & 0x80000000) ||
        (hDev[ 6 ] & 0x80000000) ||
        (hDev[ 7 ] & 0x80000000) ) { // CHECK ERROR FLAG

        HwUninitialize();

        return FALSE;
    }

    AMESDK_SET_STANDARD( hDev[ 0 ], KS_AnalogVideo_NTSC_M ); // SET STANDARD
    0 ... 7
    AMESDK_SET_STANDARD( hDev[ 7 ], KS_AnalogVideo_NTSC_M );

```



```
AMESDK_SET_FORMAT( hDev[ 0 ], 0x32595559, 720, 480, 16, 30.00 ); // SET FORMAT
0 ... 7
AMESDK_SET_FORMAT( hDev[ 7 ], 0x32595559, 720, 480, 16, 30.00 );

AMESDK_RUN( hDev[ 0 ] ); // RUN DEVICES
0 ... 7
AMESDK_RUN( hDev[ 7 ] );
}

BOOL HwUninitialize( ... )
{
    AMESDK_DESTROY( hDev[ 0 ] ); // STOP & CLOSE DEVICES
    AMESDK_DESTROY( hDev[ 1 ] );
    AMESDK_DESTROY( hDev[ 2 ] );
    AMESDK_DESTROY( hDev[ 3 ] );
    AMESDK_DESTROY( hDev[ 4 ] );
    AMESDK_DESTROY( hDev[ 5 ] );
    AMESDK_DESTROY( hDev[ 6 ] );
    AMESDK_DESTROY( hDev[ 7 ] );
}
```

1.40 SC300#Q16 Software Programming Guide

REFERENCE DEVICES: SC200#Q4, SC300#Q4/#Q8/#Q16/#Q32

```

DEVICE_HANDLE hDev[ 4 ]; // USING 4 DEVICES TO SUPPORT 16 CHANNELS

BOOL HwInitialize( ... )
{
    // CREATE DEVICES
    //
    hDev[ 0 ] = AMESDK_CREATE( "TW6802 PCI", 0, 0, hWnd00, &bcb00, NULL, // CH00
                                hWnd01, &bcb01, NULL, // CH01
                                hWnd02, &bcb02, NULL, // CH02
                                hWnd03, &bcb03, NULL, // CH03
                                );
    hDev[ 1 ] = AMESDK_CREATE( "TW6802 PCI", 1, 0, hWnd04, &bcb04, NULL, // CH04
                                hWnd05, &bcb05, NULL, // CH05
                                hWnd06, &bcb06, NULL, // CH06
                                hWnd07, &bcb07, NULL, // CH07
                                );
    hDev[ 2 ] = AMESDK_CREATE( "TW6802 PCI", 2, 0, hWnd08, &bcb08, NULL, // CH08
                                hWnd09, &bcb09, NULL, // CH09
                                hWnd10, &bcb10, NULL, // CH10
                                hWnd11, &bcb11, NULL, // CH11
                                );
    hDev[ 3 ] = AMESDK_CREATE( "TW6802 PCI", 3, 0, hWnd12, &bcb12, NULL, // CH12
                                hWnd13, &bcb13, NULL, // CH13
                                hWnd14, &bcb14, NULL, // CH14
                                hWnd15, &bcb15, NULL, // CH15
                                );
    if( (hDev[ 0 ] & 0x80000000) ||
        (hDev[ 1 ] & 0x80000000) ||
        (hDev[ 2 ] & 0x80000000) ||
        (hDev[ 3 ] & 0x80000000) ) { // CHECK ERROR FLAG

        HwUninitialize();
    }
}

```

```
        return FALSE;
    }

    AMESDK_SET_STANDARD( hDev[ 0 ], KS_AnalogVideo_NTSC_M ); // SET STANDARD
    0 ... 3
    AMESDK_SET_STANDARD( hDev[ 3 ], KS_AnalogVideo_NTSC_M );

    AMESDK_SET_FORMAT( hDev[ 0 ], 0x32595559, 720, 480, 16, 30.00 ); // SET FORMAT
    0 ... 3
    AMESDK_SET_FORMAT( hDev[ 3 ], 0x32595559, 720, 480, 16, 30.00 );

    AMESDK_RUN( hDev[ 0 ] ); // RUN DEVICES
    0 ... 3
    AMESDK_RUN( hDev[ 3 ] );
}

BOOL HwUninitialize( ... )
{
    AMESDK_DESTROY( hDev[ 0 ] ); // STOP & CLOSE DEVICES
    AMESDK_DESTROY( hDev[ 1 ] );
    AMESDK_DESTROY( hDev[ 2 ] );
    AMESDK_DESTROY( hDev[ 3 ] );
}
```

1.41 SC300#D8 Software Programming Guide

REFERENCE DEVICES: SC300#D4/#D8/#D16

```

DEVICE_HANDLE hDev[ 4 ]; // USING 4 DEVICES TO SUPPORT 8 CHANNELS

BOOL HwInitialize( ... )
{
    // CREATE DEVICES
    //
    hDev[ 0 ] = AMESDK_CREATE( "TW6802 PCI", 0, 0, hWnd0, &bcb0, NULL, // CH00
                               hWnd1, &bcb1, NULL, // CH01
    );
    hDev[ 1 ] = AMESDK_CREATE( "TW6802 PCI", 1, 0, hWnd2, &bcb2, NULL, // CH02
                               hWnd3, &bcb3, NULL, // CH03
    );
    hDev[ 2 ] = AMESDK_CREATE( "TW6802 PCI", 2, 0, hWnd4, &bcb4, NULL, // CH04
                               hWnd5, &bcb5, NULL, // CH05
    );
    hDev[ 3 ] = AMESDK_CREATE( "TW6802 PCI", 3, 0, hWnd6, &bcb6, NULL, // CH06
                               hWnd7, &bcb7, NULL, // CH07
    );
    if( (hDev[ 0 ] & 0x80000000) ||
        (hDev[ 1 ] & 0x80000000) ||
        (hDev[ 2 ] & 0x80000000) ||
        (hDev[ 3 ] & 0x80000000) ) { // CHECK ERROR FLAG

        HwUninitialize();

        return FALSE;
    }

    AMESDK_SET_STANDARD( hDev[ 0 ], KS_AnalogVideo_NTSC_M ); // SET STANDARD
    0 ... 3
    AMESDK_SET_STANDARD( hDev[ 3 ], KS_AnalogVideo_NTSC_M );

```

```
AMESDK_SET_FORMAT( hDev[ 0 ], 0x32595559, 720, 480, 16, 30.00 ); // SET FORMAT
0 ... 3
AMESDK_SET_FORMAT( hDev[ 3 ], 0x32595559, 720, 480, 16, 30.00 );

AMESDK_RUN( hDev[ 0 ] ); // RUN DEVICES
0 ... 3
AMESDK_RUN( hDev[ 3 ] );
}

BOOL HwUninitialize( ... )
{
    AMESDK_DESTROY( hDev[ 0 ] ); // STOP & CLOSE DEVICES
    AMESDK_DESTROY( hDev[ 1 ] );
    AMESDK_DESTROY( hDev[ 2 ] );
    AMESDK_DESTROY( hDev[ 3 ] );
}
```

1.42 SC280#N4 (LIVE) Software Programming Guide**REFERENCE DEVICES: SC280#N4**

```
DEVICE_HANDLE hDev[ 4 ]; // USING 4 DEVICES TO SUPPORT 4 CHANNELS

BOOL HwInitialize( ... )
{
    // CREATE DEVICES
    //
    hDev[ 0 ] = AMESDK_CREATE( "SL6010 PCI ", 0, 0, hWnd00, &bc00, NULL ); // CH00
    hDev[ 1 ] = AMESDK_CREATE( "SL6010 PCI ", 1, 0, hWnd01, &bc01, NULL ); // CH01
    hDev[ 2 ] = AMESDK_CREATE( "SL6010 PCI ", 2, 0, hWnd02, &bc02, NULL ); // CH02
    hDev[ 3 ] = AMESDK_CREATE( "SL6010 PCI ", 3, 0, hWnd03, &bc03, NULL ); // CH03

    if( (hDev[ 0 ] & 0x80000000) ||
        (hDev[ 1 ] & 0x80000000) ||
        (hDev[ 2 ] & 0x80000000) ||
        (hDev[ 3 ] & 0x80000000) ) { // CHECK ERROR FLAG

        HwUninitialize();

        return FALSE;
    }

    AMESDK_SET_STANDARD( hDev[ 0 ], KS_AnalogVideo_NTSC_M ); // SET STANDARD
    0 ... 3
    AMESDK_SET_STANDARD( hDev[ 3 ], KS_AnalogVideo_NTSC_M );

    AMESDK_SET_FORMAT( hDev[ 0 ], 0x59565955, 352, 240, 12, 30.00 ); // SET FORMAT
    0 ... 3
    AMESDK_SET_FORMAT( hDev[ 3 ], 0x59565955, 352, 240, 12, 30.00 );

    AMESDK_RUN( hDev[ 0 ] ); // RUN DEVICES
    0 ... 3
    AMESDK_RUN( hDev[ 3 ] );
}
```

```
BOOL HwUninitialize( ... )
{
    AMESDK_DESTROY( hDev[ 0 ] ); // STOP & CLOSE DEVICES
    AMESDK_DESTROY( hDev[ 1 ] );
    AMESDK_DESTROY( hDev[ 2 ] );
    AMESDK_DESTROY( hDev[ 3 ] );
}
```

1.43 SC380#N16 (LIVE) Software Programming Guide

REFERENCE DEVICES: SC380#N4/#N8/#N16

```

DEVICE_HANDLE hDev[ 16 ]; // USING 16 DEVICES TO SUPPORT 16 CHANNELS

BOOL HwInitialize( ... )
{
    // CREATE DEVICES
    //
    hDev[ 0 ] = AMESDK_CREATE( "SL6010 PCI", 0, 0, hWnd00, &bc00, NULL ); // CH00
    hDev[ 1 ] = AMESDK_CREATE( "SL6010 PCI", 1, 0, hWnd01, &bc01, NULL ); // CH01
    hDev[ 2 ] = AMESDK_CREATE( "SL6010 PCI", 2, 0, hWnd02, &bc02, NULL ); // CH02
    0 ... 15
    hDev[ 15 ] = AMESDK_CREATE( "SL6010 PCI", 15, 0, hWnd15, &bc15, NULL ); // CH15

    if( (hDev[ 0 ] & 0x80000000) ||
        (hDev[ 1 ] & 0x80000000) ||
        (hDev[ 2 ] & 0x80000000) ||
        0 ... 15
        (hDev[ 15 ] & 0x80000000) ) { // CHECK ERROR FLAG

        HwUninitialize();

        return FALSE;
    }

    AMESDK_SET_STANDARD( hDev[ 0 ], KS_AnalogVideo_NTSC_M ); // SET STANDARD
    0 ... 15
    AMESDK_SET_STANDARD( hDev[ 15 ], KS_AnalogVideo_NTSC_M );

    AMESDK_SET_FORMAT( hDev[ 0 ], 0x59565955, 352, 240, 12, 30.00 ); // SET FORMAT
    0 ... 15
    AMESDK_SET_FORMAT( hDev[ 15 ], 0x59565955, 352, 240, 12, 30.00 );

```



```
AMESDK_RUN( hDev[ 0 ] ); // RUN DEVICES
0 ... 15
AMESDK_RUN( hDev[ 15 ] );
}

BOOL HwUninitialize( ... )
{
    AMESDK_DESTROY( hDev[ 0 ] ); // STOP & CLOSE DEVICES
    AMESDK_DESTROY( hDev[ 1 ] );
    AMESDK_DESTROY( hDev[ 2 ] );
    0 ... 15
    AMESDK_DESTROY( hDev[ 15 ] );
}
```

2 Exported Functions

for

Analog Video Capture Device

(MPEG4/H.264)

SUPPORT DEVICE:

SC280, SC290, SC2A0, SC2B0,
SC380, SC390, SC3A0, SC3B0,
SC580, SC590,

Export Functions for Analog Video Capture Device	
2.00	AMESDK_CAPTURE_DEVICE_ENUMERATION (SEE CHAP.1)
2.01	AMESDK_CREATE
2.02	AMESDK_DESTROY (SEE CHAP.1)
2.03	AMESDK_RUN (SEE CHAP.1)
2.04	AMESDK_STOP (SEE CHAP.1)
2.05	AMESDK_AUTO_STANDARD_DETECTION (SEE CHAP.1)
2.06	AMESDK_GET_STANDARD (SEE CHAP.1)
2.07	AMESDK_SET_STANDARD (SEE CHAP.1)
2.08	AMESDK_GET_INPUT (SEE CHAP.1)
2.09	AMESDK_SET_INPUT (SEE CHAP.1)
2.10	AMESDK_GET_FORMAT
2.11	AMESDK_SET_FORMAT
2.12	AMESDK_GET_DEINTERLACE (SEE CHAP.1)
2.13	AMESDK_SET_DEINTERLACE (SEE CHAP.1)
2.14	AMESDK_GET_MIRROR (SEE CHAP.1)
2.15	AMESDK_SET_MIRROR (SEE CHAP.1)
2.16	AMESDK_GET_MODE (SEE CHAP.1)
2.17	AMESDK_SET_MODE (SEE CHAP.1)
2.18	AMESDK_GET_FREQUENCY (SEE CHAP.1)
2.19	AMESDK_SET_FREQUENCY (SEE CHAP.1)
2.20	AMESDK_GET_LOCK (SEE CHAP.1)
2.20	AMESDK_GET_SIGNAL_LOCK (SEE CHAP.1)
2.21	AMESDK_GET_FPS (SEE CHAP.1)
2.22	AMESDK_GET_CAMERACONTROL_PROPERTY (SEE CHAP.1)
2.23	AMESDK_SET_CAMERACONTROL_PROPERTY (SEE CHAP.1)
2.24	AMESDK_GET_VIDEOPROCAMP_PROPERTY (SEE CHAP.1)
2.25	AMESDK_SET_VIDEOPROCAMP_PROPERTY (SEE CHAP.1)
2.26	AMESDK_GET_VIDEOCOMPRESSION_PROPERTY
2.27	AMESDK_SET_VIDEOCOMPRESSION_PROPERTY
2.28	AMESDK_GET_CUSTOM_PROPERTY (SEE CHAP.1)
2.29	AMESDK_SET_CUSTOM_PROPERTY (SEE CHAP.1)
2.30	AMESDK_GET_CUSTOM_PROPERTY_EX (SEE CHAP.1)
2.31	AMESDK_SET_CUSTOM_PROPERTY_EX (SEE CHAP.1)
2.32	AMESDK_OTHER_REFRESH_DISPLAY_WINDOW (SEE CHAP.1)
2.33	AMESDK_OTHER_SNAPSHOT_BMP (SEE CHAP.1)
2.34	AMESDK_OTHER_SNAPSHOT_JPG (SEE CHAP.1)
2.35	AMESDK_OTHER_ZOOM (SEE CHAP.1)

Export Functions for Analog Video Capture Device	
2.36	SC380#N16 (MPEG4) Software Programming Guide
2.37	SC380#N16 (LIVE & MPEG4) Software Programming Guide
2.38	SC390#N16 (H.264) Software Programming Guide
2.39	SC390#N16 (LIVE & H.264) Software Programming Guide

2.01 AMESDK_CREATE

The function helps you to open an analog video hardware-compressed capture device and also allows you to attach a preview window or register a callback function on it. The callback function will offer you to obtain and to access the whole stream buffer.

```

DEVICE_HANDLE AMESDK_CREATE( LPTSTR                pszDevName,
                             UINT                 iDevNum,
                             ULONG                eDevType,
                             HWND                 hDisplayWindow,
                             PF_BUFFER_CALLBACK   pBufferCB,
                             PVOID                pUserData,

);

typedef ULONG (DEVICE_HANDLE);

typedef BOOL (* PF_BUFFER_CALLBACK) ( double    dSampleTime,
                                     BYTE *     pBuffer,
                                     ULONG       nBufferLen,
                                     BOOL        bIsKeyFrame,
                                     PVOID       pUserData

);

DEVICE_HANDLE AMESDK_CREATE_EX( LPTSTR                pszDevName,
                                UINT                 iDevNum,
                                ULONG                eDevType,
                                HWND                 hDisplayWindow,
                                PF_BUFFER_CALLBACK   pBufferCB,
                                BOOL                  bIsAllowOverlayRenderer,
                                BOOL                  bIsEnableEnhancedVideoRenderer,
                                BOOL                  bIsMaintainAspectRatio,
                                PVOID                pUserData,

);

```

Parameters:

Parameter	IN/OUT	Description
pszDevName	IN	Device Name. To give a device name that is used to create specific device. Currently, we support these device names below: "AH8400 PCI, Analog Encoder", "FH8735 PCI, Analog Encoder", "SL6010 PCI, Analog Encoder", "TW5864 PCI, Analog Encoder". "TW2809 PCI, Analog Encoder".
iDevNum	IN	Device Number. If there are more than one devices with the same device name on platform. You can use this parameter to recognize it.
eDevType	IN	Device Type. Always 0 for analog capture device.
hDisplayWindow	IN	Display Window. Pointer to one WHND window handle. If it isn't NULL, function will automatically display video on this window. If it is NULL, function will not display video on it.
pBufferCB	IN	Callback Function. Pointer to one callback function. If it is NULL, function will not return bit stream buffer to software caller. If it isn't NULL, caller will obtain bit stream buffer from callback when each frame is arrived.
bIsAllowOverlayRenderer	IN	Overlay Renderer. It is one flag to enable the overlay property on DirectShow's Video Renderer Filter. When this function is enabled, the Thum Draw function will be disabled.
bIsEnableEnhancedVideoRenderer	IN	Enhanced Video Renderer. Developer can use it to open new DirectShow's EVR renderer on Win7 platform. Default is VRM renderer in our SDK.
bIsMaintainAspectRatio	IN	Aspect Ratio. The property allows you to keep input's aspect ratio on attached window during displaying. The boundary will be fill by black image.
pUserData	IN	User Data. Pointer to one data pointer. The parameters will be passed through callback.

Return Value:

If AMESDK_CREATE is successful, it will return one DEVICE_HANDLE. If it is fail, it will return error code. As one of below:

0x80000000 - Parameter, pszDevName, is wrong.

0x80000001 - Unknown error.

0x80000002 - Device queue is full already.

Supported Devices:

SECU: SC280, SC380, SC290, SC2A0, SC2B0, SC390, SC3A0, SC3B0, SC580, SC590

Examples:

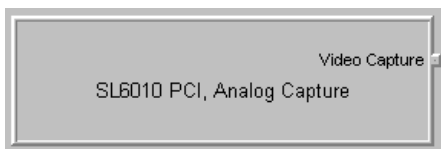
```
HWND hWnd = CreateWindowEx( ... );
```

```
BOOL bcb(    double dSampleTime, BYTE * pBuffer, ULONG nBufferLen, BOOL bIsKeyFrame ,
            PVOID pUserData )
{
    ...

    return TRUE;
}
```

EX1: Don't need to display video and to get bit stream buffer from callback function.

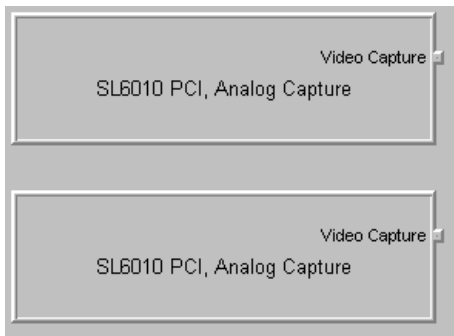
```
hDev = AMESDK_CREATE( "SL6010 PCI, Analog Encoder", 0, 0, NULL, NULL, NULL );
```



EX2: If you have two devices on one PC, you can use parameter #2 to open 2nd device.

```
hDev0 = AMESDK_CREATE( "SL6010 PCI, Analog Encoder", 0, 0, NULL, NULL, NULL );
```

```
hDev1 = AMESDK_CREATE( "SL6010 PCI, Analog Encoder", 1, 0, NULL, NULL, NULL );
```



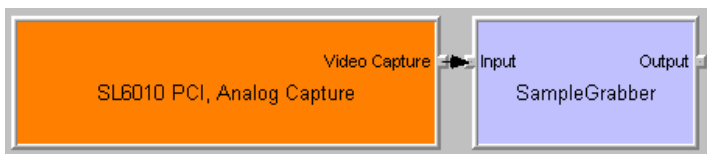
EX3: To display video (real-time playback) on your attached window by SDK engine.

```
hDev = AMESDK_CREATE( "SL6010 PCI, Analog Encoder", 0, 0, hWnd, NULL, NULL );
```



EX4: To register the callback function on the device.

```
hDev = AMESDK_CREATE( "SL6010 PCI, Analog Encoder", 0, 0, NULL, &bcb, this );
```



EX5: Both.

```
hDev = AMESDK_CREATE( "SL6010 PCI, Analog Encoder", 0, 0, hWnd, &bcb, this );
```



Remarks:

Please reference sections 2.36 ~ 2.39 to obtain more sample tutorials.

2.02 AMESDK_GET_FORMAT

This function is used to get current video format.

```
BOOL AMESDK_GET_FORMAT( DEVICE_HANDLE    hDevHandle,
                        ULONG *          pColorSpace,
                        ULONG *          pWidth,
                        ULONG *          pHeight,
                        ULONG *          pBitCount,
                        DOUBLE *         pFrameRate
                        );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose format is to be retrieved.
pColorSpace	OUT	Video Color Space. Pointer to a variable that stores the color space, in MAKEFOURCC. It cannot be NULL.
pWidth	OUT	Video Width. Pointer to a variable that stores the width, in pixels. It cannot be NULL.
pHeight	OUT	Video Height. Pointer to a variable that stores the height, in pixels. It cannot be NULL.
pBitCount	OUT	Video BitCount. Pointer to a variable that stores the bit count. It cannot be NULL.
pFrameRate	OUT	Video FrameRate. Pointer to a variable that stores the frame rate, in fps. It cannot be NULL.

Return Value:

BOOL

Support Devices:

SECU: SC280, SC380, SC290, SC2A0, SC2B0, SC390, SC3A0, SC3B0, SC580, SC590

Examples:

EX1: Get the current video format (colorspace, width, height, bit count, and frame rate).

```
AMESDK_GET_FORMAT( hDev, &nColorSpace, &nWidth, &nHeight, &nBitCount, &dFrameRate );
```

Remarks:

FORMAT (NTSC)	SC280 SC380 (XVID)	SC290 SC390 (H264)	SC2A0 SC3A0 (H264 / X264)	SC2B0 SC3B0 (H264 / X264)
720×480×24×30.00		●	● / x	● / x
704×480×24×30.00	●	●	● / x	● / x
640×480×24×30.00		●		
720×240×24×30.00		●	● / x	● / x
704×240×24×30.00	●	●	● / x	● / x
640×240×24×30.00		●		
360×240×24×30.00				
352×240×24×30.00	●	●	● / ●	● / ●
320×240×24×30.00		●		
176×120×24×30.00			● / ●	● / ●

FORMAT (PAL)	SC280 SC380 (XVID)	SC290 SC390 (H264)	SC2A0 SC3A0 (H264 / X264)	SC2B0 SC3B0 (H264 / X264)
720×576×24×25.00		●	● / x	● / x
704×576×24×25.00	●	●	● / x	● / x
640×576×24×25.00		●		
720×288×24×25.00		●	● / x	● / x
704×288×24×25.00	●	●	● / x	● / x
640×288×24×25.00		●		
360×288×24×25.00				
352×288×24×25.00	●	●	● / ●	● / ●
320×288×24×25.00		●		
176×144×24×25.00			● / ●	● / ●

FORMAT	SC580 (H264 / x264)	SC590 (H264 / x264)
720×480i×60.00	●	●
720×576i×50.00	●	●
720×480p×60.00	●	●
720×576p×50.00	●	●
1280×720p×60.00	●	●
1280×720p×50.00	●	●
1280×720p×30.00	●	●
1280×720p×25.00	●	●
1280×720p×24.00	●	●
1920×1080i×60.00	●	●
1920×1080i×50.00	●	●
1920×1080p×60.00	●	●
1920×1080p×50.00	●	●
1920×1080p×30.00	●	●
1920×1080p×25.00	●	●
1920×1080p×24.00	●	●
640×384p×60.00	●	●
640×400P×60.00	●	●
640×480p×60.00	●	●
800×600p×60.00	●	●
1024×768p×60.00	●	●
1280×768p×60.00	●	●
1280×800p×60.00	●	●
1280×960p×60.00	●	●
1280×1024p×60.00	●	●
1360×768p×60.00	●	●
1440×900p×60.00	●	●
720×240p×60.00	●	●
720×288p×50.00	●	●

Remarks:

MAKEFOURCC('H, '2, '6, '4) is used by main stream output and MAKEFOURCC('X, '2, '6, '4) is used by sub stream output.

You should set or update video format before AMESDK_RUN() call.

2.03 AMESDK_SET_FORMAT

This function is used to set/change video format.

```
BOOL AMESDK_SET_FORMAT( DEVICE_HANDLE    hDevHandle,
                        ULONG             nColorSpace,
                        ULONG             nWidth,
                        ULONG             nHeight,
                        ULONG             nBitCount,
                        DOUBLE            dFrameRate
                        );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose format is to be set/changed.
nColorSpace	IN	Video ColorSpace. Specifies the colorspace, in MAKEFOURCC.
		SUPPORT FORMAT: MAKEFOURCC('X', 'V', 'I', 'D') MAKEFOURCC('H', '2', '6', '4') MAKEFOURCC('X', '2', '6', '4')
nWidth	IN	Video Width. Specifies the width, in pixels.
nHeight	IN	Video Height. Specifies the height, in pixels.
nBitCount	IN	Video BitCount. Specifies the bit count.
dFrameRate	IN	Video FrameRate. Specifies the frame rate, in fps.

Return Value:

BOOL

Support Devices:

SECU: SC280, SC380, SC290, SC2A0, SC2B0, SC390, SC3A0, SC3B0, SC580, SC590

Examples:

EX1: Set the video format, XVID × 704× 480 × 24 bits × 30.00 fps.

```
AMESDK_SET_FORMAT( hDev, MAKEFOURCC('X', 'V', 'I', 'D'), 704, 480, 24, 30.00 );
```

EX2: Set the video format, H264 × 352× 288 × 24 bits × 25.00 fps.

```
AMESDK_SET_FORMAT( hDev, MAKEFOURCC('H', '2', '6', '4'), 352, 288, 24, 25.00 );
```

EX2: Set the video format, X264 × 352× 288 × 24 bits × 25.00 fps.

```
AMESDK_SET_FORMAT( hDev, MAKEFOURCC('X', '2', '6', '4'), 352, 288, 24, 25.00 );
```

Remarks:

FORMAT (NTSC)	SC280 SC380 (XVID)	SC290 SC390 (H264)	SC2A0 SC3A0 (H264 / X264)	SC2B0 SC3B0 (H264 / X264)
720×480×24×30.00		●	● / x	● / x
704×480×24×30.00	●	●	● / x	● / x
640×480×24×30.00		●		
720×240×24×30.00		●	● / x	● / x
704×240×24×30.00	●	●	● / x	● / x
640×240×24×30.00		●		
360×240×24×30.00				
352×240×24×30.00	●	●	● / ●	● / ●
320×240×24×30.00		●		
176×120×24×30.00			● / ●	● / ●

FORMAT (PAL)	SC280 SC380 (XVID)	SC290 SC390 (H264)	SC2A0 SC3A0 (H264 / X264)	SC2B0 SC3B0 (H264 / X264)
720×576×24×25.00		●	● / x	● / x
704×576×24×25.00	●	●	● / x	● / x
640×576×24×25.00		●		
720×288×24×25.00		●	● / x	● / x
704×288×24×25.00	●	●	● / x	● / x
640×288×24×25.00		●		
360×288×24×25.00				
352×288×24×25.00	●	●	● / ●	● / ●
320×288×24×25.00		●		
176×144×24×25.00			● / ●	● / ●

FORMAT	SC580 (H264 / x264)	SC590 (H264 / x264)
720×480i×60.00	●	●
720×576i×50.00	●	●
720×480p×60.00	●	●
720×576p×50.00	●	●
1280×720p×60.00	●	●
1280×720p×50.00	●	●
1280×720p×30.00	●	●
1280×720p×25.00	●	●
1280×720p×24.00	●	●
1920×1080i×60.00	●	●
1920×1080i×50.00	●	●
1920×1080p×60.00	●	●
1920×1080p×50.00	●	●
1920×1080p×30.00	●	●
1920×1080p×25.00	●	●
1920×1080p×24.00	●	●
640×384p×60.00	●	●
640×400P×60.00	●	●
640×480p×60.00	●	●
800×600p×60.00	●	●
1024×768p×60.00	●	●
1280×768p×60.00	●	●
1280×800p×60.00	●	●
1280×960p×60.00	●	●
1280×1024p×60.00	●	●
1360×768p×60.00	●	●
1440×900p×60.00	●	●
720×240p×60.00	●	●
720×288p×50.00	●	●

Remarks:

MAKEFOURCC('H, '2, '6, '4) is used by main stream output and MAKEFOURCC('X, '2, '6, '4) is used by sub stream output.

You should set or update video format before AMESDK_RUN() call.

2.04 AMESDK_GET_VIDECOMPRESSION_PROPERTY

This function is used to get some custom device properties.

```

BOOL AMESDK_GET_VIDECOMPRESSION_PROPERTY(    DEVICE_HANDLE    hDevHandle,
                                              ULONG          nProperty,
                                              ULONG *        pValue

);

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be retrieved.
nProperty	IN	Property. Specifies the property that will be gotten from the device. As one of below: SUPPORT PROPERTIES: VideoCompression_KeyFrameRate (0x00000000) VideoCompression_Quality (0x00000001) VideoCompression_BitRateMode (0x00000003) VideoCompression_BitRate (0x00000004) VideoCompression_QPStep (0x00000005) VideoCompression_PeakBitRate (0x00000006) VideoCompression_TroughQuality (0x00000007) VideoCompression_PostResolution (0x00000008) VideoCompression_PostSkipFrameRate (0x00000009) VideoCompression_PostAvgFrameRate (0x0000000D) VideoCompression_BFrames (0x0000000A) VideoCompression_Profile (0x0000000B) VideoCompression_AspectRatio (0x0000000C)
pValue	OUT	Property Value. Pointer to a variable that stores the specified property value. It cannot be NULL. The range of value is dependent on its property.

Return Values:

BOOL

Support Devices:

SECU: SC280, SC380, SC290, SC2A0, SC2B0, SC390, SC3A0, SC3B0, SC580, SC590

Examples:

EX1: Get the current VideoCompression Quality property.

```
AMESDK_GET_VIDECOMPRESSION_PROPERTY( hDev, 0x00000001, &nQuality );
```

Remarks:

The KeyFrameRate is GOP. It is renamed by Microsoft's compression interface.

For the QPStep property, it is used in CBR and HBR mode by SC290/SC390. In CBR mode, generally, you need just adjust the target bitrate, then the inner encoder will check current bitrate to meet your target value. When the QPStep is 1, the encoder will do the fps-checking during every frame. Here, the output bitrate of encoder will be very close to your target bitrate. When the QPStep is set to 30, the encoder will do the fps-checking per 30 frames. It will offer bigger tolerance on bitrate controlling, but it will cause the output bitrate is not accurate.

For the PeakBitRate and TroughQuality, they are used only in HBR mode by SC290/SC390. In HBR mode, if the target bitrates over one GOP period is above PeakBitRate, encoding mode changes from VBR to CBR. If current quality is lower than TroughQuality over a GOP period encoding mode changes from CBR to VBR.

The BFrames property is used by H.264 MainProfile solution only, such as SC2A0, SC3A0 and SC580. The range is usually from 0 to 2.

Here, there is one table to describe the allowed parameters in different BitRateMode as below:

BitRateMode	Property	Support Device
VBR (0x00000000)	KeyFrameRate, Quality,	SC280, SC380, SC290, SC390, SC2B0, SC3B0,
VBR (0x00000000)	KeyFrameRate, Quality, BFrames,	SC2A0, SC3A0, SC580,
CBR (0x00000001)	KeyFrameRate, BitRate,	SC2B0, SC3B0,
CBR (0x00000001)	KeyFrameRate, BitRate,	SC290, SC390,

	QPStep,	
CBR (0x00000001)	KeyFrameRate, BitRate, BFrames,	SC2A0, SC3A0, SC580,
HBR (0x00000002)	KeyFrameRate, Quality, BitRate,	SC2B0, SC3B0,
HBR (0x00000002)	KeyFrameRate, Quality, BitRate, TroughQuality, PeakBitRate, QPStep,	SC290, SC390,
HBR (0x00000002)	KeyFrameRate, Quality, BitRate, BFrames,	SC2A0, SC3A0, SC580,

The PostResolution, PostSkipFrameRate, and PostAvgFramRate are dynamically used to adjust current stream format, which is set by AMESDK_SET_FORMAT function at initialize stage. There are two FrameRate control methods can be used by your application. The range of PostSkipFrameRate property is from 0 to 255. It is identical to the skip number of frame (or field). The value 1 will generate the recording frame rate, 15.000fps, in NTSC. The range of PostAvgFramRate property is from 0 to 60. To enable it, our driver will follow the setting value to output one average fps. For example, 9 means 9.00fps.

For example, the PostResolution property for SC390 is described by the table as below:

Value	Resolution
0x002D01E0 / 0x002D0240	720X480 / 720X576
0x002C01E0 / 0x002C0240	704X480 / 704X576
0x002801E0 / 0x00280240	640X480 / 640X576
0x002D00F0 / 0x002D0120	720X240 / 720X288
0x002C00F0 / 0x002C0120	704X240 / 704X288
0x002800F0 / 0x00280120	640X240 / 640X288
0x001680F0 / 0x00168120	360X240 / 360X288
0x001600F0 / 0x00160120	352X240 / 352X288
0x001400F0 / 0x00140120	320X240 / 320X288

Moreover, for HBR user (SC290/SC390 user), please reference to this table as default setting:

BitRate	PeakBitRate	Quality	TroughQuality	QPStep
4,096 KB	6,144 KB	6000	6500	30
2,048 KB	3,072 KB	5000	5500	20
1,536 KB	2,048 KB	4000	4500	10
1,024 KB	1,536 KB	3000	3500	1

2.05 AMESDK_SET_VIDEOCOMPRESSION_PROPERTY

This function is used to set some custom device properties.

```

BOOL AMESDK_SET_VIDEOCOMPRESSION_PROPERTY(    DEVICE_HANDLE    hDevHandle,
                                              ULONG           nProperty,
                                              ULONG           nValue

);

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be set.
nProperty	IN	Property. Specifies the property that will be set to the device. As one of below: SUPPORT PROPERTIES: VideoCompression_KeyFrameRate (0x00000000) VideoCompression_Quality (0x00000001) VideoCompression_OverrideKeyFrame (0x00000002) VideoCompression_BitRateMode (0x00000003) VideoCompression_BitRate (0x00000004) VideoCompression_QPStep (0x00000005) VideoCompression_PeakBitRate (0x00000006) VideoCompression_TroughQuality (0x00000007) VideoCompression_PostResolution (0x00000008) VideoCompression_PostSkipFrameRate (0x00000009) VideoCompression_PostAvgFrameRate (0x0000000D) VideoCompression_BFrames (0x0000000A) VideoCompression_Profile (0x0000000B) VideoCompression_AspectRatio (0x0000000C)
nValue	IN	Property Value. Pointer to a variable that stores the specified property value. It cannot be NULL. The range of value is dependent on its property.

Return Values:

BOOL

Support Devices:

SECU: SC280, SC380, SC290, SC2A0, SC2B0, SC390, SC3A0, SC3B0, SC580, SC590

Examples:

EX1: Set the current VideoCompression Quality property.

```
AMESDK_SET_VIDEOCOMPRESSION_PROPERTY( hDev, 0x00000001, nQuality );
```

Remarks:

The OverrideKeyFrame is used to query one key frame as next incoming frame right away. For example, developer can call it at the file changing stage.

2.06 SC380#N16 (MPEG4) Software Programming Guide

REFERENCE DEVICES: SC280#N4, SC380#N4/#N8/#N16

```

DEVICE_HANDLE hDev[ 16 ]; // USING 16 DEVICES TO SUPPORT 16 CHANNELS

BOOL HwInitialize( ... )
{
    // CREATE DEVICES
    //
    hDev[ 0 ] = AMESDK_CREATE( "SL6010 PCI, Analog Encoder", 0, 0, hWnd00, &bcb00, NULL ); // CH00
    hDev[ 1 ] = AMESDK_CREATE( "SL6010 PCI, Analog Encoder", 1, 0, hWnd01, &bcb01, NULL ); // CH01
    hDev[ 2 ] = AMESDK_CREATE( "SL6010 PCI, Analog Encoder", 2, 0, hWnd02, &bcb02, NULL ); // CH02
    0 ... 15
    hDev[ 15 ] = AMESDK_CREATE( "SL6010 PCI, Analog Encoder", 15, 0, hWnd15, &bcb15, NULL ); // CH15

    if( (hDev[ 0 ] & 0x80000000) ||
        (hDev[ 1 ] & 0x80000000) ||
        (hDev[ 2 ] & 0x80000000) ||
        0 ... 15
        (hDev[ 15 ] & 0x80000000) ) { // CHECK ERROR FLAG

        HwUninitialize();

        return FALSE;
    }

    AMESDK_SET_STANDARD( hDev[ 0 ], KS_AnalogVideo_NTSC_M ); // SET STANDARD
    0 ... 15
    AMESDK_SET_STANDARD( hDev[ 15 ], KS_AnalogVideo_NTSC_M );

    AMESDK_SET_FORMAT( hDev[ 0 ], MAKEFOURCC('X', 'V', 'I', 'D'), 704, 480, 24, 30.00 );
    0 ... 15
    AMESDK_SET_FORMAT( hDev[ 15 ], MAKEFOURCC('X', 'V', 'I', 'D'), 704, 480, 24, 30.00 );

```

```
AMESDK_RUN( hDev[ 0 ] ); // RUN DEVICES
0 ... 15
AMESDK_RUN( hDev[ 15 ] );
}

BOOL HwUninitialize( ... )
{
    AMESDK_DESTROY( hDev[ 0 ] ); // STOP & CLOSE DEVICES
    AMESDK_DESTROY( hDev[ 1 ] );
    AMESDK_DESTROY( hDev[ 2 ] );
    0 ... 15
    AMESDK_DESTROY( hDev[ 15 ] );
}
```

2.07 SC380#N16 (LIVE + MPEG4) Software Programming Guide

REFERENCE DEVICES: SC280#N4, SC380#N4/#N8/#N16

```

DEVICE_HANDLE hDev_Live[ 16 ]; // USING 16 DEVICES TO SUPPORT 16 CHANNELS (UYVY)

DEVICE_HANDLE hDev[ 16 ]; // USING 16 DEVICES TO SUPPORT 16 CHANNELS (MPEG4)

BOOL HwInitialize( ... )
{
    // CREATE DEVICES
    //
    // LIVE DISPLAY & GET UYVY FRAME BUFFER
    //
    hDev_Live[ 0 ] = AMESDK_CREATE( "SL6010 PCI", 0, 0, hWnd00, &bc00_Live, NULL ); // CH00
    hDev_Live[ 1 ] = AMESDK_CREATE( "SL6010 PCI", 1, 0, hWnd01, &bc01_Live, NULL ); // CH01
    hDev_Live[ 2 ] = AMESDK_CREATE( "SL6010 PCI", 2, 0, hWnd02, &bc02_Live, NULL ); // CH02
    0 ... 15
    hDev_Live[ 15 ] = AMESDK_CREATE( "SL6010 PCI", 15, 0, hWnd15, &bc15_Live, NULL ); // CH15

    // GET MPEG4 BIT STREAM BUFFER
    //
    hDev[ 0 ] = AMESDK_CREATE( "SL6010 PCI, Analog Encoder", 0, 0, NULL, &bc00, NULL ); // CH00
    hDev[ 1 ] = AMESDK_CREATE( "SL6010 PCI, Analog Encoder", 1, 0, NULL, &bc01, NULL ); // CH01
    hDev[ 2 ] = AMESDK_CREATE( "SL6010 PCI, Analog Encoder", 2, 0, NULL, &bc02, NULL ); // CH02
    0 ... 15
    hDev[ 15 ] = AMESDK_CREATE( "SL6010 PCI, Analog Encoder", 15, 0, NULL, &bc15, NULL ); // CH15

    if( (hDev_Live[ 0 ] & 0x80000000) ||
        (hDev_Live[ 1 ] & 0x80000000) ||
        (hDev_Live[ 2 ] & 0x80000000) ||
        0 ... 15
        (hDev_Live[ 15 ] & 0x80000000) ) { // CHECK ERROR FLAG

        HwUninitialize();

        return FALSE;
    }
}

```



```
}

if( (hDev[ 0 ] & 0x80000000) ||
    (hDev[ 1 ] & 0x80000000) ||
    (hDev[ 2 ] & 0x80000000) ||
    0 ... 15
    (hDev[ 15 ] & 0x80000000) ) { // CHECK ERROR FLAG

    HwUninitialize();

    return FALSE;
}

AMESDK_SET_STANDARD( hDev_Live[ 0 ], KS_AnalogVideo_NTSC_M ); // SET STANDARD
0 ... 15
AMESDK_SET_STANDARD( hDev_Live[ 15 ], KS_AnalogVideo_NTSC_M );

AMESDK_SET_STANDARD( hDev[ 0 ], KS_AnalogVideo_NTSC_M ); // SET STANDARD
0 ... 15
AMESDK_SET_STANDARD( hDev[ 15 ], KS_AnalogVideo_NTSC_M );

AMESDK_SET_FORMAT( hDev_Live[ 0 ], YV12, 352, 240, 16, 30.00 ); // SET FORMAT
0 ... 15
AMESDK_SET_FORMAT( hDev_Live[ 15 ], YV12, 352, 240, 16, 30.00 );

AMESDK_SET_FORMAT( hDev[ 0 ], XVID, 704, 480, 24, 30.00 ); // SET FORMAT
0 ... 15
AMESDK_SET_FORMAT( hDev[ 15 ], XVID, 704, 480, 24, 30.00 );

AMESDK_SET_CUSTOM_PROPERTY( hDev[ 0 ], 402, 30000); // SET FRAME RATE
0 ... 15
AMESDK_SET_CUSTOM_PROPERTY( hDev[ 15 ], 402, 30000);

AMESDK_SET_CUSTOM_PROPERTY( hDev[ 0 ], 404, 8 ); //SET QUALITY
0 ... 15
AMESDK_SET_CUSTOM_PROPERTY( hDev[ 15 ], 404, 8 );
```

```
AMESDK_SET_CUSTOM_PROPERTY( hDev[ 0 ], 405, 32 ); // SET GOP
0 ... 15
AMESDK_SET_CUSTOM_PROPERTY( hDev[ 15 ], 405, 32 );

AMESDK_RUN( hDev_Live[ 0 ] ); // RUN DEVICES
0 ... 15
AMESDK_RUN( hDev_Live[ 15 ] );

AMESDK_RUN( hDev[ 0 ] ); // RUN DEVICES
0 ... 15
AMESDK_RUN( hDev[ 15 ] );
}

BOOL HwUninitialize( ... )
{
    AMESDK_DESTROY( hDev_Live[ 0 ] ); // STOP & CLOSE DEVICES
    AMESDK_DESTROY( hDev_Live[ 1 ] );
    AMESDK_DESTROY( hDev_Live[ 2 ] );
    0 ... 15
    AMESDK_DESTROY( hDev_Live[ 15 ] );

    AMESDK_DESTROY( hDev[ 0 ] ); // STOP & CLOSE DEVICES
    AMESDK_DESTROY( hDev[ 1 ] );
    AMESDK_DESTROY( hDev[ 2 ] );
    0 ... 15
    AMESDK_DESTROY( hDev[ 15 ] );
}
```

2.08 SC390#N16 (H.264) Software Programming Guide

REFERENCE DEVICES: SC290#N4, SC390#N4/#N8/#N16

```

DEVICE_HANDLE hDev[ 16 ]; // USING 16 DEVICES TO SUPPORT 16 CHANNELS

BOOL HwInitialize( ... )
{
    // CREATE DEVICES
    //
    hDev[ 0 ] = AMESDK_CREATE( "AH8400 PCI, Analog Encoder", 0, 0, NULL, &bc00, NULL ); // CH00
    hDev[ 1 ] = AMESDK_CREATE( "AH8400 PCI, Analog Encoder", 1, 0, NULL, &bc01, NULL ); // CH01
    hDev[ 2 ] = AMESDK_CREATE( "AH8400 PCI, Analog Encoder", 2, 0, NULL, &bc02, NULL ); // CH02
    0 ... 15
    hDev[ 15 ] = AMESDK_CREATE( "AH8400 PCI, Analog Encoder", 15, 0, NULL, &bc15, NULL ); // CH15

    if( (hDev[ 0 ] & 0x80000000) ||
        (hDev[ 1 ] & 0x80000000) ||
        (hDev[ 2 ] & 0x80000000) ||
        0 ... 15
        (hDev[ 15 ] & 0x80000000) ) { // CHECK ERROR FLAG

        HwUninitialize();

        return FALSE;
    }

    AMESDK_SET_STANDARD( hDev[ 0 ], KS_AnalogVideo_NTSC_M ); // SET STANDARD
    0 ... 15
    AMESDK_SET_STANDARD( hDev[ 15 ], KS_AnalogVideo_NTSC_M );

    AMESDK_SET_FORMAT( hDev[ 0 ], H264, 704, 480, 24, 30.00 ); // SET FORMAT
    0 ... 15
    AMESDK_SET_FORMAT( hDev[ 15 ], H264, 704, 480, 24, 30.00 );

```

```
AMESDK_RUN( hDev[ 0 ] ); // RUN DEVICES
0 ... 15
AMESDK_RUN( hDev[ 15 ] );
}

BOOL HwUninitialize( ... )
{
    AMESDK_DESTROY( hDev[ 0 ] ); // STOP & CLOSE DEVICES
    AMESDK_DESTROY( hDev[ 1 ] );
    AMESDK_DESTROY( hDev[ 2 ] );
    0 ... 15
    AMESDK_DESTROY( hDev[ 15 ] );
}
```

2.09 SC390#N16 (LIVE + H.264) Software Programming Guide

REFERENCE DEVICES: SC290#N4, SC390#N4/#N8/#N16

```

DEVICE_HANDLE hDev_Live[ 16 ]; // USING 16 DEVICES TO SUPPORT 16 CHANNELS (UYVY)

DEVICE_HANDLE hDev[ 16 ]; // USING 16 DEVICES TO SUPPORT 16 CHANNELS (MPEG4)

BOOL HwInitialize( ... )
{
    // CREATE DEVICES
    //
    // LIVE DISPLAY & GET UYVY FRAME BUFFER
    //
    hDev_Live[ 0 ] = AMESDK_CREATE( "AH8400 PCI", 0, 0, hWnd00, &bc00_Live, NULL ); // CH00
    hDev_Live[ 1 ] = AMESDK_CREATE( "AH8400 PCI", 1, 0, hWnd01, &bc01_Live, NULL ); // CH01
    hDev_Live[ 2 ] = AMESDK_CREATE( "AH8400 PCI", 2, 0, hWnd02, &bc02_Live, NULL ); // CH02
    0 ... 15
    hDev_Live[ 15 ] = AMESDK_CREATE( "AH8400 PCI", 15, 0, hWnd15, &bc15_Live, NULL ); // CH15

    // GET H.264 BIT STREAM BUFFER
    //
    hDev[ 0 ] = AMESDK_CREATE( "AH8400 PCI, Analog Encoder", 0, 0, NULL, &bc00, NULL ); // CH00
    hDev[ 1 ] = AMESDK_CREATE( "AH8400 PCI, Analog Encoder", 1, 0, NULL, &bc01, NULL ); // CH01
    hDev[ 2 ] = AMESDK_CREATE( "AH8400 PCI, Analog Encoder", 2, 0, NULL, &bc02, NULL ); // CH02
    0 ... 15
    hDev[ 15 ] = AMESDK_CREATE( "AH8400 PCI, Analog Encoder", 15, 0, NULL, &bc15, NULL ); // CH15

    if( (hDev_Live[ 0 ] & 0x80000000) ||
        (hDev_Live[ 1 ] & 0x80000000) ||
        (hDev_Live[ 2 ] & 0x80000000) ||
        0 ... 15
        (hDev_Live[ 15 ] & 0x80000000) ) { // CHECK ERROR FLAG

        HwUninitialize();

        return FALSE;
    }
}

```

```
}

if( (hDev[ 0 ] & 0x80000000) ||
    (hDev[ 1 ] & 0x80000000) ||
    (hDev[ 2 ] & 0x80000000) ||
    0 ... 15
    (hDev[ 15 ] & 0x80000000) ) { // CHECK ERROR FLAG

    HwUninitialize();

    return FALSE;
}

AMESDK_SET_STANDARD( hDev_Live[ 0 ], KS_AnalogVideo_NTSC_M ); // SET STANDARD
0 ... 15
AMESDK_SET_STANDARD( hDev_Live[ 15 ], KS_AnalogVideo_NTSC_M );

AMESDK_SET_STANDARD( hDev[ 0 ], KS_AnalogVideo_NTSC_M ); // SET STANDARD
0 ... 15
AMESDK_SET_STANDARD( hDev[ 15 ], KS_AnalogVideo_NTSC_M );

AMESDK_SET_FORMAT( hDev_Live[ 0 ], H264, 352, 240, 16, 30.00 ); // SET FORMAT
0 ... 15
AMESDK_SET_FORMAT( hDev_Live[ 15 ], H264, 352, 240, 16, 30.00 );

AMESDK_SET_FORMAT( hDev[ 0 ], H264, 704, 480, 24, 30.00 ); // SET FORMAT
0 ... 15
AMESDK_SET_FORMAT( hDev[ 15 ], H264, 704, 480, 24, 30.00 );

AMESDK_SET_CUSTOM_PROPERTY( hDev[ 0 ], 402, 30000); // SET FRAME RATE
0 ... 15
AMESDK_SET_CUSTOM_PROPERTY( hDev[ 15 ], 402, 30000);

AMESDK_SET_CUSTOM_PROPERTY( hDev[ 0 ], 404, 8 ); //SET QUALITY
0 ... 15
AMESDK_SET_CUSTOM_PROPERTY( hDev[ 15 ], 404, 8 );
```

```
AMESDK_SET_CUSTOM_PROPERTY( hDev[ 0 ], 405, 32 ); // SET GOP
0 ... 15
AMESDK_SET_CUSTOM_PROPERTY( hDev[ 15 ], 405, 32 );

AMESDK_RUN( hDev_Live[ 0 ] ); // RUN DEVICES
0 ... 15
AMESDK_RUN( hDev_Live[ 15 ] );

AMESDK_RUN( hDev[ 0 ] ); // RUN DEVICES
0 ... 15
AMESDK_RUN( hDev[ 15 ] );
}

BOOL HwUninitialize( ... )
{
    AMESDK_DESTROY( hDev_Live[ 0 ] ); // STOP & CLOSE DEVICES
    AMESDK_DESTROY( hDev_Live[ 1 ] );
    AMESDK_DESTROY( hDev_Live[ 2 ] );
    0 ... 15
    AMESDK_DESTROY( hDev_Live[ 15 ] );

    AMESDK_DESTROY( hDev[ 0 ] ); // STOP & CLOSE DEVICES
    AMESDK_DESTROY( hDev[ 1 ] );
    AMESDK_DESTROY( hDev[ 2 ] );
    0 ... 15
    AMESDK_DESTROY( hDev[ 15 ] );
}
```

3 Exported Functions

for

Analog Audio Capture Device

(PCM)

SUPPORT DEVICE:

PD652, SC100, SC200, SC230, SC280,
SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0,
SC3B0, SC500, SC510, SC580, SC590,

Exported Functions for Analog Audio Capture Device	
3.00	AMESDK_SOUND CARD_ENUMERATION
3.01	AMESDK_CREATE
3.02	AMESDK_DESTROY (SEE CHAP.1)
3.03	AMESDK_RUN (SEE CHAP.1)
3.04	AMESDK_STOP (SEE CHAP.1)
3.05	AMESDK_GET_INPUT
3.06	AMESDK_SET_INPUT
3.07	AMESDK_GET_FORMAT
3.08	AMESDK_SET_FORMAT
3.09	AMESDK_GET_VOLUME
3.10	AMESDK_SET_VOLUME
3.11	SC100#N4 Software Programming Guide
3.12	SC300#N8 Software Programming Guide
3.13	SC310#N8 Software Programming Guide

3.00 AMESDK_SOUND CARD_ENUMERATION

This function is used to enumerate the name of all sound card devices known to work on the platform.

```
BOOL AMESDK_SOUND CARD_ENUMERATION( CHAR * * ppszSoundCardDevName,  
                                     BOOL      bNext = FALSE  
);
```

Parameters:

Parameter	IN/OUT	Description
ppszSoundCardDevName	OUT	Sound Device Name. A pointer to type char can be considered a pointer to a string of characters which is the name of sound card on the platform.
bNext	IN	Next Status. Specifies whether to use number n of the sound card device on the platform. The value FALSE is to use the first sound card device on the platform.

Return Values:

non-zero if successful, or a non-zero error code to indicate a failure.

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: To enumerate the name of all sound card devices known to work on the platform.

```
CHAR *   pszSoundCardDevName = NULL;
AMESDK_SOUND CARD_ENUMERATION( &pszSoundCardDevName, FALSE );
printf( "sound card name [ s% ]\n", pszSoundCardDevName );
while ( AMESDK_SOUND CARD_ENUMERATION( &pszSoundCardDevName, TRUE ) ) {
    printf( "sound card name [ s% ]\n", pszSoundCardDevName );
}
```

3.01 AMESDK_CREATE

The function helps you to open an analog audio capture device and also allows you to attach a preview window or to register a callback function on it. The callback function will offer you to obtain and to access the whole sound buffer.

```

DEVICE_HANDLE AMESDK_CREATE( LPTSTR          pszDevName,
                             UINT           iDevNum,
                             ULONG          eDevType,
                             HWND           hDisplayWindow,
                             PF_BUFFER_CALLBACK pBufferCB,
                             PVOID          pUserData
);

typedef ULONG (DEVICE_HANDLE);

typedef BOOL (* PF_BUFFER_CALLBACK) ( double   dSampleTime,
                                     BYTE *    pBuffer,
                                     ULONG      nBufferLen,
                                     BOOL       bIsKeyFrame,
                                     PVOID      pUserData );

```

Parameters:

Parameter	IN/OUT	Description
pszDevName	IN	Device Name. To give a device name that is used to create specific device. Currently, we support these device names below: "AH8400 PCI, Analog WaveIn", "CX2581 PCI, Analog WaveIn", "CX2588 PCI, Analog WaveIn", "DC1150 USB, Analog WaveIn", "FH8735 PCI, Analog WaveIn", "TW2809 PCI, Analog WaveIn", "TW5804 PCI, Analog WaveIn", "TW6802 PCI, Analog WaveIn", "SA7160 PCI, Analog WaveIn", "SL6010 PCI, Analog WaveIn".
iDevNum	IN	Device Number. If there are more than one devices with the same device name on platform. You can use this parameter to recognize it.
eDevType	IN	Device Type. Always 0 for analog capture device.
hDisplayWindow	IN	Display Window. Pointer to one WHND window handle. If it isn't NULL, function will automatically play sound on this window. If it is NULL, function will mute on it.

pBufferCB	IN	Callback Function. Pointer to one callback function. If it is NULL, function will not return sound buffer to software caller. If it isn't NULL, caller will obtain sound buffer from callback when each frame is coming.
pUserData	IN	User Data. Pointer to one data pointer. The parameters will be passed through callback.

Return Value:

If AMESDK_CREATE is successful, it will return one DEVICE_HANDLE. If it is fail, it will show the error code. As one of below:

0x80000000 - Parameter, pszDevName, is wrong.
 0x80000001 - Unknown error.
 0x80000002 - Device queue is full already.

Supported Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
 SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

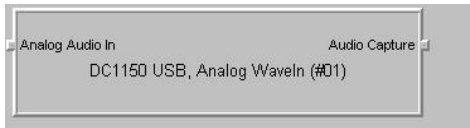
```
HWND wnd = CreateWindowEx( ... );
```

```
BOOL bcb(    double dSampleTime, BYTE * pBuffer, ULONG nBufferLen , BOOL bIsKeyFrame,
            PVOID pUserData )
{
    ...

    return TRUE;
}
```

EX1: Don't need to display video and to get sound buffer from callback function.

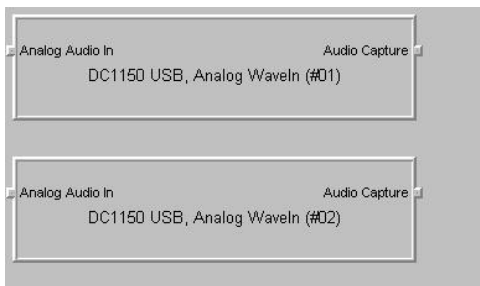
```
hDev = AMESDK_CREATE( "DC1150 USB, Analog WaveIn", 0, 0, NULL, NULL, NULL );
```



EX2: If you have two devices on one PC, you can use parameter #2 to open 2nd device.

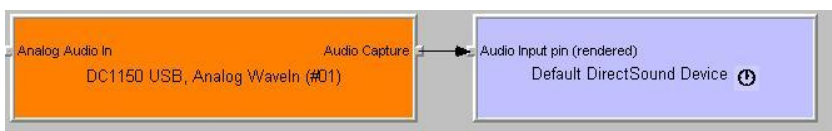
```
hDev0 = AMESDK_CREATE( "DC1150 USB, Analog WaveIn", 0, 0, NULL, NULL, NULL );
```

```
hDev1 = AMESDK_CREATE( "DC1150 USB, Analog WaveIn", 1, 0, NULL, NULL, NULL );
```



EX3: To play sound on your attached window by SDK engine.

```
hDev = AMESDK_CREATE( "DC1150 USB, Analog WaveIn", 0, 0, hWnd, NULL, NULL );
```



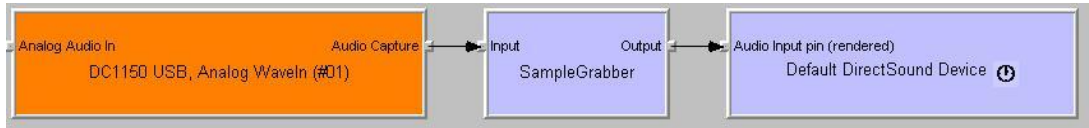
EX4: To register the callback function on the device.

```
hDev = AMESDK_CREATE( "DC1150 USB, Analog WaveIn", 0, 0, NULL, &bcb, this );
```



EX5: Both.

```
hDev = AMESDK_CREATE( "DC1150 USB, Analog WaveIn", 0, 0, hWnd, &bcb, this );
```



Remarks:

Please reference sections 3.9 ~ 3.11 to obtain more sample tutorials.

3.02 AMESDK_GET_INPUT

This function is used to get current audio input.

```

    BOOL AMESDK_GET_INPUT( DEVICE_HANDLE  hDevHandle,
                           ULONG *        pInput
    );

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose input is to be retrieved.
pInput	OUT	Video Input. Pointer to a variable that stores the input. It cannot be NULL.
		SUPPORT INPUTS: Embedded Audio (0x00000000) Line In (0x00000001)

Return Value:

BOOL

Support Devices:

PCTV: PD652

SECU: SC500, SC510, SC580, SC590

Examples:

EX1: Get the current audio input.

```
AMESDK_GET_INPUT( hDev, &nInput );
```

Remarks:

For SC500, SC510, SC580, and SC590 series, please reference their Extra Programming Guide in SDK packet in detail.

3.03 AMESDK_SET_INPUT

This function is used to set/change audio input.

```
BOOL AMESDK_SET_INPUT( DEVICE_HANDLE hDevHandle,
                        ULONG          nInput
                      );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose input is to be set/changed.
nInput	IN	Video Input. Specifies the input.
		SUPPORT INPUTS: Embedded Audio (0x00000000) Line In (0x00000001)

Return Value:

BOOL

Support Devices:

PCTV: PD652

SECU: SC500, SC510, SC580, SC590

Examples:

EX1: Set the audio input to Embedded Audio.

```
AMESDK_SET_INPUT( hDev, 0x00000000 );
```

EX2: Set the audio input to Line In.

```
AMESDK_SET_INPUT( hDev, 0x00000001 );
```

Remarks:

For SC500, SC510, SC580, and SC590 series, please reference their Extra Programming Guide in SDK packet in detail.

3.04 AMESDK_GET_FORMAT

This function is used to get current audio format.

```

BOOL AMESDK_GET_FORMAT( DEVICE_HANDLE hDevHandle,
                        ULONG *        pChannels,
                        ULONG *        pBitsPerSample,
                        ULONG *        pSamplesPerSec );
    
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be get.
pChannels	OUT	Audio Channels. Pointer to a variable that stores the audio number of channels. It cannot be NULL.
pBitsPerSample	OUT	Audio Bits Per Sample. Pointer to a variable that stores the audio bits per sample. It cannot be NULL.
pSamplesPerSec	OUT	Audio Samples Per Sec. Pointer to a variable that stores the audio sample rate in samples per second. It cannot be NULL.
		SUPPORT FORMAT (MC/PDXXX): 2 × 16 × 48000Hz SUPPORT FORMAT (SC100): 1 × 8 × 8000Hz SUPPORT FORMAT (SC200, SC230, SC300, SC330): 1 × 8 × 8000Hz 1 × 8 × 16000Hz 1 × 8 × 24000Hz 1 × 8 × 32000Hz 1 × 8 × 40000Hz 1 × 8 × 48000Hz 1 × 16 × 8000Hz 1 × 16 × 16000Hz 1 × 16 × 24000Hz 1 × 16 × 32000Hz 1 × 16 × 40000Hz 1 × 16 × 48000Hz SUPPORT FORMAT (SC310, SC340): 1 × 16 × 8000Hz 1 × 16 × 16000Hz 1 × 16 × 24000Hz 1 × 16 × 32000Hz 1 × 16 × 40000Hz 1 × 16 × 48000Hz SUPPORT FORMAT (SC280, SC380): 1 × 16 × 8000Hz SUPPORT FORMAT (SC290, SC390): 1 × 16 × 8000Hz SUPPORT FORMAT (SC3A0): 1 × 16 × 16000Hz

SUPPORT FORMAT (SC2B0, SC3B0):

1 × 16 × 8000Hz

SUPPORT FORMAT (SC500, SC510, SC580, SC590):

2 × 16 × 32000Hz

2 × 16 × 44100Hz

2 × 16 × 48000Hz

Return Values:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590

Examples:

EX1: Get the current audio format (channels, bits per sample, and samples per sec).

```
AMESDK_GET_FORMAT( hDev, &nChannels, &nBitsPerSample, &nSamplesPerSec );
```

3.05 AMESDK_SET_FORMAT

This function is used to set/change audio format.

```

BOOL AMESDK_SET_FORMAT( DEVICE_HANDLE hDevHandle,
                        ULONG          nChannels,
                        ULONG          nBitsPerSample,
                        ULONG          nSamplesPerSec );
    
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be set.
nChannels	IN	Audio Channels. Specifies the number of channels in the waveform data. Mono data uses 1 channel and stereo data uses 2 channels.
nBitsPerSample	IN	Audio Bits Per Sample. Specifies the bits per sample in the waveform data.
nSamplesPerSec	IN	Audio Samples Per Sec. Specifies the sample rate in samples per second.
		SUPPORT FORMAT (MC/PDXXX): 2 × 16 × 48000Hz SUPPORT FORMAT (SC100): 1 × 8 × 8000Hz SUPPORT FORMAT (SC200, SC230, SC300, SC330): 1 × 8 × 8000Hz 1 × 8 × 16000Hz 1 × 8 × 24000Hz 1 × 8 × 32000Hz 1 × 8 × 40000Hz 1 × 8 × 48000Hz 1 × 16 × 8000Hz 1 × 16 × 16000Hz 1 × 16 × 24000Hz 1 × 16 × 32000Hz 1 × 16 × 40000Hz 1 × 16 × 48000Hz SUPPORT FORMAT (SC310, SC340): 1 × 16 × 8000Hz 1 × 16 × 16000Hz 1 × 16 × 24000Hz 1 × 16 × 32000Hz 1 × 16 × 40000Hz 1 × 16 × 48000Hz SUPPORT FORMAT (SC280, SC380): 1 × 16 × 8000Hz SUPPORT FORMAT (SC290, SC390): 1 × 16 × 8000Hz SUPPORT FORMAT (SC3A0): 1 × 16 × 16000Hz

SUPPORT FORMAT (SC2B0, SC3B0):

1 × 16 × 8000Hz

SUPPORT FORMAT (SC500, SC510, SC580, SC590):

2 × 16 × 32000Hz

2 × 16 × 44100Hz

2 × 16 × 48000Hz

Return Values:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Set the audio format (channels, bits per sample, and samples per sec).

```
AMESDK_SET_FORMAT( hDev, 1, 16, 8000 );
```

3.06 AMESDK_GET_VOLUME

This function is used to get the volume (amplitude) of the sound card renderer.

```
BOOL AMESDK_GET_VOLUME( DEVICE_HANDLE hDevHandle, ULONG * pVolume );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be get.
pVolume	OUT	Audio Volume Amplitude. Pointer to a variable that stores the audio amplitude. It cannot be NULL.

Return Values:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Get the value of audio volume.

```
AMESDK_GET_VOLUME( hDev, &nVolume );
```

Remarks:

If you need control the hardware input amplitude on the capture card, you need to use AMESDK_GET_CUSTOM_PROPERTY to access it.

3.07 AMESDK_SET_VOLUME

This function is used to set the volume (amplitude) of the sound card renderer.

```
BOOL AMESDK_SET_VOLUME( DEVICE_HANDLE hDevHandle, ULONG nVolume );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be set.
nVolume	IN	Audio Volume Amplitude. A variable that sets the audio signal amplitude. Support Ranges: 0 (Mute) ~ 100 (Full).

Return Values:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Set the audio volume amplitude.

```
AMESDK_SET_VOLUME( hDev, 128 );
```

Remarks:

If you need control the hardware input amplitude on the capture card, you need to use AMESDK_SET_CUSTOM_PROPERTY to access it.

3.08 SC100#N4 Software Programming Guide

REFERENCE DEVICES: SC100#N4

```

DEVICE_HANDLE hDev[ 4 ]; // USING 4 DEVICES TO SUPPORT 4 CHANNELS

BOOL HwInitialize( ... )
{
    // CREATE DEVICES
    //
    hDev[ 0 ] = AMESDK_CREATE( "DC1150 USB, Analog Wave In", 0, 0, hWnd0, &bc0, NULL ); // CH00
    hDev[ 1 ] = AMESDK_CREATE( "DC1150 USB, Analog Wave In", 1, 0, hWnd1, &bc1, NULL ); // CH01
    hDev[ 2 ] = AMESDK_CREATE( "DC1150 USB, Analog Wave In", 2, 0, hWnd2, &bc2, NULL ); // CH02
    hDev[ 3 ] = AMESDK_CREATE( "DC1150 USB, Analog Wave In", 3, 0, hWnd3, &bc3, NULL ); // CH03

    if( (hDev[ 0 ] & 0x80000000) ||
        (hDev[ 1 ] & 0x80000000) ||
        (hDev[ 2 ] & 0x80000000) ||
        (hDev[ 3 ] & 0x80000000) ) { // CHECK ERROR FLAG

        HwUninitialize();

        return FALSE;
    }

    AMESDK_SET_VOLUME( hDev[ 0 ], 0 /*MUTE*/ ); // SET VOLUME
    0 ... 3
    AMESDK_SET_FORMAT( hDev[ 3 ], 0 /*MUTE*/ );

    AMESDK_RUN( hDev[ 0 ] ); // RUN DEVICES
    0 ... 3
    AMESDK_RUN( hDev[ 3 ] );
}

BOOL HwUninitialize( ... )
{
    AMESDK_DESTROY( hDev[ 0 ] ); // STOP & CLOSE DEVICES

```

```
AMESDK_DESTROY( hDev[ 1 ] );  
AMESDK_DESTROY( hDev[ 2 ] );  
AMESDK_DESTROY( hDev[ 3 ] );  
}
```

3.09 SC300#N8 Software Programming Guide

REFERENCE DEVICES: SC200#ALL, SC300#ALL

```

DEVICE_HANDLE hDev[ 8 ]; // USING 8 DEVICES TO SUPPORT 8 CHANNELS

BOOL HwInitialize( ... )
{
    // CREATE DEVICES
    //

    hDev[ 0 ] = AMESDK_CREATE( "TW6802 PCI, Analog Wave In", 0, 0, hWnd0, &bc0, NULL ); // CH00
    hDev[ 1 ] = AMESDK_CREATE( "TW6802 PCI, Analog Wave In", 1, 0, hWnd1, &bc1, NULL ); // CH01
    hDev[ 2 ] = AMESDK_CREATE( "TW6802 PCI, Analog Wave In", 2, 0, hWnd2, &bc2, NULL ); // CH02
    hDev[ 3 ] = AMESDK_CREATE( "TW6802 PCI, Analog Wave In", 3, 0, hWnd3, &bc3, NULL ); // CH03
    hDev[ 4 ] = AMESDK_CREATE( "TW6802 PCI, Analog Wave In", 4, 0, hWnd4, &bc4, NULL ); // CH04
    hDev[ 5 ] = AMESDK_CREATE( "TW6802 PCI, Analog Wave In", 5, 0, hWnd5, &bc5, NULL ); // CH05
    hDev[ 6 ] = AMESDK_CREATE( "TW6802 PCI, Analog Wave In", 6, 0, hWnd6, &bc6, NULL ); // CH06
    hDev[ 7 ] = AMESDK_CREATE( "TW6802 PCI, Analog Wave In", 7, 0, hWnd7, &bc7, NULL ); // CH07

    if( (hDev[ 0 ] & 0x80000000) ||
        (hDev[ 1 ] & 0x80000000) ||
        (hDev[ 2 ] & 0x80000000) ||
        (hDev[ 3 ] & 0x80000000) ||
        (hDev[ 4 ] & 0x80000000) ||
        (hDev[ 5 ] & 0x80000000) ||
        (hDev[ 6 ] & 0x80000000) ||
        (hDev[ 7 ] & 0x80000000) ) { // CHECK ERROR FLAG

        HwUninitialize();

        return FALSE;
    }

    AMESDK_SET_VOLUME( hDev[ 0 ], 0 /*MUTE*/ ); // SET VOLUME
    0 ... 7
    AMESDK_SET_VOLUME( hDev[ 7 ], 0 /*MUTE*/ );

```

```
AMESDK_RUN( hDev[ 0 ] ); // RUN DEVICES
0 ... 7
AMESDK_RUN( hDev[ 7 ] );
}

BOOL HwUninitialize( ... )
{
    AMESDK_DESTROY( hDev[ 0 ] ); // STOP & CLOSE DEVICES
    AMESDK_DESTROY( hDev[ 1 ] );
    AMESDK_DESTROY( hDev[ 2 ] );
    AMESDK_DESTROY( hDev[ 3 ] );
    AMESDK_DESTROY( hDev[ 4 ] );
    AMESDK_DESTROY( hDev[ 5 ] );
    AMESDK_DESTROY( hDev[ 6 ] );
    AMESDK_DESTROY( hDev[ 7 ] );
}
```

3.10 SC310#N8 Software Programming Guide

REFERENCE DEVICES: SC310#ALL

```

DEVICE_HANDLE hDev[ 8 ]; // USING 8 DEVICES TO SUPPORT 8 CHANNELS

BOOL HwInitialize( ... )
{
    // CREATE DEVICES
    //

    hDev[ 0 ] = AMESDK_CREATE( "CX2581 PCI, Analog Wave In", 0, 0, hWnd0, &bc0, NULL ); // CH00
    hDev[ 1 ] = AMESDK_CREATE( "CX2581 PCI, Analog Wave In", 1, 0, hWnd1, &bc1, NULL ); // CH01
    hDev[ 2 ] = AMESDK_CREATE( "CX2581 PCI, Analog Wave In", 2, 0, hWnd2, &bc2, NULL ); // CH02
    hDev[ 3 ] = AMESDK_CREATE( "CX2581 PCI, Analog Wave In", 3, 0, hWnd3, &bc3, NULL ); // CH03
    hDev[ 4 ] = AMESDK_CREATE( "CX2581 PCI, Analog Wave In", 4, 0, hWnd4, &bc4, NULL ); // CH04
    hDev[ 5 ] = AMESDK_CREATE( "CX2581 PCI, Analog Wave In", 5, 0, hWnd5, &bc5, NULL ); // CH05
    hDev[ 6 ] = AMESDK_CREATE( "CX2581 PCI, Analog Wave In", 6, 0, hWnd6, &bc6, NULL ); // CH06
    hDev[ 7 ] = AMESDK_CREATE( "CX2581 PCI, Analog Wave In", 7, 0, hWnd7, &bc7, NULL ); // CH07

    if( (hDev[ 0 ] & 0x80000000) ||
        (hDev[ 1 ] & 0x80000000) ||
        (hDev[ 2 ] & 0x80000000) ||
        (hDev[ 3 ] & 0x80000000) ||
        (hDev[ 4 ] & 0x80000000) ||
        (hDev[ 5 ] & 0x80000000) ||
        (hDev[ 6 ] & 0x80000000) ||
        (hDev[ 7 ] & 0x80000000) ) { // CHECK ERROR FLAG

        HwUninitialize();

        return FALSE;
    }

    AMESDK_SET_VOLUME( hDev[ 0 ], 0 /*MUTE*/ ); // SET VOLUME
    0 ... 7
    AMESDK_SET_VOLUME( hDev[ 7 ], 0 /*MUTE*/ );

```

```
AMESDK_RUN( hDev[ 0 ] ); // RUN DEVICES
0 ... 7
AMESDK_RUN( hDev[ 7 ] );
}

BOOL HwUninitialize( ... )
{
    AMESDK_DESTROY( hDev[ 0 ] ); // STOP & CLOSE DEVICES
    AMESDK_DESTROY( hDev[ 1 ] );
    AMESDK_DESTROY( hDev[ 2 ] );
    AMESDK_DESTROY( hDev[ 3 ] );
    AMESDK_DESTROY( hDev[ 4 ] );
    AMESDK_DESTROY( hDev[ 5 ] );
    AMESDK_DESTROY( hDev[ 6 ] );
    AMESDK_DESTROY( hDev[ 7 ] );
}
```

4 Exported Functions

for

Analog Audio Capture Device

(G.721/G.723)

SUPPORT DEVICE:

NONE

Exported Functions for Analog Audio Capture Device	
4.00	AMESDK_CAPTURE_DEVICE_ENUMERATION (SEE CHAP.1)
4.01	AMESDK_CREATE
4.02	AMESDK_DESTROY (SEE CHAP.1)
4.03	AMESDK_RUN (SEE CHAP.1)
4.04	AMESDK_STOP (SEE CHAP.1)
4.05	AMESDK_GET_INPUT (SEE CHAP.3)
4.06	AMESDK_SET_INPUT (SEE CHAP.3)
4.07	AMESDK_GET_FORMAT (SEE CHAP.3)
4.08	AMESDK_SET_FORMAT (SEE CHAP.3)
4.09	AMESDK_GET_VOLUME (SEE CHAP.3)
4.10	AMESDK_SET_VOLUME (SEE CHAP.3)

5 Exported Functions

for

Software Encoder and Decoder Programming

SUPPORT DEVICE:

PD652, SC100, SC200, SC230, SC280,
SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0,
SC3B0, SC500, SC510, SC580, SC590,

Exported Functions for Software Encoder and Decoder Programming	
5.01	AMESDK_CREATE (ENCODER/DECODER)
5.02	AMESDK_DESTROY (ENCODER/DECODER) (SEE CHAP.1)
5.03	AMESDK_RUN (ENCODER/DECODER) (SEE CHAP.1)
5.04	AMESDK_STOP (ENCODER/DECODER) (SEE CHAP.1)
5.05	AMESDK_GET_DEINTERLACE (DECODER) (SEE CHAP.1)
5.06	AMESDK_SET_DEINTERLACE (DECODER) (SEE CHAP.1)
5.07	AMESDK_GET_MIRROR (DECODER) (SEE CHAP.1)
5.08	AMESDK_SET_MIRROR (DECODER) (SEE CHAP.1)
5.09	AMESDK_OTHER_REFRESH_DISPLAY_WINDOW (DECODER) (SEE CHAP.1)
5.10	AMESDK_OTHER_SNAPSHOT_BMP (DECODER) (SEE CHAP.1)
5.11	AMESDK_OTHER_SNAPSHOT_JPG (DECODER) (SEE CHAP.1)
5.12	AMESDK_OTHER_ZOOM (DECODER) (SEE CHAP.1)
5.13	AMESDK_GET_FORMAT (ENCODER/DECODER)
5.14	AMESDK_SET_FORMAT (ENCODER/DECODER)
5.15	AMESDK_CODEC_ENCODE (ENCODER)
5.16	AMESDK_CODEC_DECODE (DECODER)
5.17	AMESDK_CODEC_DECODE_EX (DECODER)
5.18	AMESDK_CODEC_IS_HARDWARE_ACCELERATION_SUPPORT
5.19	A MPEG4 Video Encoder Software Programming Guide
5.20	A H.264 Video Encoder Software Programming Guide
5.21	A MPEG4 Video Decoder Software Programming Guide
5.22	A H.264 Video Decoder Software Programming Guide
5.23	A PCM Audio Decoder Software Programming Guide

En/Decoder Device Workflow in Software View

Programming Step	Related API Functions
CoInitialize	
Create Device	AMESDK_CREATE
Set Device Parameters	AMESDK_SET_FORMAT
Start Capturing	AMESDK_RUN
Stop Capturing	AMESDK_STOP
Delete Device	AMESDK_DESTROY
CoUninitialize	

5.01 AMESDK_CREATE

The function helps you to open a video codec device and also allows you to attach a playback window or register a callback function on it. The callback function will offer you to obtain and to access the whole frame buffer.

```

DEVICE_HANDLE AMESDK_CREATE( LPTSTR                pszDevName,
                             UINT                 iDevNum,
                             ULONG                 eDevType,
                             HWND                 hDisplayWindow,
                             PF_BUFFER_CALLBACK    pBufferCB,
                             PVOID                pUserData
);

typedef ULONG (DEVICE_HANDLE);

typedef BOOL (* PF_BUFFER_CALLBACK)( double    dSampleTime,
                                     BYTE *    pBuffer,
                                     ULONG      nBufferLen,
                                     BOOL       bIsKeyFrame,
                                     PVOID      pUserData
);

DEVICE_HANDLE AMESDK_CREATE_EX( LPTSTR                pszDevName,
                                UINT                 iDevNum,
                                ULONG                 eDevType,
                                HWND                 hDisplayWindow,
                                PF_BUFFER_CALLBACK    pBufferCB,
                                BOOL                  bIsAllowOverlayRenderer,
                                BOOL                  bIsEnableEnhancedVideoRenderer,
                                BOOL                  bIsMaintainAspectRatio,
                                PVOID                pUserData
);
    
```

Parameters:

Parameter	IN/OUT	Description
pszDevName	IN	Device Name. To give a device name that is used to create specific device. Currently, we support these codec names below: "Common Analog Encoder (MPEG4)", "Common Analog Decoder (MPEG4)", "Common Analog Encoder (H.264)", "Common Analog Decoder (H.264)", "Common Analog Intel Encoder (H.264)", "Common Analog Intel Decoder (H.264)", "Common Analog Nvidia Cuda Encoder (H.264)", "Common Analog Encoder (G.721)", "Common Analog Encoder (AAC)", "Common Analog Decoder (PCM)", "Common Analog Decoder (G.721)", "Common Analog Decoder (AAC)"
iDevNum	IN	Device Number. Here, SDK supports you to create 64 Common Analog Decoders and 64 Common Analog Encoders at the same time.
eDevType	IN	Device Type. Number 6 for Common Analog Decoder. Number 7 for Common Analog Encoder.
hDisplayWindow	IN	Display Window. Pointer to one WHND window handle. If it isn't NULL, function will automatically display video on this window. If it is NULL, function will not display video on it. For encoder, it is always NULL.
pBufferCB	IN	Callback Function. Pointer to one callback function. If it is NULL, function will not return frame buffer to software caller. If it isn't NULL, caller will obtain frame buffer from callback when every frame is received. For encoder, it is always NULL.
bIsAllow OverlayRenderer	IN	Overlay Renderer. It is one flag to enable the overlay property on DirectShow's Video Renderer Filter. When this function is enabled, the Thum Draw function will be disabled. For encoder, it is always NULL.
bIsEnable EnhancedVideoRenderer	IN	Enhanced Video Renderer. Developer can use it to open new DirectShow's EVR renderer on Win7 platform. Default is VRM renderer in our SDK. For encoder, it is always NULL.
bIsMaintain AspectRatio	IN	Aspect Ratio. The property allows you to keep input's aspect ratio on attached window during displaying. The boundary will be fill by black image. For encoder, it is always NULL.
pUserData	IN	User Data. Pointer to one data pointer. The parameters will be passed through callback. For encoder, it is always NULL.

Return Value:

If AMESDK_CREATE is successful, it will return one DEVICE_HANDLE. If it is fail, it will return error code. As one of below:

0x80000000 - Parameter, pszDevName, is wrong.

0x80000001 - Unknown error.

0x80000002 - Device queue is full already.

Supported Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

```
HWND hWnd = CreateWindowEx( ... );
```

```
BOOL bcb(    double dSampleTime, BYTE * pBuffer, ULONG nBufferLen, BOOL bIsKeyFrame,  
            PVOID pUserData )  
{  
    ...  
  
    return TRUE;  
}
```

EX1: Create one H.264 Video Decoder Device.

```
hDev = AMESDK_CREATE( "Common Analog Decoder (H.264)", 0, 6, hWnd, bcb, param );
```

EX2: Create four MPEG4 Video Encoder Devices.

```
hDev0 = AMESDK_CREATE( "Common Analog Encoder (MPEG4)", 0, 7, NULL, NULL, NULL );
```

```
hDev1 = AMESDK_CREATE( "Common Analog Encoder (MPEG4)", 1, 7, NULL, NULL, NULL );
```

EX3: Create two PCM Audio Decoder Devices.

```
hDev0 = AMESDK_CREATE( "Common Analog Decoder (PCM)", 0, 6, hWnd[ 0 ], bcb[ 0 ], param[ 0 ] );
```

```
hDev1 = AMESDK_CREATE( "Common Analog Decoder (PCM)", 1, 6, hWnd[ 1 ], bcb[ 1 ], param[ 1 ] );
```

Remarks:

If software developer wants to enable H.264 encoder/decoder using hardware acceleration support in your project, you need use the library from "VC.GPU" or "NET.GPU".

About AAC License:

This software development kit contains software programming code and libraries related to AAC function that is subject to your development use only. All the intellectual properties are held by individual license groups and/or the property holders. License and royalty fee should be charged by the license groups and/or property holders and paid by you if any of them is implemented into your commercial product. We will not be responsible for any illegal usage and/or any infringement of the rights of the individual owners of these intellectual properties.

Details of AAC could be found in the website:

<http://www.vialicensing.com/licensing/aac-overview.aspx>

5.02 AMESDK_GET_FORMAT

5.02 AMESDK_GET_FORMAT_EX

This function is used to get current video/audio stream format.

```

BOOL AMESDK_GET_FORMAT(  DEVICE_HANDLE    hDevHandle,
                          ULONG *         pColorSpaceType,
                          ULONG *         pWidth,
                          ULONG *         pHeight,
                          ULONG *         pBitCount,
                          double *        pFrameRate,
                          ULONG *         pRecordMoe,
                          ULONG *         pBitRate,
                          ULONG *         pQuality,
                          ULONG *         pGop,
                          ULONG *         pInterlaceMode,
                          ULONG *         pAspectRatio,
                          ULONG *         pRecordComplexity = NULL );
    
```

```

BOOL AMESDK_GET_FORMAT_EX(  DEVICE_HANDLE    hDevHandle,
                            ULONG *         pColorSpaceType,
                            ULONG *         pWidth,
                            ULONG *         pHeight,
                            ULONG *         pBitCount,
                            double *        pFrameRate,
                            ULONG *         pRecordProfile,
                            ULONG *         pRecordLevel,
                            ULONG *         pRecordEntropy,
                            ULONG *         pRecordMoe,
                            ULONG *         pBitRate,
                            ULONG *         pQuality,
                            ULONG *         pGop,
                            ULONG *         pInterlaceMode,
                            ULONG *         pBFrames,
                            ULONG *         pSlices,
                            ULONG *         pLayers,
                            ULONG *         pAspectRatio,
    
```



```
                                ULONG *          pRecordComplexity );  
  
BOOL AMESDK_GET_FORMAT( DEVICE_HANDLE    hDevHandle,  
                        ULONG *          pChannels,  
                        ULONG *          pBitsPerSample,  
                        ULONG *          pSamplesPerSec  
);
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose format is to be retrieved.
pColorSpace	OUT	Color Space. Pointer to a variable that stores the color space, in MAKEFOURCC. It cannot be NULL.
pWidth	OUT	Width. Pointer to a variable that stores the width, in pixels. It cannot be NULL.
pHeight	OUT	Height. Pointer to a variable that stores the height, in pixels. It cannot be NULL.
pBitCount	OUT	Bit Count. Pointer to a variable that stores the bit count. It cannot be NULL.
pFrameRate	OUT	Frame Rate. Pointer to a variable that stores the frame rate, in fps. It cannot be NULL.
pRecordProfile	OUT	Record Profile. Pointer to a variable that stores the encoder's profile. 0 is baseline, 1 is main-profile, and 2 is high-profile.
pRecordLevel	OUT	Record Level. Pointer to a variable that stores the encoder's profile level. Here, value 41 is Level 41.
pRecordEntropy	OUT	Record Entropy. Pointer to a variable that stores the encoder's entropy function mode. 0 is CAVLC and 1 is CABAC. CABAC is only at main-profile and high-profile.
pRecordMoe	OUT	Record Mode. Pointer to a variable that stores the encoder's mode. It is NULL for decoder.
pBitRate	OUT	Bit Rate. Pointer to a variable that stores the encoder's target bit rate. It is NULL for decoder.
pQuality	OUT	Quality. Pointer to a variable that stores the encoder's quality. It is NULL for decoder.
pGop	OUT	GOP. Pointer to a variable that stores the encoder's GOP value. It is NULL for decoder.
pInterlaceMode	OUT	Interlace Mode. Pointer to a variable that stores the encoder's interlace mode. Interleave mode is 1 and progressive mode is 0. It is NULL for decoder.
pBFrames	OUT	B Frames. Pointer to a variable that stores the encoder's b frame size. It is NULL for decoder.
pSlices	OUT	Slice. Pointer to a variable that stores the encode's slice count. It is NULL for decoder.
pLayers	OUT	Layer. Pointer to a variable that stores the encode's layer count. It is NULL for decoder.
pAspectRatio	OUT	Aspect Ratio. Pointer to a variable that stores the encoder's aspect ratio (x:y). The 16 MSBs are used for x, and the 16 LSBs are for y.
pRecordComplexity	OUT	Record Complexity. Pointer to a variable that stores the encoder's complexity parameter. It is NULL for decoder.
pChannels	OUT	Audio Channels. Pointer to a variable that stores the audio channels. It cannot be NULL.

pBitsPerSample	OUT	Bits Per Sample. Pointer to a variable that stores the number of bis per sample. It cannot be NULL.
pSamplesPerSec	OUT	Sample Per Second. Pointer to a variable that stores the number of sample per second. It cannot be NULL.

Return Value:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Get the current video encoder's format.

```
AMESDK_GET_FORMAT( hDev, &nColorSpace, &nWidth, &nHeight, &nBitCount, &dFrameRate,
                   &nRecordMoe, &nBitRate, &nQuality, &nGOP, &InterlaceMode,
                   &AspectRatio, &nPerformance );
```

EX2: Get the current audio encoder's format.

```
AMESDK_GET_FORMAT( hDev, &nChannels, &nBitsPerSample, &nSamplesPerSec );
```

5.03 AMESDK_SET_FORMAT

5.03 AMESDK_SET_FORMAT_EX

This function is used to configure the encoder.

```

    BOOL AMESDK_SET_FORMAT( DEVICE_HANDLE    hDevHandle,
                            ULONG            nColorSpaceType,
                            ULONG            nWidth,
                            ULONG            nHeight,
                            ULONG            nBitCount,
                            double           dFrameRate,
                            ULONG            nRecordMoe,
                            ULONG            nBitRate,
                            ULONG            nQuality,
                            ULONG            nGop,
                            ULONG            nInterlaceMode,
                            ULONG            nAspectRatio,
                            ULONG            nRecordComplexity = 0
    );

    BOOL AMESDK_SET_FORMAT_EX( DEVICE_HANDLE    hDevHandle,
                              ULONG            nColorSpaceType,
                              ULONG            nWidth,
                              ULONG            nHeight,
                              ULONG            nBitCount,
                              double           dFrameRate,
                              ULONG            nRecordProfile,
                              ULONG            nRecordLevel,
                              ULONG            nRecordEntropy,
                              ULONG            nRecordMoe,
                              ULONG            nBitRate,
                              ULONG            nQuality,
                              ULONG            nGop,
                              ULONG            nInterlaceMode,
                              ULONG            nBFrames,
                              ULONG            nSlices,
                              ULONG            nLayers,
                              ULONG            nAspectRatio,

```

```
                                ULONG          nRecordComplexity

);

BOOL AMESDK_SET_FORMAT( DEVICE_HANDLE    hDevHandle,
                        ULONG            nChannels,
                        ULONG            nBitsPerSample,
                        ULONG            nSamplesPerSec
);
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose format is to be updated.
nColorSpaceType	IN	Video ColorSpace. Specifies the colorspace, in MAKEFOURCC.
nWidth	IN	Video Width. Specifies the width, in pixels.
nHeight	IN	Video Height. Specifies the height, in pixels.
nBitCount	IN	Video BitCount. Specifies the bit count.
dFrameRate	IN	Video FrameRate. Specifies the frame rate, in fps.
nRecordProfile	IN	Record Profile. Specifies the recoder profile (Baseline 0, Main-Profile 1, High-Profile 2).
nRecordLevel	IN	Record Level. Specifies the recoder profile level.
nRecordEntropy	IN	Record Level. Specifies the recoder entropy function (CAVLC 0, CABAC 1).
nRecordMoe	IN	Record Mode. Specifies the recoder mode (VBR 0, CBR 1).
nBitRate	IN	Bit Rate. Specifies the bit rate in bps.
nQuality	IN	Quality. Specifies the quality (QP value, 0~10000).
nGop	IN	GOP. Specifies the GOP (0~255).
nInterlaceMode	IN	Interlace Mode. Specifies the interlace mode. Interleave mode is 1 and progressive mode is 0.
nBFrames	IN	B Frames Mode. Specifies the B frame size. (0 ~ 2)
nSlices	IN	Slice. Specifies the number of sequences of macroblocks into which to divide a frame. H.264 compression allows for the video to be divided and encoded in slices. The codec encodes each slice as an independent stream. Generally, if you use slices, set maximum for every 16 pixels of width in your output (ex. 1280x720 format, maximum = 720 / 16 = 45).
nLayers	IN	Layer. Specifies the number of the layer. It supports functionality such as a degradation in lossy transmission environments.
nAspectRatio	IN	Aspect Ratio. Specifies the aspect ratio (x:y). The 16 MSBs are used for x, and the 16 LSBs are for y. $nAspectRatio = ((x \ll 16) \& 0xFFFF0000) ((y \ll 0) \& 0x0000FFFF)$.
nRecordComplexity	IN	Record Complexity. Specifies the performance speed level (0~7). 0 is highest speed. Low speed makes better quality.

Return Value:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Set the current video encoder's format.

```
AMESDK_SET_FORMAT( hDev,  
                   MAKEFOURCC('H', '2', '6', '4'),  
                   720, 480, 24, 29.970,  
                   0,  
                   8000000,  
                   5000,  
                   30,  
                   0,  
                   0,  
                   0  
);
```


5.04 AMESDK_CODEC_ENCODE

5.04 AMESDK_CODEC_ENCODE_EX

This function is used to encode one video frame buffer. If developer wants to enable a H.264 encoder using "Nvidia CUDA" technology, each encoded frame is acquired one by one via CallBack(i.e. PF_BUFFER_CALLBACK pBufferCB). In addition, the last parameter "nSrcTimeStamp" here **must be set** if you want use NVidia encoder. If you do not specify here this parameter, this may cause the previous frame's timestamp is more than that of the next one.

```
BOOL AMESDK_CODEC_ENCODE( DEVICE_HANDLE hDevHandle,
                           BYTE *        pSrcFrameBuffer,
                           ULONG         nSrcFrameColorSpaceType,
                           ULONG         nSrcFrameWidth,
                           ULONG         nSrcFrameHeight,
                           BYTE * *      ppDstStreamBuffer,
                           ULONG *       pDstStreamBufferSize,
                           BOOL *        pIsKeyFrame,
                           BOOL          bForceKeyFrame = FALSE,
                           ULONGLONG    nSrcTimeStamp = 0x0000000000000000
);
```

This advance function is used to encode one video frame buffer and it also supports cropping.

```

    BOOL AMESDK_CODEC_ENCODE_EX(    DEVICE_HANDLE    hDevHandle,
                                     BYTE *            pSrcFrameBuffer,
                                     ULONG              nSrcFrameColorSpaceType,
                                     ULONG              nSrcFrameWidth,
                                     ULONG              nSrcFrameHeight,
                                     ULONG              nSrcFramePitch,
                                     ULONG              nCropX,
                                     ULONG              nCropY,
                                     ULONG              nCropW,
                                     ULONG              nCropH,
                                     BYTE * *          ppDstStreamBuffer,
                                     ULONG *            pDstStreamBufferSize,
                                     BOOL *             pIsKeyFrame,
                                     BOOL               bForceKeyFrame = FALSE,
                                     ULONGLONG          nSrcTimeStamp = 0x0000000000000000,
                                     ULONG              nQP = 24
    );

```

This function is used to encode one audio frame buffer. For current AAC Encoder, it generates one delay output from encoder, so you need set timestamp to encoder. Encoder will return delay timestamp to you by pDstTimeStamp.

```

    BOOL AMESDK_CODEC_ENCODE( DEVICE_HANDLE hDevHandle,
                              BYTE *       pSrcFrameBuffer,
                              ULONG        nSrcFrameBufferSize,
                              BYTE * *     ppDstStreamBuffer,
                              ULONG *       pDstStreamBufferSize,
                              ULONGLONG     nSrcTimeStamp = 0x0000000000000000,
                              ULONGLONG *   pDstTimeStamp = NULL );

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be updated.
pSrcFrameBuffer	IN	Frame Buffer. Pointer to the address of uncompressed video source.
nSrcFrameColorSpaceType	IN	Video ColorSpace. Specifies the colorspace of source, in MAKEFOURCC.
nSrcFrameWidth	IN	Frame Width. Specifies the width of source, in pixels.
nSrcFrameHeight	IN	Frame Height. Specifies the height of source, in pixels.
nSrcFramePitch	IN	Frame Pitch. Specifies the pitch of source, in bytes.
nCropX	IN	Crop X. Specifies the cropping x offset of source, in pixels.
nCropY	IN	Crop Y. Specifies the cropping y offset of source, in lines.
nCropW	IN	Crop W. Specifies the cropping width of source, in pixels.
nCropH	IN	Crop H. Specifies the cropping height of source, in lines.
ppDstStreamBuffer	OUT	Pointer of destination of compressed steam. For Nvidia CUDA encoder, it always is NULL.
pDstStreamBufferSize	OUT	Size of destination to store compressed steam. For Nvidia CUDA encoder, it always is NULL.
pIsKeyFrame	OUT	Key Frame. I frame or not. For Nvidia CUDA encoder, it always is NULL.
bForceKeyFrame	IN	Froce Key Frame. Ask encoder to generate new GOP in this stage. Encoder will return I frame right now.
nSrcTimeStamp	IN	Input Time Stamp. Specifies current timestamp of this frame buffer.
pDstTimeStamp	OUT	Output Time Stamp. Specifies output timestamp of this compression stream buffer.
nQP	IN	Qantization Parameter. Specifies 0~51. According to different QP value, you can use that the own rate control algorithm estimate the number of bits given the QP value.

Return Value:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: To encode one video frame.

```
AMESDK_CODEC_ENCODE( hDev,  
                      pSrcFrameBuffer,  
                      nSrcFrameColorSpaceType,  
                      nSrcFrameWidth,  
                      nSrcFrameHeight,  
                      &pDstStreamBuffer,  
                      &nDstStreamBufferSize,  
                      &nIsKeyFrame  
);
```

EX2: To encode one audio frame and obtain its output timestamp.

```
AMESDK_CODEC_ENCODE( hDev,  
                      pSrcFrameBuffer,  
                      nSrcFrameBufferSize,  
                      &pDstStreamBuffer,  
                      &nDstStreamBufferSize,  
                      nSrcTimeStamp,  
                      &nDstTimeStamp  
);
```

EX3: To encode one video frame using "NVidia CUDA" technology.

```
BOOL bcb( double dSampleTime, BYTE * pBuffer, ULONG nBufferLen, BOOL bIsKeyFrame,
          PVOID pUserData )
{
    BYTE pDstStreamBuffer = pBuffer;

    ULONG nDstStreamBufferSize = nBufferLen;

    BOOL nIsKeyFrame = bIsKeyFrame;

    return TRUE;
}

hDev =
AMESDK_CREATE( "Common Analog Nvidia Cuda Encoder (H.264)", 0, 7, NULL, bcb, NULL );

AMESDK_CODEC_ENCODE( hDev,
                    pSrcFrameBuffer,
                    nSrcFrameColorSpaceType,
                    nSrcFrameWidth,
                    nSrcFrameHeight,
                    NULL,
                    NULL,
                    NULL,
                    bForceKeyFrame,
                    nSrcTimeStamp
);
```

5.05 AMESDK_CODEC_DECODE

This function is used to decode the stream buffer.

```
BOOL AMESDK_CODEC_DECODE( DEVICE_HANDLE hDevHandle,
                           BYTE *        pSrcStreamBuffer,
                           ULONG          nSrcStreamBufferSize,
                           BOOL           bIsKeyFrame
                           );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be updated.
pSrcStreamBuffer	IN	Pointer of address of stream buffer.
nSrcStreamBufferSize	IN	Size of stream buffer.
bIsKeyFrame	IN	Key Frame. I frame or not.

Return Value:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: To decode one video frame.

```
AMESDK_CODEC_DECODE( hDev,  
                      pSrcStreamBuffer,  
                      nSrcStreamBufferSize,  
                      bIsKeyFrame  
);
```

5.06 AMESDK_CODEC_DECODE_EX

This function is used to decode the stream buffer and to return original frame buffer right away.

```

BOOL AMESDK_CODEC_DECODE_EX( DEVICE_HANDLE  hDevHandle,
                               BYTE *        pSrcStreamBuffer,
                               ULONG         nSrcStreamBufferSize,
                               BOOL          bIsKeyFrame,
                               BYTE *        pDstFrameBuffer,
                               LONG *        pDstFrameBufferSize );

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be updated.
pSrcStreamBuffer	IN	Pointer of address of stream buffer.
nSrcStreamBufferSize	IN	Size of stream buffer.
bIsKeyFrame	IN	Key Frame. I frame or not.
pDstFrameBuffer	OUT	Pointer of frame buffer of destination.
pDstFrameBufferSize	OUT	Size of frame buffer of destination.

Return Value:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
 SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: To decode one video frame.

```
AMESDK_CODEC_DECODE_EX( hDev,  
                          pSrcFrameBuffer,  
                          nSrcStreamBufferSize,  
                          bIsKeyFrame,  
                          pDstFrameBuffer,  
                          &nDstFrameBufferSize  
);
```

5.07 AMESDK_CODEC_IS_HARDWARE_ACCELERATION_SUPPORT

This function is used to check whether to enable or not enable hardware acceleration support. If you can enable hardware acceleration, you can call AMESDK_CRETA() function to create a H.264 of encoder using "Intel Quick Sync" or "Nvidia CUDA" technology.

```
BOOL AMESDK_CODEC_IS_HARDWARE_ACCELERATION_SUPPORT( ULONG nEncoderType );
```

Parameters:

Parameter	IN/OUT	Description
nEncoderType	IN	Hardware Type Support. 0x00000000 // Intel Quick Sync 0x00000001 // Nvidia CUDA

Return Value:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: To check whether to enable hardware acceleration support.

```
AMESDK_CODEC_IS_HARDWARE_ACCELERATION_SUPPORT( 0x00000000 ); // INTEL QUICK SYNC
```

```
AMESDK_CODEC_IS_HARDWARE_ACCELERATION_SUPPORT( 0x00000001 ); // NVIDIA CUDA
```

5.08 AMESDK_CODEC_GET_LAYER_ID

This function is used to get the value of the layer for the stream buffer.

```
BOOL AMESDK_CODEC_GET_LAYER_ID( BYTE *   pStreamBuffer,
                                ULONG    nStreamBufferLen,
                                ULONG *  pLayerID );
```

Parameters:

Parameter	IN/OUT	Description
pStreamBuffer	IN	Pointer of address of stream buffer.
nStreamBufferLen	IN	Length of stream buffer
pLayerID	OUT	Layer value of stream buffer

Return Value:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: To get the value of the layer for stream buffer.

```
AMESDK_CODEC_GET_LAYER_ID( pStreamBuffer, nStreamBufferLen, &nLayerID );
```

6 Exported Functions

for

Network Server and Client Programming

SUPPORT DEVICE:

PD652, SC100, SC200, SC230, SC280,
SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0,
SC3B0, SC500, SC510, SC580, SC590,

Exported Functions for Network Server and Client Programming	
6.01	AMESDK_CREATE (SOURCE/RENDERER)
6.02	AMESDK_DESTROY (SOURCE/RENDERER) (SEE CHAP.1)
6.03	AMESDK_RUN (SOURCE/RENDERER) (SEE CHAP.1)
6.04	AMESDK_STOP (SOURCE/RENDERER) (SEE CHAP.1)
6.05	AMESDK_GET_DEINTERLACE (SOURCE) (SEE CHAP.1)
6.06	AMESDK_SET_DEINTERLACE (SOURCE) (SEE CHAP.1)
6.07	AMESDK_GET_MIRROR (SOURCE) (SEE CHAP.1)
6.08	AMESDK_SET_MIRROR (SOURCE) (SEE CHAP.1)
6.09	AMESDK_OTHER_REFRESH_DISPLAY_WINDOW (SOURCE) (SEE CHAP.1)
6.10	AMESDK_OTHER_SNAPSHOT_BMP (SOURCE) (SEE CHAP.1)
6.11	AMESDK_OTHER_SNAPSHOT_JPG (SOURCE) (SEE CHAP.1)
6.12	AMESDK_OTHER_ZOOM (SOURCE) (SEE CHAP.1)
6.13	AMESDK_NETWORK_SET_VIDEO_STREAM_FORMAT (RENDERER)
6.14	AMESDK_NETWORK_SET_AUDIO_STREAM_FORMAT (RENDERER)
6.15	AMESDK_NETWORK_SET_VIDEO_STREAM_BUFFER (RENDERER)
6.16	AMESDK_NETWORK_SET_AUDIO_STREAM_BUFFER (RENDERER)
6.17	AMESDK_NETWORK_GET_VIDEO_STREAM_STATISTICS (RENDERER)
6.18	AMESDK_NETWORK_GET_AUDIO_STREAM_STATISTICS (RENDERER)
6.19	AMESDK_NETWORK_SET_STREAMING_ADAPTER (RENDERER)
6.20	AMESDK_NETWORK_SET_STREAMING_PORT (RENDERER)
6.21	AMESDK_NETWORK_SET_STREAMING_FOLDER (RENDERER)
6.22	AMESDK_NETWORK_SET_USER_ACCOUNT (RENDERER)
6.23	AMESDK_NETWORK_SET_CALLBACK (RENDERER)
6.24	AMESDK_NETWORK_SET_CUSTOM_PROPERTY (SOURCE)
6.25	AMESDK_NETWORK_GET_CUSTOM_PROPERTY (SOURCE)
6.26	AMESDK_NETWORK_CONNECT_STREAMING_SERVER (SOURCE)
6.27	A Network Server Software Programming Guide
6.28	A Network Client Software Programming Guide

6.05 AMESDK_CREATE

The function helps you to create a network streaming server and client. In SDK, we regard the streaming server as one network renderer device and it can output video and audio streams to internet. On the other hand, the network source device is one streaming client. Your software can use it to receive video and audio streams from specific network streaming server. For a network source device, it also allows you to attach a preview window on it. If the parameter is not NULL, our SDK can help you to display video and audio on this window. Of course, we also allow you to register a callback function on it. The callback function will offer you to obtain and to access the whole frame buffer.

The network function is based on standard RTSP protocol to transfer data between internets. Currently, we support RTSP over UDP, RTSP over TCP, and RTSP over HTTP solutions. Developer can use VLC to test network streaming server.

After version 1.1.0.122.0, we begin to open RTMP and HLS network streaming for developer. Please reference our sample code to obtain more information about it.

```
DEVICE_HANDLE AMESDK_CREATE( LPTSTR                pszDevName,
                             UINT                  iDevNum,
                             ULONG                  eDevType,
                             HWND                   hDisplayWindow_Video,
                             PF_BUFFER_CALLBACK     pBufferCB_Video,
                             PVOID                  pUserData_Video,
                             HWND                   hDisplayWindow_Audio,
                             PF_BUFFER_CALLBACK     pBufferCB_Audio,
                             PVOID                  pUserData_Audio
                             );
```

```
DEVICE_HANDLE AMESDK_CREATE_EX(  
    LPTSTR          pszDevName,  
    UINT            iDevNum,  
    ULONG           eDevType,  
    HWND            hDisplayWindow_Video,  
    PF_BUFFER_CALLBACK pBufferCB_Video,  
    BOOL            bIsAllowOverlayRenderer_Video,  
    BOOL            bIsEnableEnhancedVideoRenderer_Video,  
    BOOL            bIsMaintainAspectRatio_Video,  
    PVOID           pUserData_Video,  
    HWND            ingore,  
    PF_BUFFER_CALLBACK pBufferCB_Audio,  
    BOOL            ingore,  
    BOOL            ingore,  
    BOOL            ingore,  
    PVOID           pUserData_Audio  
);  
typedef ULONG (DEVICE_HANDLE);
```

Parameters:

Parameter	IN/OUT	Description
pszDevName	IN	Device Name. To give a device name that is used to create specific device. Currently, we support these device names below: "Common Analog Network Source url=%s". "Common Analog Network Renderer streams=%s". "Common Analog Network Portal url=%s". Here, %s is your URL path and initial parameters for device initialization. Please reference subsection, Examples , to obtain more introductions.
iDevNum	IN	Device Number. Here, SDK supports you to create 64 Common Analog Network Sources and 64 Common Analog Network Renderers at the same time.
eDevType	IN	Device Type. Number 4 for Common Analog Network RTSP Source. Number 5 for Common Analog Network RTSP Renderer. Number 13 for Common Analog Network HLS Renderer. Number 14 for Common Analog Network RTMP Renderer. Number 15 for Common Analog Network RTMP Portal.
hDisplayWindow	IN	Display Window. Pointer to one WHND window handle. If it isn't NULL, function will automatically play video and sound on this window. If it is NULL, function will hide on it. For network renderer, it is always NULL.
pBufferCB	IN	Callback Function. Pointer to one callback function. If it is NULL, function will not return frame buffer to software caller. If it isn't NULL, caller will obtain frame buffer from callback when every frame is coming. For network renderer, it is always NULL. When network renderer sends the contents of a buffer, it returns the buffer to network source via a callback. The buffer content is of a H.264 data bitstreams. If you need get decode data, you can call AMESDK CREATE EX() to get it. If requested, for more info about the usage of the function, you can refer to below "Examples".
bIsAllowOverlayRenderer	IN	Overlay Renderer. It is one flag to enable the overlay property on DirectShow's Video Renderer Filter. When this function is enabled, the Thum Draw function will be disabled. For network renderer, it is always FALSE.
bIsEnableEnhancedVideoRenderer	IN	Enhanced Video Renderer. Developer can use it to open new DirectShow's EVR renderer on Win7 platform. Default is VRM renderer in our SDK. For network renderer, it is always FALSE.
bIsMaintainAspectRatio	IN	Aspect Ratio. The property allows you to keep input's aspect ratio on attached window during displaying. The boundary will be fill by black image. For network renderer, it is always FALSE.
pUserData	IN	User Data. Pointer to one data pointer. The parameters will be passed through callback. For network renderer, it is always NULL.

Return Value:

If AMESDK_CREATE is successful, it will return one DEVICE_HANDLE. If it is fail, it will show the error code. As one of below:

0x80000000 - Parameter, pszDevName, is wrong.

0x80000001 - Unknown error.

0x80000002 - Device queue is full already.

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support Network Devices:

SOURCE, RENDERER

Examples:

EX1: Create a network streaming server to support 4 media streams at the same time. Here, every media stream can support one video and one audio substreams.

```
hDev = AMESDK_CREATE( "Common Analog Network Renderer streams=4",  
                      0,  
                      5,  
                      NULL,  
                      NULL,  
                      NULL );
```

EX2: Open a client proxy to receive media stream from server without authorization. Developer can use the URL on VLC player, too.

```
hDev = AMESDK_CREATE( "Common Analog Network Source url=rtsp://10.10.10.1/session0.mpg",  
                      0,  
                      4,  
                      hWnd,  
                      NULL,  
                      NULL );
```

EX3: Open a client proxy to receive media stream from server with authorization. Developer can use the URL on VLC player, too.

```
hDev = AMESDK_CREATE( "Common Analog Network Source url=rtsp://root:root@10.10.10.1/session0.mpg",  
                      0,  
                      4,  
                      hWnd,  
                      NULL,  
                      NULL );
```

EX4: Open a client proxy to receive media stream from server with authorization and you are able to get video/audio data of encode/decode via the callback. Developer can use the URL on VLC player, too.

```
hDev =  
AMESDK_CREATE_EX( "Common Analog Network Source url=rtsp://root:root@10.10.10.1/session0.mpg",  
0, 4,  
m_hAttachedWindow, on_process_h264_video_buffer,    // Encode Video Data Callback  
bIsAllowOverlayRenderer, is_enable_enhanced_video_renderer, m_bMaintainAspectRatio, this,  
  
m_hAttachedWindow, on_process_h264_audio_buffer,    // Encode Audio Data Callback  
bIsAllowOverlayRenderer, is_enable_enhanced_video_renderer, m_bMaintainAspectRatio, this,  
  
m_hAttachedWindow, on_process_video_decoder_buffer, // Decode Video Data Callback  
bIsAllowOverlayRenderer, is_enable_enhanced_video_renderer, m_bMaintainAspectRatio, this,  
  
m_hAttachedWindow, on_process_audio_decoder_buffer, // Decode Audio Data callback  
bIsAllowOverlayRenderer, is_enable_enhanced_video_renderer, m_bMaintainAspectRatio, this );
```

6.02 AMESDK_NETWORK_SET_VIDEO_STREAM_FORMAT

This function is to set video stream format.

```
BOOL AMESDK_NETWORK_SET_VIDEO_STREAM_FORMAT(  
  
        DEVICE_HANDLE    hDevHandle,  
        ULONG            nStreamNumber,  
        ULONG            nColorSpaceType,  
        ULONG            nWidth,  
        ULONG            nHeight,  
        ULONG            nBitCount,  
        double           dFrameRate,  
        ULONG            nBandwidth,  
        USHORT           wUdpStartPort = 6790  
  
);
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be updated.
nStreamNumber	IN	Stream Number. Specifies which channel stream to set.
nColorSpaceType	IN	Color Space. Specifies the color space type of the video.
nWidth	IN	Width. Specifies the width of the video.
nHeight	IN	Height. Specifies height of the video.
nBitCount	IN	Bit Count. Specifies the bit count of the video.
dFrameRate	IN	Frame Rate. Specifies the frame rate of the video.
nBandwidth	IN	Bandwidth. Specifies the bandwidth for the video.
wUdpStartPort	IN	UDP Start Port. Specifies the UDP port for the video. The default UDP port is 6790 unless otherwise specified.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support Network Devices:

RENDERER

Examples:

EX1: Set video stream format to NTSC.

```
AMESDK_NETWORK_SET_VIDEO_STREAM_FORMAT( hDev, 0, 0x34363248,  
                                          704, 480, 24, 29.97, 4000000, 6791 );
```

EX2: Set video stream format to PAL.

```
AMESDK_NETWORK_SET_VIDEO_STREAM_FORMAT( hDev, 0, 0x34363248,  
                                          704, 576, 24, 25.00, 4000000, 6791 );
```

6.03 AMESDK_NETWORK_SET_AUDIO_STREAM_FORMAT

This function is to set audio stream format.

```

BOOL AMESDK_NETWORK_SET_AUDIO_STREAM_FORMAT(

    DEVICE_HANDLE    hDevHandle,
    ULONG            nStreamNumber,
    ULONG            nStreamType,
    ULONG            nChannels,
    ULONG            nBitsPerSample,
    ULONG            nSamplesPerSec,
    ULONG            nBandwidth,
    USHORT           wUdpStartPort = 6790

);

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be updated.
nStreamNumber	IN	Stream Number. Specifies which channel stream to set.
nStreamType	IN	Stream Type. Specifies the audio stream type for RTSP. 0x00000000: PCM 0x00000001: AAC
nChannels	IN	Channel Number. Specifies the audio channel of the audio stream. 1: MONO 2: STEREO
nBitsPerSample	IN	Bits Per Sample. Specifies the bit count of the sampling rate.
nSamplesPerSec	IN	Samples Per Second. Specifies the number of sample per second.
nBandwidth	IN	Bandwidth. Specifies the bandwidth for the audio.
wUdpStartPort	IN	UDP Start Port. Specifies the UDP port for the audio. The default UDP port is 6790 unless otherwise specified.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support Network Devices:

RENDERER

Examples:

Ex1: Set audio stream format to Mono.

```
AMESDK_NETWORK_SET_AUDIO_STREAM_FORMAT( hDev, 0, 0x0000,  
                                          1, 16, 8000, 128000, 6791 );
```

Ex1: Set audio stream format to Stereo.

```
AMESDK_NETWORK_SET_AUDIO_STREAM_FORMAT( hDev, 0, 0x0001,  
                                          2, 16, 48000, 1536000, 6791 );
```

About AAC License:

This software development kit contains software programming code and libraries related to AAC function that is subject to your development use only. All the intellectual properties are held by individual license groups and/or the property holders. License and royalty fee should be charged by the license groups and/or property holders and paid by you if any of them is implemented into your commercial product. We will not be responsible for any illegal usage and/or any infringement of the rights of the individual owners of these intellectual properties.

Details of AAC could be found in the website:

<http://www.vialicensing.com/licensing/aac-overview.aspx>

6.04 AMESDK_NETWORK_SET_VIDEO_STREAM_BUFFER

This function is to set stream buffer for video stream.

```

BOOL AMESDK_NETWORK_SET_VIDEO_STREAM_BUFFER(

    DEVICE_HANDLE    hDevHandle,
    ULONG            nStreamNumber,
    BYTE *           pStreamBuffer,
    ULONG            nStreamBufferSize,
    BOOL             bIsKeyFrame,
    LONGLONG         nDelayTime = 0x0000000000000000,
    ULONGLONG        nTimeStamp = 0x0000000000000000

);

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be updated.
nStreamNumber	IN	Stream Number. Specifies which channel stream to set.
pStreamBuffer	IN	Stream Buffer. Specifies the start address of video stream buffer.
nStreamBufferSize	IN	Stream Buffer Size. Specifies the buffer size of the video stream.
bIsKeyFrame	IN	Key Frame. Specifies I frame or not.
nDelayTime	IN	Delay Time, in 100ns units. Specifies the delay time for video playback. User can use it to adjust lip-sync with audio stream.
nTimeStamp	IN	Time Stamp, in 100ns units. Specifies the time stamp.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support Network Devices:

RENDERER

Examples:

Ex1: To set stream buffer for video stream.

```
AMESDK_NETWORK_SET_VIDEO_STREAM_BUFFER( hDev, 0, pStreamBuffer, 0x00096000, TRUE );
```

6.05 AMESDK_NETWORK_SET_AUDIO_STREAM_BUFFER

This function is to set stream buffer for audio stream.

```

BOOL AMESDK_NETWORK_SET_AUDIO_STREAM_BUFFER(

    DEVICE_HANDLE    hDevHandle,
    ULONG            nStreamNumber,
    BYTE *           pStreamBuffer,
    ULONG            nStreamBufferSize,
    LONGLONG          nDelayTime = 0x0000000000000000,
    ULONGLONG         nTimeStamp = 0x0000000000000000

);

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be updated.
nStreamNumber	IN	Stream Number. Specifies which channel stream to set.
pStreamBuffer	IN	Stream Buffer. Specifies the start address of audio stream buffer.
nStreamBufferSize	IN	Stream Buffer Size. Specifies the buffer size of the audio stream.
nDelayTime	IN	Delay Time, in 100ns units. Specifies the delay time for audio playback. User can use it to adjust lip-sync with video stream.
nTimeStamp	IN	Time Stamp, in 100ns units. Specifies the time stamp.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support Network Devices:

RENDERER

Examples:

Ex1: To set stream buffer for audio stream.

```
AMESDK_NETWORK_SET_AUDIO_STREAM_BUFFER( hDev, 0, pStreamBuffer, 320 );
```

6.06 AMESDK_NETWORK_GET_VIDEO_STREAM_STATISTICS

This function is to check the current status of network connection. Programmer can use this function to design QOS function in the streaming server. It is for RTSP only now.

```
BOOL AMESDK_NETWORK_GET_VIDEO_STREAM_STATISTICS(  
  
        DEVICE_HANDLE    hDevHandle,  
        ULONG            nStreamNumber,  
        ULONG *          pBufferQueueSize,  
        ULONG *          pFrameQueueSize,  
        ULONG *          pClients  
  
);
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be retrieved.
nStreamNumber	IN	Stream Number. Specifies which channel stream to get.
pBufferQueueSize	OUT	Buffer Queue Size. Specifies queue size in byte.
pFrameQueueSize	OUT	Frame Queue Size. Specifies queue size in frame.
pClients	OUT	Number Of Client. Specifies the quantity of clients.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support Network Devices:

RENDERER

Examples:

EX1: To obtain current bandwidth status of network connection.

```
AMESDK_NETWORK_GET_VIDEO_STREAM_STATISTICS( hDev,  
                                              0,  
                                              &nBufferSize,  
                                              &nFrameQueueSize,  
                                              &nClients );
```

6.07 AMESDK_NETWORK_GET_AUDIO_STREAM_STATISTICS

This function is to check current bandwidth status of network connection. Programmer can use this function to design QOS function in the streaming server. It is for RTSP only now.

```
BOOL AMESDK_NETWORK_GET_AUDIO_STREAM_STATISTICS(  
  
        DEVICE_HANDLE    hDevHandle,  
        ULONG            nStreamNumber,  
        ULONG *          pBufferQueueSize,  
        ULONG *          pFrameQueueSize,  
        ULONG *          pClients  
  
);
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be retrieved.
nStreamNumber	IN	Stream Number. Specifies which channel stream to get.
pBufferQueueSize	OUT	Buffer Queue Size. Specifies queue size in byte.
pFrameQueueSize	OUT	Frame Queue Size. Specifies queue size in frame.
pClients	OUT	Number Of Client. Specifies the quantity of clients.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support Network Devices:

RENDERER

Examples:

EX1: To obtain current bandwidth status of network connection.

```
AMESDK_NETWORK_GET_AUDIO_STREAM_STATISTICS( hDev,  
                                              0,  
                                              &nBufferQueueSize,  
                                              &nFrameQueueSize,  
                                              &nClients );
```

6.08 AMESDK_NETWORK_SET_STREAMING_ADAPTER

This function is to select outputted network adapter.

```
BOOL AMESDK_NETWORK_SET_STREAMING_ADAPTER(  
  
    DEVICE_HANDLE    hDevHandle,  
    CHAR *           pszOutgoingNetworkInterface  
  
);
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be updated.
pszOutgoingNetworkInterface	IN	Network Adapter. Specifies the adapter's address.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support Network Devices:

RENDERER

Examples:

EX1: To setup local network adapter as output adapter.

```
AMESDK_NETWORK_SET_STREAMING_ADAPTER( hDev, "127.0.0.1" );
```


6.09 AMESDK_NETWORK_SET_STREAMING_PORT

This function is to set port for streaming.

```

    BOOL AMESDK_NETWORK_SET_STREAMING_PORT( DEVICE_HANDLE hDevHandle,
                                             USHORT          wPort
    );

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be updated.
wPort	IN	Port number. Specifies the port number.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
 SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support Network Devices:

RENDERER

Examples:

EX1: To setup streaming port.

```
AMESDK_NETWORK_SET_STREAMING_PORT( hDev, 554 );
```

6.10 AMESDK_NETWORK_SET_STREAMING_FOLDER

This function is to set folder for streaming. It is used for HLS server only.

```

BOOL AMESDK_NETWORK_SET_STREAMING_FOLDER(
    DEVICE_HANDLE    hDevHandle,
    CHAR *           pszWebServerRootFolderPath,
    CHAR *           pszSubFolderPath
);

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be updated.
pszWebServerRootFolderPath	IN	Root Folder. Specifies the root folder of your web server.
pszSubFolderPath	IN	Sub Folder. Specifies the folder to save your HLS files.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support Network Devices:

RENDERER

Examples:

EX1: To setup streaming folder.

```
AMESDK_NETWORK_SET_STREAMING_PORT( hDev, 554 );
```

6.11 AMESDK_NETWORK_SET_USER_ACCOUNT

This function is to set user account and password.

```
BOOL AMESDK_NETWORK_SET_USER_ACCOUNT( DEVICE_HANDLE hDevHandle,  
                                      CHAR *        pszUserName,  
                                      CHAR *        pUserPassword  
);
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be updated.
pszUserName	IN	User Name. Specifies the user name.
pUserPassword	IN	Password. Specifies the pass word.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support Network Devices:

RENDERER

Examples:

EX1: To setup user name and password.

```
AMESDK_NETWORK_SET_USER_ACCOUNT( hDev, "root", "root" );
```

6.12 AMESDK_NETWORK_SET_CALLBACK

This function is to register some callback functions on server side. All 4 callback functions must be implemented before using AMESDK_NETWORK_GET_CUSTOM_PROPERTY() and AMESDK_NETWORK_SET_CUSTOM_PROPERTY().

```

BOOL AMESDK_NETWORK_SET_CALLBACK(

    DEVICE_HANDLE                hDevHandle,
    PF_NETWORK_JOIN_SESSION_CALLBACK pJoinSessionCB,
    PF_NETWORK_LEAVE_SESSION_CALLBACK pLeaveSessionCB,
    PF_NETWORK_SET_CUSTOM_PROPERTY_CALLBACK pSetCustomPropertyCB,
    PF_NETWORK_GET_CUSTOM_PROPERTY_CALLBACK pGetCustomPropertyCB,
    PVOID                        pUserData

);

typedef BOOL (AMESDK_EXPORT *PF_NETWORK_JOIN_SESSION_CALLBACK) (

    ULONG nStreamNumber, CHAR * pszUserName, ULONG dwClientAddress, PVOID pUserData );

typedef BOOL (AMESDK_EXPORT *PF_NETWORK_LEAVE_SESSION_CALLBACK) (

    ULONG nStreamNumber, CHAR * pszUserName, ULONG dwClientAddress, PVOID pUserData );

typedef BOOL (AMESDK_EXPORT *PF_NETWORK_SET_CUSTOM_PROPERTY_CALLBACK) (

    ULONG nStreamNumber, CHAR * pszProperty, CHAR * pszValue, PVOID pUserData );

typedef CHAR * (AMESDK_EXPORT *PF_NETWORK_GET_CUSTOM_PROPERTY_CALLBACK) (

    ULONG nStreamNumber, CHAR * pszProperty, PVOID pUserData );
    
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be updated.
pJoinSessionCB	IN	Pointer of join session callback function.
pLeaveSessionCB	IN	Pointer of leave session callback function.
pSetCustomPropertyCB	IN	Pointer of set custom property callback function.
pGetCustomPropertyCB	IN	Pointer of get custom property callback function.
pUserData	IN	User data. Pointer to the address of user data.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

RENDERER

Examples:

```
BOOL on_join_session( ULONG nStreamNumber,
                     CHAR * pszUserName,
                     ULONG dwClientAddress,
                     PVOID pUserData )
{
    ...
}

BOOL on_leave_session( ULONG nStreamNumber,
                     CHAR * pszUserName,
                     ULONG dwClientAddress,
                     PVOID pUserData )
{
    ...
}

BOOL on_set_custom_property( ULONG nStreamNumber,
                           CHAR * pszProperty,
                           CHAR * pszValue,
                           PVOID pUserData )
{
    // RECEIVE COMMAND OF AMESDK_NETWORK_SET_CUSTOM_PROPERTY ISSUED BY CLIENT.
}

CHAR * on_get_custom_property( ULONG nStreamNumber,
                              CHAR * pszProperty,
                              PVOID pUserData )
{
    // RECEIVE COMMAND OF AMESDK_NETWORK_GET_CUSTOM_PROPERTY ISSUED BY CLIENT.
}

AMESDK_NETWORK_SET_CALLBACK( hDevHandle,
                            on_join_session,
                            on_leave_session,
                            on_set_custom_property,
                            on_get_custom_property );
```

6.13 AMESDK_NETWORK_SET_CUSTOM_PROPERTY

This function is used to set one custom property to server by client. At server side, it is necessary to design AMESDK_NETWORK_SET_CALLBACK() before using this function.

```

BOOL  AMESDK_NETWORK_SET_CUSTOM_PROPERTY(  DEVICE_HANDLE  hDevHandle,
                                           CHAR *          pszProperty,
                                           CHAR *          pszValue,
                                           ULONG           nBytes
                                           );
    
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be updated.
pszProperty	IN	Property. Specifies the property that will be set to the server.
pszValue	IN	Property Value. Specifies the property value. The range of value is dependent on its property.
nBytes	IN	Size. Size of pszValue

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support Network Devices:

SOURCE

Examples:

EX1: To set/change custom property to server.

```
AMESDK_NETWORK_SET_CUSTOM_PROPERTY( hDev, "ptz", p_cmd, sizeof(p_cmd) );
```


6.14 AMESDK_NETWORK_GET_CUSTOM_PROPERTY

This function is used to get one custom property from server by client. At server side, it is necessary to design AMESDK_NETWORK_SET_CALLBACK() before using this function.

```

BOOL AMESDK_NETWORK_GET_CUSTOM_PROPERTY( DEVICE_HANDLE  hDevHandle,
                                         CHAR *         pszProperty,
                                         CHAR *         pszValue,
                                         ULONG          nBytes
);

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be updated.
pszProperty	IN	Property. Specifies the property that will be gotten from the server.
pszValue	IN	Property Value. Specifies the property value. The range of value is dependent on its property.
nBytes	IN	Size. Size of pszValue

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support Network Devices:

SOURCE

Examples:

EX1: To get custom property from server.

```
AMESDK_NETWORK_GET_CUSTOM_PROPERTY( hDev, "gps", p_gps, sizeof(p_gps) );
```

6.15 AMESDK_NETWORK_CONNECT_STREAMING_SERVER

This function is to connect to streaming server with UDP/TCP protocol.

```
BOOL AMESDK_NETWORK_CONNECT_STREAMING_SERVER(  
  
    DEVICE_HANDLE    hDevHandle,  
    ULONG            nProtocol = 0x00000000,  
    USHORT           wUdpStartPort = 0  
);
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be updated.
nProtocol	IN	Protocol. UDP is 0, TCP is 1, HTTP is 2.
wUdpStartPort	IN	Port Number. Specifies the UDP/TCP port for connecting to streaming server. By default, the UDP/TCP port number is set to 0 unless otherwise specified. In UDP protocol mode, the port value 0 is defined to automatically assign port number mode. Otherwise, you can also change the default port to the specific port number. If you choose the same port number for the different channels to connect the streaming server. This will cause the client side has a conflict for the same port value. The conflict will lead to the video/audio stream of only one channel is received by the client side. Additionally, please note that you must set to increase by more than 4 between distances of the port numbers associated with UDP sessions.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support Network Devices:

SOURCE

Examples:

EX1: Connect to streaming server with UDP protocol.

```
AMESDK_NETWORK_CONNECT_STREAMING_SERVER( hDev, 0x00000000, 6791 ); // UDP
```

EX2: Connect to streaming server with TCP protocol.

```
AMESDK_NETWORK_CONNECT_STREAMING_SERVER( hDev, 0x00000001, 6791 ); // TCP
```

7 Exported Functions

for

File Record and Playback Programming

SUPPORT DEVICE:

PD652, SC100, SC200, SC230, SC280,
SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0,
SC3B0, SC500, SC510, SC580, SC590,

Exported Functions for File Record and Playback Programming	
7.01	AMESDK_CREATE (SOURCE/RENDERER)
7.02	AMESDK_DESTROY (SOURCE/RENDERER) (SEE CHAP.1)
7.03	AMESDK_RUN (SOURCE) (SEE CHAP.1)
7.04	AMESDK_STOP (SOURCE) (SEE CHAP.1)
7.05	AMESDK_PAUSE (SOURCE)
7.06	AMESDK_STEP (SOURCE)
7.07	AMESDK_GET_DEINTERLACE (SOURCE) (SEE CHAP.1)
7.08	AMESDK_SET_DEINTERLACE (SOURCE) (SEE CHAP.1)
7.09	AMESDK_GET_MIRROR (SOURCE) (SEE CHAP.1)
7.10	AMESDK_SET_MIRROR (SOURCE) (SEE CHAP.1)
7.11	AMESDK_OTHER_REFRESH_DISPLAY_WINDOW (SOURCE) (SEE CHAP.1)
7.12	AMESDK_OTHER_SNAPSHOT_BMP (SOURCE) (SEE CHAP.1)
7.13	AMESDK_OTHER_SNAPSHOT_JPG (SOURCE) (SEE CHAP.1)
7.14	AMESDK_OTHER_ZOOM (SOURCE) (SEE CHAP.1)
7.15	AMESDK_GET_VOLUME (SOURCE) (SEE CHAP.1)
7.16	AMESDK_SET_VOLUME (SOURCE) (SEE CHAP.1)
7.17	AMESDK_FILE_GET_VIDEO_STREAM_FORMAT (SOURCE/RENDERER)
7.18	AMESDK_FILE_SET_VIDEO_STREAM_FORMAT (RENDERER)
7.19	AMESDK_FILE_GET_AUDIO_STREAM_FORMAT (SOURCE/RENDERER)
7.20	AMESDK_FILE_SET_AUDIO_STREAM_FORMAT (RENDERER)
7.21	AMESDK_FILE_SET_VIDEO_STREAM_BUFFER (SOURCE/RENDERER)
7.22	AMESDK_FILE_SET_AUDIO_STREAM_BUFFER (RENDERER)
7.23	AMESDK_FILE_GET_VIDEO_STREAM_BUFFER (SOURCE/RENDERER)
7.24	AMESDK_FILE_GET_AUDIO_STREAM_BUFFER (RENDERER)
7.25	AMESDK_FILE_GET_VIDEO_STREAM_DATA (SOURCE)
7.26	AMESDK_FILE_GET_AUDIO_STREAM_DATA (SOURCE)
7.27	AMESDK_FILE_GET_VIDEO_TIMESTAMP_MAP (SOURCE)
7.28	AMESDK_FILE_GET_AUDIO_TIMESTAMP_MAP (SOURCE)
7.29	AMESDK_FILE_GET_VIDEO_SECTION_MAP (SOURCE)
7.30	AMESDK_FILE_GET_AUDIO_SECTION_MAP (SOURCE)
7.31	AMESDK_FILE_GET_VIDEO_MOTION_MAP (SOURCE)
7.32	AMESDK_FILE_GET_VIDEO_GPS_MAP (SOURCE)
7.33	AMESDK_FILE_GET_VIDEO_POS_MAP (SOURCE)
7.34	AMESDK_FILE_GET_MEDIA_LENGTH (SOURCE)
7.35	AMESDK_FILE_GET_MEDIA_POSITION (SOURCE)
7.36	AMESDK_FILE_SET_MEDIA_POSITION (SOURCE)
7.37	AMESDK_FILE_GET_MEDIA_PLAYBACK_RATE (SOURCE)
7.38	AMESDK_FILE_SET_MEDIA_PLAYBACK_RATE (SOURCE)

Exported Functions for File Record and Playback Programming	
7.39	AMESDK_FILE_GET_MEDIA_PLAYBACK_SKIP_MODE (SOURCE)
7.40	AMESDK_FILE_SET_MEDIA_PLAYBACK_SKIP_MODE (SOURCE)
7.41	AMESDK_FILE_SEEK (SOURCE)
7.42	AMESDK_FILE_FLUSH (RENDERER)
7.43	AMESDK_FILE_DELETE_THE_OLDEST_FILE (SOURCE/RENDERER)
7.44	AMESDK_FILE_GET_FILE_INFO_LIST (SOURCE/RENDERER)
7.45	AMESDK_FILE_UPDATE_FILE_INFO_LIST (SOURCE/RENDERER)
7.46	AMESDK_FILE_FREE_FILE_INFO_LIST (SOURCE/RENDERER)
7.47	AMESDK_FILE_EXPORT (SOURCE/RENDERER)
7.48	AMESDK_FILE_SELF_REPAIR (SOURCE/RENDERER)
7.49	AMESDK_FILE_REPAIR (SOURCE/RENDERER)
7.50	AMESDK_FILE_DIAGNOSIS (SOURCE/RENDERER)
7.51	AMESDK_FILE_STD_RESTORE (SOURCE/RENDERER)
7.52	An AVI File Writer Software Programming Guide (RENDERER)
7.53	An AVI File Player Software Programming Guide (SOURCE)

7.01 AMESDK_CREATE

The function helps you to access a media file. In SDK, we see the media file as one file source device and it can output video and audio streams to your software. On the other hand, the file renderer device is one file writer. Your software can use it to record video and audio streams into specific media file. For a file source device, it also allows you to attach a preview window on it. If the parameter is not NULL, our SDK can help you to display video and audio on this window.

For file source, our SDK designs 2 kinds of mode for developer. One is DirectShow mode, it means you can attached one window to play video and audio on it. Another is Editing mode, if you just need access file's frame buffer and you can set the attach window as NULL.

```
DEVICE_HANDLE AMESDK_CREATE( LPTSTR                pszDevName,
                             UINT                  iDevNum,
                             ULONG                  eDevType,
                             HWND                   hDisplayWindow_Video,
                             PF_BUFFER_CALLBACK     pBufferCB_Video,
                             PVOID                  pUserData_Video
                             HWND                   ignore = NULL,
                             PF_BUFFER_CALLBACK     pBufferCB_Audio = NULL,
                             PVOID                  pUserData_Audio = NULL
                             );
```

```
DEVICE_HANDLE AMESDK_CREATE_EX(  
    LPTSTR          pszDevName,  
    UINT            iDevNum,  
    ULONG           eDevType,  
    HWND            hDisplayWindow_Video,  
    BOOL            bIsAllowOverlayRenderer_Video,  
    BOOL            bIsEnableEnhancedVideoRenderer_Video,  
    BOOL            bIsMaintainAspectRatio_Video,  
    PF_BUFFER_CALLBACK pBufferCB_Video,  
    PVOID           pUserData_Video,  
    HWND            ignore = NULL,  
    BOOL            ignore = FALSE,  
    BOOL            ignore = FALSE,  
    BOOL            ignore = FALSE,  
    PF_BUFFER_CALLBACK pBufferCB_Audio = NULL,  
    PVOID           pUserData_Audio = NULL  
);
```

Parameters:

Parameter	IN/OUT	Description
pszDevName	IN	Device Name. To give a device name that is used to create specific device. Currently, we support these device names below: "Common Analog File Source %s". "Common Analog File Renderer %s". Here, %s is your file path of the media file.
iDevNum	IN	Device Number. Here, SDK supports you to create 64 Common Analog File Sources and 64 Common Analog File Renderers at the same time.
eDevType	IN	Device Type. Number 2 for Common Analog File Source. Number 3 for Common Analog File Renderer.
hDisplayWindow	IN	Display Window. Pointer to one WHND window handle. If it isn't NULL, function will automatically play video and sound on this window. If it is NULL, function will hide on it. For file renderer, it is always NULL.
pBufferCB_Video pBufferCB_Audio	IN	Callback Function. Pointer to one callback function. If it is NULL, function will not return bit stream buffer to software caller. If it isn't NULL, caller will obtain bit stream buffer from callback when each frame is arrived. For file renderer, it is always NULL.
bIsAllowOverlayRenderer	IN	Overlay Renderer. It is one flag to enable the overlay property on DirectShow's Video Renderer Filter. When this function is enabled, the Thum Draw function will be disabled. For file renderer, it is always FALSE.
bIsEnableEnhancedVideoRenderer	IN	Enhanced Video Renderer. Developer can use it to open new DirectShow's EVR renderer on Win7 platform. Default is VRM renderer in our SDK. For file renderer, it is always FALSE.
bIsMaintainAspectRatio	IN	Aspect Ratio. The property allows you to keep input's aspect ratio on attached window during displaying. The boundary will be fill by black image. For file renderer, it is always FALSE.
pUserData_Video pUserData_Audio	IN	User Data. Pointer to one data pointer. The parameters will be passed through callback. For file renderer, it is always NULL.

Return Value:

If AMESDK_CREATE is successful, it will return one DEVICE_HANDLE. If it is fail, it will show the error code. As one of below:

0x80000000 - Parameter, pszDevName, is wrong.

0x80000001 - Unknown error.

0x80000002 - Device queue is full already.

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE, RENDERER

Support File Types:

AVI, MP4, ASF, TS, FLV

Examples:

EX1: Open a media file then play it on an attached window at DirectShow mode.

```
hDev = AMESDK_CREATE( "Common Analog File Source C:\\200812050000.AVI",
                      0,
                      2,
                      hWnd,
                      &bcb_video,
                      this,
                      NULL,
                      &bcb_audio,
                      this );
```

EX1: Open a media file at editing mode.

```
hDev = AMESDK_CREATE( "Common Analog File Source C:\\200812050000.AVI",
                      0, 2, NULL, NULL, NULL );
```

EX3: Create a media file writer to record video and audio streams.

```
hDev = AMESDK_CREATE( "Common Analog File Renderer C:\\200812050000.AVI",  
                      0,  
                      3,  
                      NULL,  
                      NULL,  
                      NULL );
```

EX4: Create two media file writers at the same time.

```
hDev = AMESDK_CREATE( "Common Analog File Renderer C:\\200812050000.AVI",  
                      0,  
                      3,  
                      NULL,  
                      NULL,  
                      NULL );
```

```
hDev = AMESDK_CREATE( "Common Analog File Renderer C:\\200812060000.AVI",  
                      1,  
                      3,  
                      NULL,  
                      NULL,  
                      NULL );
```

7.02 AMESDK_PAUSE

This function is used to pause the file source device on DirectShow mode.

```
BOOL AMESDK_PAUSE( DEVICE_HANDLE hDevHandle );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device that is to be paused.

Return Value:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE

Support File Types:

AVI, MP4, ASF, TS, FLV

Examples:

EX1: Pause the device.

```
AMESDK_PAUSE( hDev );
```

7.03 AMESDK_STEP

This function is used to step forward by the specified number of frames on DirectShow mode.

```
BOOL AMESDK_STEP( DEVICE_HANDLE hDevHandle,
                  ULONG          nSteps );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device that is to be stepped.
nSteps	IN	Steps. Specifies the number of frames to skip. If nSteps is 1, the file source steps forward one frame. If nSteps is a number n greater than 1, the graph skips n - 1 frames and shows the n-th frame.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE

Support File Types:

AVI, MP4, ASF, TS, FLV

Examples:

EX1: Step to next frame.

```
AMESDK_STEP( hDev, 1 );
```

EX2: Skip 5 frames and show the next 6th frame.

```
AMESDK_STEP( hDev, 6 );
```

7.04 AMESDK_FILE_GET_VIDEO_STREAM_FORMAT

This function is used to get the video stream format from one media file.

```

BOOL AMESDK_FILE_GET_VIDEO_STREAM_FORMAT( DEVICE_HANDLE  hDevHandle,
                                           ULONG *        pColorSpaceType,
                                           ULONG *        pWidth,
                                           ULONG *        pHeight,
                                           ULONG *        pBitCount,
                                           DOUBLE *       pFrameRate,
                                           DWORD *        pCustomFlags );
    
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose video stream format is to be retrieved.
pColorSpaceType	OUT	Color Space. Pointer to a variable that stores the color space type of the video.
pWidth	OUT	Width. Pointer to a variable that stores the width of the video.
pHeight	OUT	Height. Pointer to a variable that stores the height of the video.
pBitCount	OUT	Bit Count. Pointer to a variable that stores the bit count of the video.
pFrameRate	OUT	Frame Rate. Pointer to a variable that stores the frame rate of the video.
pCustomFlags	OUT	Custom Flags. Pointer to a variable that stores the custom flags of the video stream. The following flags are defined: AMESDK_FILE_CUSTOMFLAG_ISINTERLEAVED Indicates this video stream is interleaved. It need do deinterlace during playback. AMESDK_FILE_CUSTOMFLAG_ISSYNCHRONIZATION_VIDEO AMESDK_FILE_CUSTOMFLAG_ISSYNCHRONIZATION_AUDIO Indicates this video stream need enable one post-sync algorithm to re-calculate correct playback frame rate. It is suggested to be used by all live data cards, such as SC100, SC200, SC230, SC300, SC310, SC330, SC340 and SC500. AMESDK_FILE_CUSTOMFLAG_NONINDEX Indicates timestamp information will not be inserted into recording file. Note!! Non-index recording file cannot support file export function.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE, RENDERER

Support File Types:

AVI, MP4, ASF, TS, FLV

Examples:

EX1: Get the video stream format from file.

```
AMESDK_FILE_GET_VIDEO_STREAM_FORMAT( hDev,  
                                     &nColorSpaceType,  
                                     &nWidth,  
                                     &nHeight,  
                                     &nBitCount,  
                                     &nFrameRate  
                                     &nCustomFlags );  
  
if( nCustomFlags & AMESDK_FILE_CUSTOMFLAG_ISINTERLEAVED ) {  
  
    AMESDK_SET_DEINTERLACE( hDev, 0x00000007 );  
}
```

7.05 AMESDK_FILE_SET_VIDEO_STREAM_FORMAT

This function is used to set/change the video stream format.

```

BOOL AMESDK_FILE_SET_VIDEO_STREAM_FORMAT( DEVICE_HANDLE  hDevHandle,
                                           ULONG          nColorSpaceType,
                                           ULONG          nWidth,
                                           ULONG          nHeight,
                                           ULONG          nBitCount,
                                           DOUBLE         nFrameRate,
                                           DWORD          dwCustomFlags = 0 );

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose video stream format is to be set.
nColorSpaceType	IN	Color Space. Specifies the color space type of the video.
nWidth	IN	Width. Specifies the width of the video.
nHeight	IN	Height. Specifies height of the video.
nBitCount	IN	Bit Count. Specifies the bit count of the video.
nFrameRate	IN	Frame Rate. Specifies the frame rate of the video.
dwCustomFlags	IN	Custom Flags. Custom flags for the video stream. The following flags are defined: AMESDK_FILE_CUSTOMFLAG_ISINTERLEAVED Indicates this video stream is interleaved. It need do deinterlace during playback. AMESDK_FILE_CUSTOMFLAG_ISSYNCHRONIZATION_VIDEO AMESDK_FILE_CUSTOMFLAG_ISSYNCHRONIZATION_AUDIO Indicates this video stream need enable one post-sync algorithm to re-calculate playback frame rate. It is suggested to be used by all live data cards, such as SC100, SC200, SC230, SC300, SC310, SC330, SC340 and SC500. AMESDK_FILE_CUSTOMFLAG_NONINDEX Indicates timestamp information will not be inserted into recording file. Note!! Non-index recording file cannot support file export function.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

RENDERER

Support File Types:

AVI, MP4, ASF, TS, FLV

Examples:

EX1: Set video stream format.

```
AMESDK_FILE_SET_VIDEO_STREAM_FORMAT( hDev, 0x44495658 /*XVID*/, 704, 480, 24, 29.970 );
```

```
AMESDK_FILE_SET_VIDEO_STREAM_FORMAT( hDev, 0x58564944 /*DIVX*/, 704, 480, 24, 29.970 );
```

```
AMESDK_FILE_SET_VIDEO_STREAM_FORMAT( hDev, 0x34363248 /*H264*/, 704, 480, 24, 29.970 );
```

```
AMESDK_FILE_SET_VIDEO_STREAM_FORMAT( hDev, 0x44495658 /*XVID*/, 704, 576, 24, 25.000 );
```

```
AMESDK_FILE_SET_VIDEO_STREAM_FORMAT( hDev, 0x58564944 /*DIVX*/, 704, 576, 24, 25.000 );
```

```
AMESDK_FILE_SET_VIDEO_STREAM_FORMAT( hDev, 0x34363248 /*H264*/, 704, 576, 24, 25.000 );
```

EX2: Set video stream format with custom flags, CUSTOMFLAG_ISINTERLEAVED.

```
AMESDK_FILE_SET_VIDEO_STREAM_FORMAT( hDev, 0x34363248 /*H264*/,  
                                     704, 480, 24, 29.970,  
                                     AMESDK_FILE_CUSTOMFLAG_ISINTERLEAVED );
```

```
AMESDK_FILE_SET_VIDEO_STREAM_FORMAT( hDev, 0x44495658 /*XVID*/,  
                                     704, 240, 24, 29.970,  
                                     0x00000000 );
```

```
AMESDK_FILE_SET_VIDEO_STREAM_FORMAT( hDev, 0x44495658 /*XVID*/,  
                                     352, 240, 24, 29.970,  
                                     0x00000000 );
```

EX3: Set video stream format with custom flags, CUSTOMFLAG_ISSYNCHRONIZATION.

```
AMESDK_FILE_SET_VIDEO_STREAM_FORMAT( hDev, 0x44495658 /*XVID*/,  
                                     704, 480, 24, 29.970,  
                                     AMESDK_FILE_CUSTOMFLAG_ISSYNCHRONIZATION |  
                                     AMESDK_FILE_CUSTOMFLAG_ISINTERLEAVED );
```

7.06 AMESDK_FILE_GET_AUDIO_STREAM_FORMAT

This function is used to get the audio stream format from one media file.

```

BOOL AMESDK_FILE_GET_AUDIO_STREAM_FORMAT( DEVICE_HANDLE  hDevHandle,
                                           ULONG *        pStreamType,
                                           ULONG *        pChannels,
                                           ULONG *        pBitsPerSample,
                                           ULONG *        pSamplesPerSec );

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose audio format is to be retrieved.
pStreamType	OUT	Stream Type. Pointer to a variable that stores the stream type of the audio channel of the audio stream. 0x00000000: PCM 0x00000001: AAC
pChannels	OUT	Channel number. Pointer to a variable that stores the number of the audio channel of the audio stream. 1: MONO 2: STEREO
pBitsPerSample	OUT	Bits Per Sample. Pointer to a variable that stores the bit count of the sampling rate.
pSamplesPerSec	OUT	Samples Per Second. Pointer to a variable that stores the number of sample per second.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

RENDERER

Support File Types:

AVI, MP4, ASF, TS, FLV

Examples:

EX1: Get the audio stream format.

```
AMESDK_FILE_GET_AUDIO_STREAM_FORMAT( hDev,  
                                     &nChannels,  
                                     &nBitsPerSample,  
                                     &nSamplesPerSec );
```


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<http://www.vialicensing.com/licensing/aac-overview.aspx>

7.07 AMESDK_FILE_SET_AUDIO_STREAM_FORMAT

This function is used to set/change the audio stream format.

```

BOOL AMESDK_FILE_SET_AUDIO_STREAM_FORMAT( DEVICE_HANDLE  hDevHandle,
                                           ULONG          nStreamType,
                                           ULONG          nChannels,
                                           ULONG          nBitsPerSample,
                                           ULONG          nSamplesPerSec );

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose audio format is to be set.
nStreamType	IN	Stream Type. Pointer to a variable that stores the stream type of the audio channel of the audio stream. 0x00000000: PCM 0x00000001: AAC
nChannels	IN	Channel number. Specifies the audio channel of the audio stream. 1: MONO 2: STEREO
nBitsPerSample	IN	Bits Per Sample. Specifies the bit count of the sampling rate.
nSamplesPerSec	IN	Samples Per Second. Specifies the number of sample per second.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

RENDERER

Support File Types:

AVI, MP4, ASF, TS, FLV

Examples:

EX1: Set the audio stream format.

```
AMESDK_FILE_SET_AUDIO_STREAM_FORMAT( hDev, 0, 1, 16, 48000 );
```

```
AMESDK_FILE_SET_AUDIO_STREAM_FORMAT( hDev, 0, 2, 16, 8000 );
```

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Details of AAC could be found in the website:

<http://www.vialicensing.com/licensing/aac-overview.aspx>

7.08 AMESDK_FILE_SET_VIDEO_STREAM_BUFFER

This function is used to push one video stream buffer into one media file.

```

BOOL AMESDK_FILE_SET_VIDEO_STREAM_BUFFER(

    DEVICE_HANDLE          hDevHandle,
    BYTE *                 pStreamBuffer,
    ULONG                  nStreamBufferSize,
    BOOL                   bIsKeyFrame,
    LONGLONG               nDelayTime = 0x0000000000000000,
    ULONGLONG              nTimeStamp = 0x0000000000000000,
    AMESDK_SECTION_INFO *  pSectionData = NULL,
    AMESDK_MOTION_INFO *   pMotionData = NULL,
    AMESDK_GPS_INFO *      pGpsData = NULL,
    AMESDK_POS_INFO *      pPosData = NULL
);

```

```

struct AMESDK_SECTION_INFO {

    ULONG          m_nStartSample;
    ULONG          m_nStopSample;
    ULONGLONG      m_nStartTimeStamp;
    ULONGLONG      m_nStopTimeStamp;
    ULONG          m_nSectionNumber;
};

```

```

struct AMESDK_MOTION_INFO {

    ULONG          m_nStartSample;
    ULONG          m_nStopSample;
    ULONGLONG      m_nStartTimeStamp;
    ULONGLONG      m_nStopTimeStamp;
    ULONG          m_nStrength;
};

```

```
struct AMESDK_GPS_INFO {

    ULONG        m_nStartSample;
    ULONG        m_nStopSample;
    ULONGLONG    m_nStartTimeStamp;
    ULONGLONG    m_nStopTimeStamp;
    float        m_fLongitude;
    float        m_fLatitude;
    float        m_fSpeed;
    float        m_fAngle;
    BOOL         m_bIsVaild;
};
```

```
struct AMESDK_POS_INFO {

    ULONG        m_nStartSample;
    ULONG        m_nStopSample;
    ULONGLONG    m_nStartTimeStamp;
    ULONGLONG    m_nStopTimeStamp;
};
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose video buffer is to be set.
pStreamBuffer	IN	Stream Buffer. Specifies the start address of video stream buffer.
nStreamBufferSize	IN	Stream Buffer Size. Specifies the buffer size of the video stream.
bIsKeyFrame	IN	Key Frame. Specifies whether the frame is I frame or not.
nDelayTime	IN	Delay Time. Specifies the time delay information.
nTimeStamp	IN	Time Stamp. Specifies the frame's timestamp information.
pSectionData	IN	Section Data. Specifies the frame's section information. It is only for AVI.
pMotionData	IN	Motion Data. Specifies the frame's motion information. It is only for AVI.
pGpsData	IN	GPS Data. Specifies the frame's GPS information. It is only for AVI.

pPosData	IN	POS Data. Specifies the frame's POS information. It is only for AVI.
----------	----	---

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

RENDERER

Support File Types:

AVI, MP4, ASF, TS, FLV

Examples:

EX1: Set the video stream buffer.

```
AMESDK_FILE_SET_VIDEO_STREAM_BUFFER( hDev, po, 0x00080000, TRUE );
```

EX2: Set the video stream buffer with motion data into renderer.

```
AMESDK_GPS_INFO s_motion_info = { -1, -1, -1, -1, 0xFF };
```

```
AMESDK_FILE_SET_VIDEO_STREAM_BUFFER( hDev, po, 0x00080000, FALSE, 0, 0,  
  
                                     NULL, &s_motion_info, NULL, NULL );
```

EX3: Set the video stream buffer with gps data into renderer.

```
AMESDK_GPS_INFO s_gps_info = { -1, -1, -1, -1, 100.000, 20.000, 120.000, 250.000, TRUE };
```

```
AMESDK_FILE_SET_VIDEO_STREAM_BUFFER( hDev, po, 0x00080000, FALSE, 0, 0  
  
                                     NULL, NULL, &s_gps_info, NULL );
```


7.09 AMESDK_FILE_SET_AUDIO_STREAM_BUFFER

This function is used to push one audio stream buffer into one media file.

```

BOOL AMESDK_FILE_SET_AUDIO_STREAM_BUFFER(

    DEVICE_HANDLE          hDevHandle,
    BYTE *                 pStreamBuffer,
    ULONG                  nStreamBufferSize,
    LONGLONG                nDelayTime = 0x0000000000000000,
    ULONGLONG              nTimeStamp = 0x0000000000000000,
    AMESDK_SECTION_INFO *  pSectionData = NULL
);

struct AMESDK_SECTION_INFO {

    ULONG      m_nStartSample;
    ULONG      m_nStopSample;
    ULONGLONG  m_nStartTimeStamp;
    ULONGLONG  m_nStopTimeStamp;
    ULONG      m_nSectionNumber;
};

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose audio buffer is to be set.
pStreamBuffer	IN	Stream Buffer. Specifies the start address of audio stream buffer.
nStreamBufferSize	IN	Stream Buffer Size. Specifies the buffer size of the audio stream.
nDelayTime	IN	Delay Time. Specifies the time delay information.
nTimeStamp	IN	Time Stamp. Specifies the frame's timestamp information.
pSectionData	IN	Section Data, Specifies the frame's section information. It is only for AVI.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

RENDERER

Support File Types:

AVI, MP4, ASF, TS, FLV

Examples:

EX1: Set the audio stream buffer.

```
AMESDK_FILE_SET_AUDIO_STREAM_BUFFER( hDev, po, 1920 );
```

7.10 AMESDK_FILE_GET_VIDEO_STREAM_BUFFER

This function is used to get one video stream buffer from one media file.

```

BOOL AMESDK_FILE_GET_VIDEO_STREAM_BUFFER(  DEVICE_HANDLE  hDevHandle,
                                           ULONG          nSample,
                                           BYTE *         pStreamBuffer,
                                           ULONG *         pStreamBufferSize
                                           );

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose video buffer is to be set.
nSample	IN	Sample. Specifies which sample's stream buffer is to be retrieved.
pStreamBuffer	OUT	Stream Buffer. Specifies the start address of video stream buffer.
pStreamBufferSize	IN/OUT	Stream Buffer Size. Specifies the buffer size of the video stream. For input, it specifies the size of pStreamBuffer. For output, it returns the frame's stream length.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
 SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE, RENDERER

Support File Types:

AVI, MP4, ASF, TS, FLV

Examples:

EX1: Get the first video stream buffer.

```
AMESDK_FILE_GET_VIDEO_STREAM_BUFFER( hDev, 0, pStreamBuffer, pStreamBufferSize );
```

7.11 AMESDK_FILE_GET_AUDIO_STREAM_BUFFER

This function is used to get one audio stream buffer from one media file.

```

BOOL AMESDK_FILE_GET_AUDIO_STREAM_BUFFER( DEVICE_HANDLE  hDevHandle,
                                           ULONG          nSample,
                                           BYTE *         pStreamBuffer,
                                           ULONG          nStreamBufferSize
                                           );

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose audio buffer is to be set.
nSample	IN	Sample. Specifies which sample's stream buffer is to be retrieved.
pStreamBuffer	OUT	Stream Buffer. Specifies the start address of audio stream buffer.
pStreamBufferSize	IN/OUT	Stream Buffer Size. Specifies the buffer size of the audio stream. For input, it specifies the size of pStreamBuffer. For output, it returns the frame's stream length.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE, RENDERER

Support File Types:

AVI, MP4, ASF, TS, FLV

Examples:

EX1: Get the first audio stream buffer.

```
AMESDK_FILE_GET_AUDIO_STREAM_BUFFER( hDev, 0, pStreamBuffer, pStreamBufferSize );
```

7.12 AMESDK_FILE_GET_VIDEO_STREAM_DATA

This function is used to get one video sample's private stream data. The timestamp parameter is recorded one absolute system local time for this sample. For example, the sample is recorded on 2009.07.25.12:06:30,000,000,0 ns. User can use Microsoft's Win32 API, `FileTimeToSystemTime` to exchange it into `SYSTEMTIME` structure.

```

BOOL AMESDK_FILE_GET_VIDEO_STREAM_DATA( DEVICE_HANDLE    hDevHandle,
                                         ULONG            nSample,
                                         ULONGLONG *      pTimeStamp,
                                         BOOL *           pIsKeyFrame );

```

Parameters:

Parameter	IN/OUT	Description
<code>hDevHandle</code>	IN	Device Handle. Handle to the device whose information is to be retrieved.
<code>nSample</code>	IN	Sample. Specifies which sample's information is to be retrieved.
<code>pTimeStamp</code>	OUT	Time Stamp, in 100ns units. Pointer to a variable that receives the time stamp of the sample.
<code>pIsKeyFrame</code>	OUT	Key Frame. Pointer to a variable that indicates whether the frame is key frame or not.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE

Support File Types:

AVI, MP4, ASF, TS, FLV

Examples:

EX1: Get the first video sample's private data.

```
AMESDK_FILE_GET_VIDEO_STREAM_DATA( hDev, 0, &nTimeStamp, &bIsKeyFrame );
```

EX2: Get the second video sample's private data.

```
AMESDK_FILE_GET_VIDEO_STREAM_DATA( hDev, 1, &nTimeStamp, &bIsKeyFrame );
```


7.13 AMESDK_FILE_GET_AUDIO_STREAM_DATA

This function is used to get the audio's private stream data. The timestamp parameter is recorded one absolute system local time for this sample. For example, the sample is recorded on 2009.07.25.12:06:30,000,000,0 ns. User can use Microsoft's Win32 API, `FileTimeToSystemTime` to exchange it into `SYSTEMTIME` structure.

```

BOOL AMESDK_FILE_GET_AUDIO_STREAM_DATA( DEVICE_HANDLE    hDevHandle,
                                         ULONG            nSample,
                                         ULONGLONG *      pTimeStamp );
    
```

Parameters:

Parameter	IN/OUT	Description
<code>hDevHandle</code>	IN	Device Handle. Handle to the device whose information is to be retrieved.
<code>nSample</code>	IN	Sample. Specifies which sample's information is to be retrieved.
<code>pTimeStamp</code>	OUT	Time Stamp, in 100ns units. Pointer to a variable that receives the time stamp of the sample.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE

Support File Types:

AVI, MP4, ASF, TS, FLV

Examples:

EX1: Get the first audio sample's private data.

```
AMESDK_FILE_GET_AUDIO_STREAM_DATA( hDev, 0, &nTimeStamp );
```

EX2: Get the second audio sample's private data.

```
AMESDK_FILE_GET_AUDIO_STREAM_DATA( hDev, 1, &nTimeStamp );
```

7.14 AMESDK_FILE_GET_VIDEO_TIMESTAMP_MAP

This function is used to get complete timestamp map from video stream. Please refer to function AMESDK_FILE_SET_VIDEO_STREAM_BUFFER.

```
BOOL AMESDK_FILE_GET_VIDEO_TIMESTAMP_MAP( DEVICE_HANDLE  hDevHandle,
                                           ULONGLONG **   ppTimeStampMap,
                                           ULONG *        pTimeStampMapSize );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose information is to be retrieved.
ppTimeStampMap	OUT	TimeStamp Map. Pointer to a pointer that receives the complete data buffer of timestamp information. System will automatically release this buffer memory.
pTimeStampMapSize	OUT	TimeStamp Map Size. Pointer to a variable that receives the size of timestamp map.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE

Support File Types:

AVI

Examples:

EX1: Get the timestamp map information.

```
AMESDK_FILE_GET_VIDEO_TIMESTAMP_MAP( hDev, &pTimeStampMap, &nTimeStampMapSize );
```

7.15 AMESDK_FILE_GET_AUDIO_TIMESTAMP_MAP

This function is used to get complete timestamp map from audio stream. Please refer to function AMESDK_FILE_SET_AUDIO_STREAM_BUFFER.

```
BOOL AMESDK_FILE_GET_AUDIO_TIMESTAMP_MAP( DEVICE_HANDLE hDevHandle,
                                           ULONGLONG ** ppTimeStampMap,
                                           ULONG * pTimeStampMapSize );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose information is to be retrieved.
ppTimeStampMap	OUT	TimeStamp Map. Pointer to a pointer that receives the complete data buffer of timestamp information. System will automatically release this buffer memory.
pTimeStampMapSize	OUT	TimeStamp Map Size. Pointer to a variable that receives the size of timestamp map.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE

Support File Types:

AVI

Examples:

EX1: Get the timestamp map information.

```
AMESDK_FILE_GET_AUDIO_TIMESTAMP_MAP( hDev, &pTimeStampMap, &nTimeStampMapSize );
```

7.16 AMESDK_FILE_GET_VIDEO_SECTION_MAP

This function is used to get complete section map from video stream. Please refer to function AMESDK_FILE_SET_VIDEO_STREAM_BUFFER.

```
BOOL AMESDK_FILE_GET_VIDEO_SECTION_MAP( DEVICE_HANDLE          hDevHandle,
                                         AMESDK_SECTION_INFO ** ppSectionMap,
                                         ULONG *                pSectionMapSize );

struct AMESDK_SECTION_INFO {

    ULONG          m_nStartSample;
    ULONG          m_nStopSample;
    ULONGLONG      m_nStartTimeStamp;
    ULONGLONG      m_nStopTimeStamp;
    ULONG          m_nSectionNumber;

};
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose information is to be retrieved.
ppSectionMap	OUT	Section Map. Pointer to a pointer that receives the complete data buffer of section information. System will automatically release this buffer memory.
pSectionMapSize	OUT	Section Map Size. Pointer to a variable that receives the size of section map.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE

Support File Types:

AVI

Examples:

EX1: Get the section map infomation.

```
AMESDK_FILE_GET_VIDEO_SECTION_MAP( hDev, &pSectionMap, &nSectionMapSize );
```


7.17 AMESDK_FILE_GET_AUDIO_SECTION_MAP

This function is used to get complete section map from audio stream. Please refer to function AMESDK_FILE_SET_AUDIO_STREAM_BUFFER.

```
BOOL AMESDK_FILE_GET_AUDIO_SECTION_MAP( DEVICE_HANDLE          hDevHandle,
                                         AMESDK_SECTION_INFO ** ppSectionMap
                                         ULONG *                pSectionMapSize );

struct AMESDK_SECTION_INFO {

    ULONG          m_nStartSample;
    ULONG          m_nStopSample;
    ULONGLONG      m_nStartTimeStamp;
    ULONGLONG      m_nStopTimeStamp;
    ULONG          m_nSectionNumber;

};
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose information is to be retrieved.
ppSectionMap	OUT	Section Map. Pointer to a pointer that receives the complete data buffer of section information. System will automatically release this buffer memory.
pSectionMapSize	OUT	Section Map Size. Pointer to a variable that receives the size of section map.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE

Support File Types:

AVI

Examples:

EX1: Get the section map infomation.

```
AMESDK_FILE_GET_AUDIO_SECTION_MAP( hDev, &pSectionMap, &nSectionMapSize );
```

7.18 AMESDK_FILE_GET_VIDEO_MOTION_MAP

This function is used to get complete motion map from video stream. Please refer to function AMESDK_FILE_SET_VIDEO_STREAM_BUFFER.

```
BOOL AMESDK_FILE_GET_VIDEO_MOTION_MAP( DEVICE_HANDLE      hDevHandle,
                                        AMESDK_MOTION_INFO ** ppMotionMap,
                                        ULONG *              pMotionMapSize );

struct AMESDK_MOTION_INFO {

    ULONG      m_nStartSample;
    ULONG      m_nStopSample;
    ULONGLONG  m_nStartTimeStamp;
    ULONGLONG  m_nStopTimeStamp;
    BYTE       m_nStrength;
};
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose information is to be retrieved.
ppMotionMap	OUT	Motion Map. Pointer to a pointer that receives the complete data buffer of motion information. System will automatically release this buffer memory.
pMotionMapSize	OUT	Motion Map Size. Pointer to a variable that receives the size of motion map.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE

Support File Types:

AVI

Examples:

EX1: Get the motion map infomation.

```
AMESDK_FILE_GET_VIDEO_MOTION_MAP( hDev, &pMotionMap, &nMotionMapSize );
```

7.19 AMESDK_FILE_GET_VIDEO_GPS_MAP

This function is used to get complete GPS map from video stream. Please reference function AMESDK_FILE_SET_VIDEO_STREAM_BUFFER.

```
BOOL AMESDK_FILE_GET_VIDEO_GPS_MAP(  DEVICE_HANDLE      hDevHandle,
                                     AMESDK_GPS_INFO **  ppGpsMap,
                                     ULONG *               pGpsMapSize );

struct AMESDK_GPS_INFO {

    ULONG      m_nStartSample;
    ULONG      m_nStopSample;
    ULONGLONG  m_nStartTimeStamp;
    ULONGLONG  m_nStopTimeStamp;
    float      m_fLongitude;
    float      m_fLatitude;
    float      m_fSpeed;
    float      m_fAngle;
    BOOL       m_bIsVaild;
};
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose information is to be retrieved.
ppGpsMap	OUT	GPS Map. Pointer to a pointer that receives the complete data buffer of GPS information. System will automatically release this buffer memory.
pGpsMapSize	OUT	GPS Map Size. Pointer to a variable that receives the size of GPS map.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE

Support File Types:

AVI

Examples:

EX1: Get the GPS map information.

```
AMESDK_FILE_GET_VIDEO_GPS_MAP( hDev, &pGpsMap, &nGpsMapSize );
```

7.20 AMESDK_FILE_GET_VIDEO_POS_MAP

This function is used to get complete POS map from video stream. Please refer to function AMESDK_FILE_SET_VIDEO_STREAM_BUFFER.

```

BOOL AMESDK_FILE_GET_VIDEO_POS_MAP(  DEVICE_HANDLE      hDevHandle,
                                     AMESDK_POS_INFO **  ppPosMap,
                                     ULONG *              pPosMapSize );

struct AMESDK_POS_INFO {

    ULONG      m_nStartSample;
    ULONG      m_nStopSample;
    ULONGLONG  m_nStartTimeStamp;
    ULONGLONG  m_nStopTimeStamp;
};

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose information is to be retrieved.
ppPosMap	OUT	POS Map. Pointer to a pointer that receives the complete data buffer of POS information. System will automatically release this buffer memory.
pPosMapSize	OUT	POS Map Size. Pointer to a variable that receives the size of POS map.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE

Support File Types:

AVI

Examples:

EX1: Get the POS map infomation.

```
AMESDK_FILE_GET_VIDEO_POS_MAP( hDev, &pPosMap, &nPosMapSize );
```


7.21 AMESDK_FILE_GET_MEDIA_LENGTH

This function is used to get the total length of a media file. The unit can be specified by you.

```
BOOL AMESDK_FILE_GET_MEDIA_LENGTH( DEVICE_HANDLE    hDevHandle,
                                   LONGLONG *        pLength,
                                   DWORD             dwTimeUnits );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose information is to be retrieved.
pLength	OUT	Length. Pointer to a variable that receives the length, in units of the current time format.
dwTimeUnits	IN	Time Units. Specifies the time format.
		SUPPORT TIME FORMAT: TIME_FORMAT_MEDIA_TIME 0x00000000, in 100ns units. TIME_FORMAT_VEDIO_FRAME 0x00000001, in frame units. TIME_FORMAT_AUDIO_FRAME 0x00000002, in frame units.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE

Support File Types:

AVI, MP4, ASF, TS, FLV

Examples:

EX1: Get the media length, in 100ns units.

```
AMESDK_FILE_GET_MEDIA_LENGTH( hDev, &nMediaTimeLength, 0x00000000 );
```

EX2: Get the media length, in video frame units.

```
AMESDK_FILE_GET_MEDIA_LENGTH( hDev, &nVideoFrameLength, 0x00000001 );
```

7.22 AMESDK_FILE_GET_MEDIA_POSITION

This function is used to get the current playback position of a media file. The unit can be specified by you.

```

BOOL AMESDK_FILE_GET_MEDIA_POSITION( DEVICE_HANDLE  hDevHandle,
                                     LONGLONG *      pPosition,
                                     DWORD           dwTimeUnits );
    
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose media position is to be retrieved.
pPosition	OUT	Position. Pointer to a variable that receives the position, in units of the current time format.
dwTimeUnits	IN	Time Units. Specifies the time format.
		SUPPORT TIME FORMAT: TIME_FORMAT_MEDIA_TIME 0x00000000, in 100ns units.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE

Support File Types:

AVI, MP4, ASF, TS, FLV

Examples:

EX1: Get the current playback position of one media file, in 100ns units.

```
AMESDK_FILE_GET_MEDIA_POSITION( hDev, &nMediaTimePosition, 0x00000000 );
```

7.23 AMESDK_FILE_SET_MEDIA_POSITION

This function is used to set the playback position of a media file. The unit can be specified by you.

```
BOOL AMESDK_FILE_SET_MEDIA_POSITION( DEVICE_HANDLE  hDevHandle,
                                     LONGLONG        nPosition
                                     DWORD           dwTimeUnits );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose media position is to be set.
pPosition	IN	Position. Specifies the position of one media file, in units of the current time format.
dwTimeUnits	IN	Time Units. Specifies the time format.
		SUPPORT TIME FORMAT: TIME_FORMAT_MEDIA_TIME 0x00000000, in 100ns units.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE

Support File Types:

AVI, MP4, ASF, TS, FLV

Examples:

EX1: Set the playback position of one media file, in 100ns units.

```
AMESDK_FILE_SET_MEDIA_POSITION( hDev, nMediaTimePosition, 0x00000000 );
```

7.24 AMESDK_FILE_GET_MEDIA_PLAYBACK_RATE

This function is used to get current playback rate.

```
BOOL AMESDK_FILE_GET_MEDIA_PLAYBACK_RATE( DEVICE_HANDLE hDevHandle,  
                                           DOUBLE * pRate );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose playback rate is to be retrieved.
pRate	OUT	Rate. Pointer to a variable that receives current playback rate. Here, 1.0 is normal playback speed, 0.5 is half speed, and 2.0 is twice speed.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE

Support File Types:

AVI, MP4, ASF, TS, FLV

Examples:

EX1: Get current playback rate.

```
AMESDK_FILE_GET_MEDIA_PLAYBACK_RATE( hDev, &dRate );
```

7.25 AMESDK_FILE_SET_MEDIA_PLAYBACK_RATE

This function is used to set the playback rate.

```
BOOL AMESDK_FILE_SET_MEDIA_PLAYBACK_RATE( DEVICE_HANDLE hDevHandle,  
                                           DOUBLE          dRate );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose playback rate is to be set.
dRate	IN	Rate. Specifies the playback rate. Here, 1.0 is normal playback speed, 0.5 is half speed, and 2.0 is twice speed.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE

Support File Types:

AVI, MP4, ASF, TS, FLV

Examples:

EX1: Set normal playback speed.

```
AMESDK_FILE_SET_MEDIA_PLAYBACK_RATE( hDev, 1.000 );
```

EX2: Set twice playback rate.

```
AMESDK_FILE_SET_MEDIA_PLAYBACK_RATE( hDev, 2.000 );
```

EX3: Set half playback rate.

```
AMESDK_FILE_SET_MEDIA_PLAYBACK_RATE( hDev, 0.500 );
```

7.26 AMESDK_FILE_GET_MEDIA_PLAYBACK_SKIP_MODE

This function is used to get current playback skip mode.

```
BOOL AMESDK_FILE_GET_MEDIA_PLAYBACK_SKIP_MODE( DEVICE_HANDLE hDevHandle,  
                                                ULONG *          pSkipMode );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose playback rate is to be retrieved.
pSkipMode	OUT	Skip Mode. Pointer to a variable that receives current playback skip mode. Here, 0 will decode all frames. 1 will decode I frame only. 2 will decode I / P frames and skip B frame.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE

Support File Types:

AVI, MP4, ASF, TS, FLV

Examples:

EX1: Get current playback skip mode.

```
AMESDK_FILE_GET_MEDIA_PLAYBACK_SKIP_MODE( hDev, &nSkipMode );
```

7.27 AMESDK_FILE_SET_MEDIA_PLAYBACK_SKIP_MODE

This function is used to set the playback skip mode.

```
BOOL AMESDK_FILE_SET_MEDIA_PLAYBACK_SKIP_MODE( DEVICE_HANDLE hDevHandle,  
                                                ULONG           nSkipMode );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose playback rate is to be set.
nSkipMode	IN	Rate. Specifies the playback skip mode. Here, 0 will decode all frames. 1 will decode I frame only. 2 will decode I / P frames and skip B frame.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE

Support File Types:

AVI, MP4, ASF, TS, FLV

Examples:

EX1: Decode all frames.

```
AMESDK_FILE_SET_MEDIA_PLAYBACK_SKIP_MODE( hDev, 0 );
```

EX2: Decode I frame only.

```
AMESDK_FILE_SET_MEDIA_PLAYBACK_SKIP_MODE( hDev, 1 );
```

EX3: Decode I / P frames and skip B frame.

```
AMESDK_FILE_SET_MEDIA_PLAYBACK_SKIP_MODE( hDev, 2 );
```

7.28 AMESDK_FILE_SEEK

This function is used to do forward/rewind of key frame seeking.

```
BOOL AMESDK_FILE_SEEK( DEVICE_HANDLE hDevHandle, LONG nSeeks );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose media position is to be set.
nSeeks	IN	Seeks. Specifies the number of key frames to skip. If nSteps is 1, the file source steps forward to next key frame. If nSeeks is a number n greater than 1, the graph skips n - 1 key frames and shows the nth key frame. If nSeeks is a number n lower than 0, the graph rewind to last n key frames. The value should not be 0.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE

Support File Types:

AVI

Examples:

EX1: Seek to next key frame.

```
AMESDK_FILE_SEEK( hDev, 1 );
```

EX2: Seek to last key frame.

```
AMESDK_FILE_SEEK( hDev, -1 );
```

EX3: Seek to next 5 key frames.

```
AMESDK_FILE_SEEK( hDev, 5 );
```

7.29 AMESDK_FILE_FLUSH

This helper function allows you to flush the system's cache memory into hard disk right away.

```
BOOL AMESDK_FILE_FLUSH( DEVICE_HANDLE hDevHandle );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose cache memory is to be flushed.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

RENDERER

Support File Types:

AVI

Examples:

EX1: Flush the cache memory into hard disk right away.

```
AMESDK_FILE_FLUSH( hDev );
```

7.30 AMESDK_FILE_DELETE_THE_OLDEST_FILE

This function is used to delete the oldest file in this list you specify. If the oldest file is blocking, and it will automatically jump to next file. If there is no file can be removed from disk, it will return FALSE.

```
BOOL AMESDK_FILE_DELETE_THE_OLDEST_FILE(

    CArray<AMESDK_FILE_INFO, AMESDK_FILE_INFO> * pFileInfoList,
);

struct AMESDK_FILE_INFO {

    CHAR            m_pszFileName[ MAX_PATH ];
    ULONGLONG       m_nFileSize;
    ULONGLONG       m_nFileStartTime;
    ULONGLONG       m_nFileStopTime;
    ULONGLONG       m_nVideoStreamStartTime;
    ULONGLONG       m_nVideoStreamStopTime;
    ULONGLONG       m_nAudioStreamStartTime;
    ULONGLONG       m_nAudioStreamStopTime;
    ULONG           m_nVideoFrameNumber;
    ULONG           m_nVideoColorSpaceType;
    ULONG           m_nVideoWidth;
    ULONG           m_nVideoHeight;
    ULONG           m_nVideoBitCount;
    double          m_dVideoFrameRate;
    DWORD           m_dwVideoCustomFlags;
    ULONG           m_nVideoMotionRatio;
    ULONG           m_nAudioFrameNumber;
    ULONG           m_nAudioChannels;
    ULONG           m_nAudioBitsPerSample;
    ULONG           m_nAudioSamplesPerSec;
    ULONG           m_nAudioSamplesPerStreamBuffer;
    DWORD           m_dwReserved;
};
```


Parameters:

Parameter	IN/OUT	Description
pFileInfoList	IN/OUT	File Info List. Pointer to a CArray list that stores the current file information. The helper function will delete the oldest file in this list.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE, RENDERER

Support File Types:

AVI

Examples:

EX1: To delete the oldest file in this list.

```
AMESDK_FILE_GET_DELETE_THE_OLDEST_FILE( &sFileInfoList );
```

7.31 AMESDK_FILE_GET_FILE_INFO_LIST

This function is used to get one file info list within the time range you specify. Note!! If the bAutoRepair parameter is enabled, the function will enable the self-repair function. When there are damaged files which are found out in this source directory, they will be fixed right away. For self-repair, please reference AMESD_FILE_REPAIR.

```
CArray<AMESDK_FILE_INFO, AMESDK_FILE_INFO> *
AMESDK_FILE_GET_FILE_INFO_LIST(  CHAR *      pszSrcDirectory,
                                ULONGLONG    nStartSearchSystemTime,
                                ULONGLONG    nStopSearchSystemTime,
                                BOOL          bAutoRepair = FALSE,
                                volatile ULONG * pSearchProgress = NULL,
                                volatile ULONG * pRepairProgress = NULL
                                );
```

```
struct AMESDK_FILE_INFO {

    CHAR          m_pszFileName[ MAX_PATH ];
    ULONGLONG     m_nFileSize;
    ULONGLONG     m_nFileStartTime;
    ULONGLONG     m_nFileStopTime;
    ULONGLONG     m_nVideoStreamStartTime;
    ULONGLONG     m_nVideoStreamStopTime;
    ULONGLONG     m_nAudioStreamStartTime;
    ULONGLONG     m_nAudioStreamStopTime;
    ULONG         m_nVideoFrameNumber;
    ULONG         m_nVideoColorSpaceType;
    ULONG         m_nVideoWidth;
    ULONG         m_nVideoHeight;
    ULONG         m_nVideoBitCount;
    double        m_dVideoFrameRate;
    DWORD         m_dwVideoCustomFlags;
    ULONG         m_nVideoMotionRatio;
    ULONG         m_nAudioFrameNumber;
    ULONG         m_nAudioChannels;
    ULONG         m_nAudioBitsPerSample;
```

```

        ULONG        m_nAudioSamplesPerSec;
        ULONG        m_nAudioSamplesPerStreamBuffer;
        DWORD        m_dwReserved;

};
    
```

Parameters:

Parameter	IN/OUT	Description
pszSrcDirectory	IN	Search Directory. Specifies the directory where you want to search.
nStartSearchSystemTime	IN	Start Search Time. Specifies the start search time.
nStopSearchSystemTime	IN	End Search Time. Specifies the end search time.
dwSearchOps	IN	Search Operation. Specifies the search operation.
		Support Operations: FILE_INFO_LIST_RESET 0x00000000 FILE_INFO_LIST_UPDATE 0x00000001
bAutoRepair	IN	Auto Repair. Specifies whether to enable the auto repair function.
pSearchProgress	OUT	Search Progress, %. Pointer to a variable that stores the current search progress. User can use it to design one progress bar control.
pRepairProgress	OUT	Repair Progress, %. Pointer to a variable that stores the current repair progress. User can use it to design one progress bar control.

Return Values:

CArray<AMESDK_FILE_INFO, AMESDK_FILE_INFO> *. If AMESDK_FILE_GET_FILE_INFO_LIST is successful, it will return one file info list pointer. If it is fail, it will return NULL. User should use AMESDK_FILE_FREE_FILE_INFO_LIST to release all memory resource.

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
 SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE, RENDERER

Support File Types:

AVI

Examples:

EX1: Get the file information list within specified search time range.

```
pFileInfoList = AMESDK_FILE_GET_FILE_INFO_LIST( "D:\\\\SC\\",  
                                                nStartSearchSystemTime,  
                                                nStopSearchSystemTime );
```

Remarks:

The caller must free the returned list's memory block. You can use the helper function `AMESDK_FILE_FREE_FILE_INFO_LIST`.

7.32 AMESDK_FILE_UPDATE_FILE_INFO_LIST

This function is used to update one file info list within the time range you specify. Note!! If the bAutoRepair parameter is enabled, the function will enable the self-repair function. When there are damaged files which are found out in this source directory, they will be fixed right away. For self-repair, please refer to AMESD_FILE_REPAIR.

```

BOOL AMESDK_FILE_UPDATE_FILE_INFO_LIST(
CArray<AMESDK_FILE_INFO, AMESDK_FILE_INFO> * pFileInfoList,
                                CHAR *      pszSrcDirectory,
                                ULONGLONG   nStartSearchSystemTime,
                                ULONGLONG   nStopSearchSystemTime,
                                BOOL        bAutoRepair = FALSE,
                                volatile ULONG * pSearchProgress = NULL,
                                volatile ULONG * pRepairProgress = NULL
);

```

```

struct AMESDK_FILE_INFO {

    CHAR        m_pszFileName[ MAX_PATH ];
    ULONGLONG   m_nFileSize;
    ULONGLONG   m_nFileStartTime;
    ULONGLONG   m_nFileStopTime;
    ULONGLONG   m_nVideoStreamStartTime;
    ULONGLONG   m_nVideoStreamStopTime;
    ULONGLONG   m_nAudioStreamStartTime;
    ULONGLONG   m_nAudioStreamStopTime;
    ULONG       m_nVideoFrameNumber;
    ULONG       m_nVideoColorSpaceType;
    ULONG       m_nVideoWidth;
    ULONG       m_nVideoHeight;
    ULONG       m_nVideoBitCount;
    double      m_dVideoFrameRate;
    DWORD       m_dwVideoCustomFlags;
    ULONG       m_nVideoMotionRatio;
    ULONG       m_nAudioFrameNumber;
    ULONG       m_nAudioChannels;
}

```

```

        ULONG        m_nAudioBitsPerSample;
        ULONG        m_nAudioSamplesPerSec;
        ULONG        m_nAudioSamplesPerStreamBuffer;
        DWORD        m_dwReserved;

};
    
```

Parameters:

Parameter	IN/OUT	Description
pFileInfoList	IN/OUT	File Info List. Pointer to a CArray list.
pszSrcDirectory	IN	Search Directory. Specifies the directory where you want to search.
nStartSearchSystemTime	IN	Start Search Time. Specifies the start search time.
nStopSearchSystemTime	IN	End Search Time. Specifies the end search time.
bAutoRepair	IN	Auto Repair. Specifies whether to enable the auto repair function.
pSearchProgress	OUT	Search Progress, %. Pointer to a variable that stores the current search progress. User can use it to design one progress bar control.
pRepairProgress	OUT	Repair Progress, %. Pointer to a variable that stores the current repair progress. User can use it to design one progress bar control.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
 SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE, RENDERER

Support File Types:

AVI

Examples:

EX1: Update the file information list within specified search time range. The update operation will help you to save more cpu loading than the get operation. Here, the pFileInfoList should not be NULL.

```
AMESDK_FILE_UPDATE_FILE_INFO_LIST( pFileInfoList,  
                                     "D:\\SC\\",  
                                     nStartSearchSystemTime,  
                                     nStopSearchSystemTime );
```

7.33 AMESDK_FILE_FREE_FILE_INFO_LIST

This function is used to free the list's memory block. The list pointer is required from AMESDK_FILE_GET_FILE_INFO_LIST function.

```
BOOL AMESDK_FILE_FREE_FILE_INFO_LIST(  
  
    CArray<AMESDK_FILE_INFO, AMESDK_FILE_INFO> * pFileInfoList  
);
```

Parameters:

Parameter	IN/OUT	Description
pFileInfoList	IN/OUT	File Info List. Pointer to a CArray list.

Return Values:

BOOL

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE, RENDERER

Support File Types:

AVI

Examples:

EX1: Free the list's memory block.

```
AMESDK_FILE_FREE_FILE_INFO_LIST( pFileInfoList );
```


7.34 AMESDK_FILE_EXPORT

This group functions are used to backup data within the time range you specify. They can export one new media file from the source directory, which could contain many small media files, to destination directory. The parameter, `nMaxExportFileSize`, allows you to control the max size of the exported media file, too. When the backup size is overflow you specify. The function will automatically generate next media file to backup remainder files. The COPY function allows you to support the real-time export function from one memory file. You can use STOP function to end the export.

```
PVOID AMESDK_FILE_EXPORT_START( CHAR *          pszSrcDirectory,
                                CHAR *          pszDstDirectory,
                                ULONGLONG      nStartExportSystemTime,
                                ULONGLONG      nStopExportSystemTime,
                                ULONGLONG      nMaxExportFileSize = 1,073,741,824,
                                volatile ULONG * pExportProgress = NULL
                                );

BOOL AMESDK_FILE_EXPORT_STOP(  PVOID *          pDstFileRenderer );

BOOL AMESDK_FILE_EXPORT_COPY(  PVOID *          pDstFileRenderer,
                                DEVICE_HANDLE hSrcFileRenderer,
                                ULONGLONG      nStartExportSystemTime,
                                ULONGLONG      nStopExportSystemTime,
                                BOOL           bFlush = FALSE );
```

Parameters:

Parameter	IN/OUT	Description
<code>pszSrcDirectory</code>	IN	Source Directory. Specifies the source directory or the source file path that you want to export.
<code>pszDstDirectory</code>	IN	Destination Directory. Specifies the destination directory or the destination file path where you want to export to.
<code>nStartExportSystemTime</code>	IN	Start Export Time. Specifies the start time of the data to export.
<code>nStopExportSystemTime</code>	IN	End Export Time. Specifies the end time of the data to export.
<code>nMaxExportFileSize</code>	IN	Max Export File Size. Specifies max export file size. Default size is 1GB for single file.
<code>pExportProgress</code>	OUT	Export Progress, %. Pointer to a variable that stores the current export progress. User can use

		it to design one progress bar control.
pDstFileRenderer	IN	Destination File Renderer. Specifies one destination file renderer pointer that is returned by AMESDK_FILE_EXPORT_START.
pSrcFileRenderer	IN	Source File Renderer. Specifies one source file renderer pointer.
nStartExportSystemTime	IN	Start Export Time. Specifies the start time of the data to export.
nStopExportSystemTime	IN	End Export Time. Specifies the end time of the data to export.
bFlush	IN	Flush. See AMESDK_FILE_FLUSH section.

Return Values:

PVOID. If AMESDK_FILE_EXPORT_START is successful, it will return one file renderer pointer. If it is fail, it will return NULL. User should use AMESDK_FILE_EXPORT_STOP to release all memory resource.

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE, RENDERER

Support File Types:

AVI

Examples:

EX1: Backup data to "E:\BACKUP\" within the time range you specify.

```
PVOID pe = AMESDK_FILE_EXPORT_START( "D:\\SC\\",  
                                     "E:\\BACKUP\\",  
                                     nStartExportSystemTime,  
                                     nStopExportSystemTime,  
                                     1024 * 1024 * 1024,  
                                     &nExportProgress );
```

```
AMESDK_FILE_EXPORT_STOP( pe );
```

EX2: Backup data to "E:\BACKUP\" and the single file's max size is 256MB.

```
PVOID pe = AMESDK_FILE_EXPORT_START( "D:\\SC\\",  
                                     "E:\\BACKUP\\",  
                                     nStartExportSystemTime,  
                                     nStopExportSystemTime,  
                                     256 * 1024 * 1024,  
                                     &nExportProgress );
```

```
AMESDK_FILE_EXPORT_STOP( pe );
```

EX3: Backup data to "E:\BACKUP\" and the single buackup file's max size is 50GB.

```
PVOID pe = AMESDK_FILE_EXPORT_START( "D:\\SC\\200910150000.AVI",  
                                     "E:\\BACKUP\\200910150000.AVI",  
                                     nStartExportSystemTime,  
                                     nStopExportSystemTime,  
                                     50 * 1024 * 1024 * 1024,  
                                     &nExportProgress );
```

```
AMESDK_FILE_EXPORT_STOP( pe );
```

Remarks:

The AMESDK_FILE_EXPORT_COPY function allows you to export current recording file (memory file) into the destination directory. About AMESDK_FILE_EXPORT_COPY extra programming, please reference sample sourcecode to obtain more tutorials.

7.35 AMESDK_FILE_SELF_REPAIR

This function is used to repair one bad record file. When your system suffered from one unknown shutdown, the recording files could be damaged, because they cannot be closed normally. The helper function can help you to repair them.

```
BOOL AMESDK_FILE_SELF_REPAIR( CHAR *      pszSrcFileName,
                               volatile ULONG * pRepairProgress = NULL
);
```

Parameters:

Parameter	IN/OUT	Description
pszSrcFileName	IN	Source File. Specifies the source file that you want to repair.
pRepairProgress	OUT	Repair Progress, %. Pointer to a variable that stores the current repair progress. User can use it to design one progress bar control.

Return Values:

BOOL.

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE, RENDERER

Support File Types:

AVI

Examples:

EX1: Repair one damaged file into new target file.

```
AMESDK_FILE_SELF_REPAIR( "C:\\20091001000000.AVI", &nRepairProgress );
```

7.36 AMESDK_FILE_REPAIR

This function is used to repair one bad record file. When your system suffered from one unknown shutdown, the recording files could be damaged, because they cannot be closed normally. The helper function can help you to repair them.

```

BOOL AMESDK_FILE_REPAIR( CHAR *   pszSrcFileName,
                           CHAR *   pszDstFileName = NULL,
                           volatile ULONG * pRepairProgress = NULL
);

```

Parameters:

Parameter	IN/OUT	Description
pszSrcFileName	IN	Source File. Specifies the source file that you want to repair.
pszDstFileName	IN	Destination File. Specifies the destination file where you want to rebuild to. Note!! If the parameter is NULL, SDK will enable self-repair function to overwrite the source file.
pRepairProgress	OUT	Repair Progress, %. Pointer to a variable that stores the current repair progress. User can use it to design one progress bar control.

Return Values:

BOOL.

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE, RENDERER

Support File Types:

AVI

Examples:

EX1: Repair one damaged file into new target file.

```
AMESDK_FILE_REPAIR( "C:\\20091001000000.AVI", "C:\\0000.AVI" );
```

EX2: Self-Repair.

```
AMESDK_FILE_REPAIR( "C:\\20091001000000.AVI", "C:\\20091001000000.AVI" ); or
```

```
AMESDK_FILE_REPAIR( "C:\\20091001000000.AVI" );
```

EX3: Get the repair progress during repairing.

```
AMESDK_FILE_REPAIR( "C:\\20091001000000.AVI", NULL, &nRepairProgress );
```


7.37 AMESDK_FILE_DIAGNOSIS

This function is to check the fidelity of the source file. It could be checked if additional data can be retrieved from source file.

```
BOOL AMESDK_FILE_DIAGNOSIS( CHAR * pszFileName,  
                             BOOL * pIsHealthy,  
                             BOOL * pHasIndex  
);
```

Parameters:

Parameter	IN/OUT	Description
pszFileName	IN	Source File. Specifies the source file that you want to repair.
pIsHealthy	OUT	IsHealthy. Specifies the fidelity of the source file.
pHasIndex	OUT	Index. Specifies if additional data is included in source file.

Return Values:

BOOL.

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE, RENDERER

Support File Types:

AVI

Examples:

```
AMESDK_FILE_DIAGNOSIS( "C:\\00000000.AVI", &bIsHealthy, &bHasIndex );
```

7.38 AMESDK_FILE_STD_RESTORE

This function is to strip off the additional data from source file, the destination file will be a pure AVI file.

```
BOOL AMESDK_FILE_STD_RESTORE( CHAR *          pszSrcFileName,
                              CHAR *          pszDstFileName,
                              volatile ULONG * pRestoreProgress = NULL
                              );
```

Parameters:

Parameter	IN/OUT	Description
pszSrcFileName	IN	Source File. Specifies the source file that you want to repair.
pszDstFileName	IN	Destination File. Specifies the destination file where you want to rebuild to. Note!! If the parameter is NULL, SDK will enable self-repair function to overwrite the source file.
pRestoreProgress	OUT	Repair Progress, %. Pointer to a variable that stores the current repair progress. User can use it to design one progress bar control.

Return Values:

BOOL.

Support File Types:

AVI

Support Capture Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Support File Devices:

SOURCE, RENDERER

Support File Types:

AVI

Examples:

Ex1: convert original file to AVI file

```
AMESDK_FILE_STD_RESTORE("C:\\20091001000000.AVI", "C:\\20091001000000.AVI")
```

7.39 An AVI File Writer Software Programming Guides**DEMO DEVICES: SC290#N4**

```
DEVICE_HANDLE hVideoDev[ 4 ]; // VIDEO H.264 STREAM CAPTURE DEVICE

DEVICE_HANDLE hAudioDev[ 4 ]; // AUDIO PCM STREAM CAPTURE DEVICE

DEVICE_HANDLE hFileDev[ 4 ]; // FILE RENDERER DEVICE

HWND wnd[ 8 ] = { NULL, NULL, NULL, NULL, NULL, NULL, NULL, NULL };

PF_BUFFER_CALLBACK bcb[ 8 ] = { NULL, NULL, NULL, NULL, NULL, NULL, NULL, NULL };

PVOID params[ 8 ] = { this, this, this, this, this, this, this, this };

BOOL HwInitializeDevice()
{
    bcb[ 0 ] = on_process_video_encoder_buffer_CH01;
    bcb[ 1 ] = on_process_video_encoder_buffer_CH02;
    bcb[ 2 ] = on_process_video_encoder_buffer_CH03;
    bcb[ 3 ] = on_process_video_encoder_buffer_CH04;
    bcb[ 4 ] = on_process_audio_buffer_CH01;
    bcb[ 5 ] = on_process_audio_buffer_CH02;
    bcb[ 6 ] = on_process_audio_buffer_CH03;
    bcb[ 7 ] = on_process_audio_buffer_CH04;

    // INITIALIZE FILE RESOURCE
    //
    hFileDev[ 0 ] = AMESDK_CREATE( "Common Analog File Renderer C:\\CH01.AVI", 0, 3, NULL, NULL, NULL );
    hFileDev[ 1 ] = AMESDK_CREATE( "Common Analog File Renderer C:\\CH02.AVI", 1, 3, NULL, NULL, NULL );
    hFileDev[ 2 ] = AMESDK_CREATE( "Common Analog File Renderer C:\\CH03.AVI", 2, 3, NULL, NULL, NULL );
    hFileDev[ 3 ] = AMESDK_CREATE( "Common Analog File Renderer C:\\CH04.AVI", 3, 3, NULL, NULL, NULL );

    for( ULONG i = 0 ; i < 4 ; i++ ) {

        // SET VIDEO FORMAT: RESOLUTION / FRAMERATE
```

```
//
AMESDK_FILE_SET_VIDEO_STREAM_FORMAT( hFileDev[ i ],
                                     MAKEFOURCC('H', '2', '6', '4'),
                                     720, 480, 24, 29.970
                                     AMESDK_FILE_CUSTOMFLAG_ISINTERLEAVED );

// SET AUDIO FORMAT: MONO / 16BITS / 8000HZ
//
AMESDK_FILE_SET_AUDIO_STREAM_FORMAT( hFileDev[ i ], 1, 16, 8000 );
}

// INITIALIZE DEVICE RESOURCE
//
hVideoDev[ 0 ] = AMESDK_CREATE( "AH8400 PCI, Analog Encoder", 0, 0, wnd[ 0 ], bcb[ 0 ], params[ 0 ] );
hVideoDev[ 1 ] = AMESDK_CREATE( "AH8400 PCI, Analog Encoder", 1, 0, wnd[ 1 ], bcb[ 1 ], params[ 1 ] );
hVideoDev[ 2 ] = AMESDK_CREATE( "AH8400 PCI, Analog Encoder", 2, 0, wnd[ 2 ], bcb[ 2 ], params[ 2 ] );
hVideoDev[ 3 ] = AMESDK_CREATE( "AH8400 PCI, Analog Encoder", 3, 0, wnd[ 3 ], bcb[ 3 ], params[ 3 ] );

hAudioDev[ 0 ] = AMESDK_CREATE( "AH8400 PCI, Analog WaveIn", 0, 0, wnd[ 4 ], bcb[ 4 ], params[ 4 ] );
hAudioDev[ 1 ] = AMESDK_CREATE( "AH8400 PCI, Analog WaveIn", 1, 0, wnd[ 5 ], bcb[ 5 ], params[ 5 ] );
hAudioDev[ 2 ] = AMESDK_CREATE( "AH8400 PCI, Analog WaveIn", 2, 0, wnd[ 6 ], bcb[ 6 ], params[ 6 ] );
hAudioDev[ 3 ] = AMESDK_CREATE( "AH8400 PCI, Analog WaveIn", 3, 0, wnd[ 7 ], bcb[ 7 ], params[ 7 ] );

// SETUP VIDEO PATH (H.264) PROPERTIES
//
for( i = 0 ; i < 4 ; i++ ) {

    AMESDK_SET_STANDARD( hVideoDev[ i ], 0x00000001 );

    AMESDK_SET_FORMAT( hVideoDev[ i ], MAKEFOURCC('H', '2', '6', '4'), 720, 480, 24, 29.970 );

    AMESDK_SET_VIDEOCOMPRESSION_PROPERTY( hVideoDev[ i ], 0x00000003, 0 );

    AMESDK_SET_VIDEOCOMPRESSION_PROPERTY( hVideoDev[ i ], 0x00000001, 6000 );

    AMESDK_SET_VIDEOCOMPRESSION_PROPERTY( hVideoDev[ i ], 0x00000000, 30 );
}
```

```

        AMESDK_SET_DEINTERLACE( m_hVideoDev[ i ], 7 );
    }

    // SETUP AUDIO PATH (PCM) PROPERTIES
    //
    for( i = 0 ; i < 4 ; i++ ) {

        AMESDK_SET_FORMAT( hAudioDev[ i ], 1, 16, 8000 ); // MONO / 16BITS / 8000HZ
    }

    // START
    //
    AMESDK_RUN( hVideoDev[ 0 ] );
    AMESDK_RUN( hVideoDev[ 1 ] );
    AMESDK_RUN( hVideoDev[ 2 ] );
    AMESDK_RUN( hVideoDev[ 3 ] );

    AMESDK_RUN( hAudioDev[ 0 ] );
    AMESDK_RUN( hAudioDev[ 1 ] );
    AMESDK_RUN( hAudioDev[ 2 ] );
    AMESDK_RUN( hAudioDev[ 3 ] );
}

// RECORD VIDEO DATA
//
BOOL on_process_video_encoder_buffer_CH0X( double dSampleTime,
                                           BYTE * pBuffer,
                                           ULONG nBufferLen,
                                           BOOL bIsKeyFrame,
                                           PVOID pUserData )
{
    ULONG i = nChannelNumber;

    CMyDlg * pMyDialog = (CMyDlg *) (pUserData);

    BOOL bIsRecord = pMyDialog->bIsRecord[ i ];

    if( bIsRecord ) {

```

```
        AMESDK_FILE_SET_VIDEO_STREAM_BUFFER( hFileDev[ i ],
                                              pBuffer,
                                              nBufferLen,
                                              bIsKeyFrame );
    }
}

// RECORD AUDIO DATA
//
BOOL on_process_audio_buffer_CH0X( double dSampleTime,
                                   BYTE * pBuffer,
                                   ULONG nBufferLen,
                                   BOOL bIsKeyFrame,
                                   PVOID pUserData )
{
    ULONG i = nChannelNumber;

    CMyDlg * pMyDialog = (CMyDlg *) (pUserData);

    BOOL bIsRecord = pMyDialog->bIsRecord[ i ];

    if( bIsRecord ) {

        AMESDK_FILE_SET_AUDIO_STREAM_BUFFER( hFileDev[ i ], pBuffer, nBufferLen );
    }
}
```



```
BOOL HwUnInitializeDevice()
{
    // STOP RECORDING
    //
    bIsRecord[ 0 ] = FALSE
    bIsRecord[ 1 ] = FALSE
    bIsRecord[ 2 ] = FALSE
    bIsRecord[ 3 ] = FALSE

    // UNINITIALIZE DEVICE RESOURCE
    //
    for( ULONG i = 0 ; i < 4 ) {

        AMESDK_DESTROY( hVideoDev[ i ] );

        AMESDK_DESTROY( hAudioDev[ i ] );
    }

    // UNINITIALIZE FILE RESOURCE
    //
    for( ULONG i = 0 ; i < 4 ; i ++ ) {

        AMESDK_DESTROY( hFileDev[ i ] );
    }
}
```

7.40 An AVI File Player Software Programming Guides

DEMO DEVICES: ALL

```
DEVICE_HANDLE hFileDev = 0xFFFFFFFF; // FILE SOURCE DEVICE
```

```
BOOL CMyDlg::OnInitDialog()
```

```
{
    hFileDev = AMESDK_CREATE( "Common Analog File Source C:\\20100501083000.AVI",
                               0,
                               2,
                               m_hWnd,
                               NULL,
                               NULL,
    );

    // CHECK ERROR FLAG
    //
    if( hFileDev & 0x80000000 ) {

        hFileDev = 0xFFFFFFFF;

        return FALSE;
    }

    // GET THE VIDEO STREAM FORMAT : WIDTH, HEIGHT, BIT COUNT, FRAME RATE
    //
    ULONG cx = 0; ULONG cy = 0; ULONG cz = 0; double fps = 0.0; DWORD flags = 0;

    AMESDK_FILE_GET_VIDEO_STREAM_FORMAT( hFileDev, NULL, &cx, &cy, &cz, &fps, &flags );

    // GET THE TOTAL LENGTH OF A MEDIA FILE (TIME UNITS)
    //
    LONGLONG length = 0;

    AMESDK_FILE_GET_MEDIA_LENGTH( hFileDev, &length, 0x00000000 );
}
```

```
// ENABLE THE DEINTERLACE FUNCTION IN THE BEST QUALITY METHOD
//
if( flags & AMESDK_FILE_CUSTOMFLAG_ISINTERLEAVED ) {

    AMESDK_SET_DEINTERLACE( hFileDev, 0x00000007 );

}

}

void CMyDlg::OnPlay()
{
    AMESDK_RUN( hFileDev );
}

void CMyDlg::OnPause()
{
    AMESDK_PAUSE( hFileDev );
}

void CMyDlg::OnStep()
{
    AMESDK_STEP( hFileDev, 1 ); // GOTO NEXT FRAME
}

void CMyDlg::OnStop()
{
    AMESDK_STOP( hFileDev );

    // JUMP TO THE FIRST FRAME (TIME UNITS)
    //
    AMESDK_FILE_SET_MEDIA_POSITION( hFileDev, 0, 0x00000000 );

    AMESDK_PAUSE( hFileDev );
}
```

```
void CMyDlg::OnDestroy()
{
    AMESDK_STOP( hFileDev );

    AMESDK_DESTROY( hFileDev );
}
```

8 Exported Functions for GPS Device

SUPPORT DEVICE:

PD652, SC100, SC200, SC230, SC280,
SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0,
SC3B0, SC500, SC510, SC580, SC590,

Exported Functions for GPS Device Programming	
8.01	AMESDK_CREATE
8.02	AMESDK_DESTROY (SEE CHAP.1)
8.03	AMESDK_RUN (SEE CHAP.1)
8.04	AMESDK_STOP (SEE CHAP.1)
8.05	AMESDK_GPS_GET_DATA

8.05 AMESDK_CREATE

The function helps you to easily access one GPS device. It is suit to all GPS devices in mobile market. Actually, all GPS devices use the virtual COM port driver as their access interface. By the pszDevName parameter, you can setup the COM's port number and baud rate.

```

DEVICE_HANDLE AMESDK_CREATE( LPTSTR           pszDevName,
                             UINT            iDevNum,
                             ULONG           eDevType,
                             HWND            hDisplayWindow,
                             PF_BUFFER_CALLBACK pBufferCB,
                             PVOID           pUserData
);

typedef ULONG (DEVICE_HANDLE);

```

Parameters:

Parameter	IN/OUT	Description
pszDevName	IN	Device Name. To give a device name that is used to create specific device. Currently, we support these device names below: "Common Analog GPS Source %s". Here, %s is your port and baud rate setting. Please reference subsection, Examples , to obtain more introductions.
iDevNum	IN	Device Number. Here, SDK supports you to create 4 Common Analog GPS Sources at the same time.
eDevType	IN	Device Type. Number 8 for Common Analog GPS Source.
hDisplayWindow	IN	Display Window. It is always NULL.
pBufferCB	IN	Callback Function. It is always NULL.
pUserData	IN	User Data. It is always NULL.

Return Value:

If AMESDK_CREATE is successful, it will return one DEVICE_HANDLE. If it is fail, it will show the error code. As one of below:

0x80000000 - Parameter, pszDevName, is wrong.

0x80000001 - Unknown error.

0x80000002 - Device queue is full already.

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Open a media file then play it on an attached window.

```
hDev = AMESDK_CREATE( "Common Analog GPS Source port=com1 baudrate=9600",  
                    0,  
                    8,  
                    NULL, NULL, NULL );
```


8.02 AMESDK_GPS_GET_DATA

This function is to retrieve the GPS data from your GPS device.

```
BOOL AMESDK_GPS_GET_DATA( DEVICE_HANDLE hDevHandle,
                           double *      pLongitude,
                           double *      pLatitude,
                           double *      pSpeed,
                           double *      pAngle,
                           BOOL *        pIsValid
                           );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be retrieved.
pLongitude	OUT	Longitude. Specifies the longitude of the position.
pLatitude	OUT	Latitude. Specifies the latitude of the position.
pSpeed	OUT	Speed. Specifies the speed of motion of the device.
pAngle	OUT	Angle. Specifies the angle of the moving track.
pIsValid	OUT	Valid. Specifies if these data are valid.

Return Values:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Read GPS data from SDK.

```
AMESDK_GPS_GET_DATA( hDev, &dLongitude, &dLatitude, &dSpeed, &dAngle, &bIsVaild );
```

9 Exported Functions

for

Software Deinterlacer

SUPPORT DEVICE:

PD652, SC100, SC200, SC230, SC280,
SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0,
SC3B0, SC500, SC510, SC580, SC590,

Exported Functions for Software Deinterlacer Programming	
9.01	AMESDK_CREATE
9.02	AMESDK_DESTROY (SEE CHAP.1)
9.03	AMESDK_RUN (SEE CHAP.1)
9.04	AMESDK_STOP (SEE CHAP.1)
9.05	AMESDK_GET_FORMAT (SEE CHAP.1)
9.06	AMESDK_SET_FORMAT (SEE CHAP.1)
9.07	AMESDK_DI_DEINTERLACE_METHOD
9.08	AMESDK_DI_DEINTERLACE

9.01 AMESDK_CREATE

For some customers, we can offer independent deinterlace function. The function helps you to deinterlace one interleaved video frame buffer.

```

DEVICE_HANDLE AMESDK_CREATE( LPTSTR                pszDevName,
                             UINT                  iDevNum,
                             ULONG                  eDevType,
                             HWND                   hDisplayWindow,
                             PF_BUFFER_CALLBACK     pBufferCB,
                             PVOID                  pUserData
                             );

typedef ULONG (DEVICE_HANDLE);

```

Parameters:

Parameter	IN/OUT	Description
pszDevName	IN	Device Name. To give a device name that is used to create specific device. Currently, we support these device names below: "Common Analog Deinterlacer".
iDevNum	IN	Device Number. Here, SDK supports you to create 64 Common Analog Deinterlacer at the same time.
eDevType	IN	Device Type. Number 16 for Common Analog Deinterlacer.
hDisplayWindow	IN	Display Window. It is always NULL.
pBufferCB	IN	Callback Function. It is always NULL.
pUserData	IN	User Data. It is always NULL.

Return Value:

If AMESDK_CREATE is successful, it will return one DEVICE_HANDLE. If it is fail, it will show the error code. As one of below:

```

0x80000000 - Parameter, pszDevName, is wrong.
0x80000001 - Unknown error.
0x80000002 - Device queue is full already.

```

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: Open a media file then play it on an attached window.

```
hDev = AMESDK_CREATE( "Common Analog Deinterlacer", 0, 16, NULL, NULL, NULL );
```

9.02 AMESDK_DI_DEINTERLACE_METHOD

This function is used to set deinterlacing method manually.

```
BOOL AMESDK_DI_DEINTERLACE_METHOD(  DEVICE_HANDLE    hDevHandle,
                                     ULONG              nDeinterlaceType );
```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be retrieved.
nDeinterlaceType	IN	Deinterlace Type. 0x00000000 // Blending 0x00000001 // Motion Adapter 0x00000002 // Triangle Filtering

Return Values:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: To set deinterlacing method manually.

```
AMESDK_DI_DEINTERLACE_METHOD( hDev, 0x00000000 );
```

9.03 AMESDK_DI_DEINTERLACE

This function is used to do deinterlacing for incoming video frame buffer. The incoming video frame buffer will become one progressive frame.

```

    BOOL AMESDK_DI_DEINTERLACE( DEVICE_HANDLE    hDevHandle,
                                BYTE *           pFrameBuffer,
                                ULONG            nFrameBufferSize );

```

Parameters:

Parameter	IN/OUT	Description
hDevHandle	IN	Device Handle. Handle to the device whose property is to be retrieved.
pFrameBuffer	IN/OUT	Pointer of video frame buffer.
nFrameBufferSize	IN	Size of video frame buffer.

Return Values:

BOOL

Support Devices:

PCTV: PD652

SECU: SC100, SC200, SC230, SC280, SC290, SC2A0, SC2B0, SC300, SC310,
 SC330, SC340, SC380, SC390, SC3A0, SC3B0, SC500, SC510, SC580, SC590,

Examples:

EX1: To do deinterlacing for incoming video frame buffer.

```

AMESDK_DI_DEINTERLACE( hDev, pFrameBuffer, nFrameBufferSize );

```