



**MODEL:
HDB-301R**

**USB 3.0 Uncompressed Full HD Capture Box
with One HDMI Input Channel and One HDMI
Output Channel, 1920x1080@60p**

User Manual

Revision

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Manual Conventions



WARNING

Warnings appear where overlooked details may cause damage to the equipment or result in personal injury. Warnings should be taken seriously.



CAUTION

Cautionary messages should be heeded to help reduce the chance of losing data or damaging the product.



NOTE

These messages inform the reader of essential but non-critical information. These messages should be read carefully as any directions or instructions contained therein can help avoid making mistakes.



HOT SURFACE

This symbol indicates a hot surface that should not be touched without taking care.

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Chapter

1

Introduction

1.1 Overview



Figure 1-1: HDB-301R Full HD Capture Box

The HDB-301R USB 3.0 capture box supports 1080p Full HD video via HDMI connection. The HDB-301R capture box is equipped with the high-performing codec component with one HDMI input channel and one HDMI output channel.

A software development kit (SDK) is provided with the capture box, and the flexible system architecture simplifies the integration of cameras, video signal processing, storage and video management or security applications.

1.2 Features

Some of the HDB-301R full HD capture box features are listed below.

- HDMI input channel with 1920x1080@60p
- Pass through for transmitting uncompressed video up to 1080p resolution
- Equips with USB 3.0 SuperSpeed interface
- Works with DirectShow-compliant software
- Software development kit (SDK)

HDB-301R Full HD Capture Box

1.3 Applications

The HDB-301R can connect to the following devices:

- Game consoles (PS4, Xbox One, Xbox 360)
- DVD / Blue-ray player
- Camcorder
- Industrial video recording devices (marine, in-vehicle, factory or healthcare)

Some possible applications include:

- Video surveillance
- Video analyzer
- Video post production
- Live video broadcasting



WARNING:

Recording HDCP-protected content is prohibited by law. Unauthorized screenshots or recording videos may infringe the rights of the copyright owner and violate the law.

1.4 Connector Overview

The connector overview of the HDB-301R is shown in **Figure 1-2**.



Figure 1-2: HDB-301R Connector Overview

HDB-301R Full HD Capture Box

1.5 Specifications

The HDB-301R specifications are listed in the table below:

HDB-301R	
PC Interface	USB 3.0
INPUT PORT	
Video Input Channel	One
Video Input Type	HDMI
Audio Input Channel	One
Audio Input Type	HDMI (stereo)
NO DELAY HDMI PASSTHROUGH	
Video Output Channel	One
Video Output Type	HDMI
Audio Output Channel	One
Audio Output Type	HDMI (stereo)
VIDEO INPUT	
Supported Resolution	1920x1080 24p/25p/30p/50p/59.94p/60p
	1680x1050 30p/60p
	1440x900 30p/60p
	1360x768 30p/60p
	1280x1024 30p/60p
	1280x800 30p/60p
	1280x768 30p/60p
	1280x720 30p/50p/59.94p/60p
	1024x768 30p/60p
	800x600 60p
	720x576 50p
	720x480 59.94p/60p
	640x480 60p

Video Capture Resolution (Encoding)	1920x1080	24p/25p/30p/50p/59.94p/60p
	1680x1050	30p/60p
	1440x900	30p/60p
	1360x768	30p/60p
	1280x1024	30p/60p
	1280x800	30p/60p
	1280x768	30p/60p
	1280x720	30p/50p/59.94/60p
	1024x768	30p/60p
	800x600	60p
	720x576	50p
	720x480	59.94p/60p
	640x480	60p
AUDIO INPUT		
Sampling Frequencies	44.1 k, 48 kHz	
SYSTEM REQUIREMENTS		
OS Environment	Windows: Microsoft® Windows® 7/8.1/10 32-bit/64-bit Linux: Ubuntu 14.04.2 64-bit (kernel version 3.16.0-30-generic)	
SOFTWARE SUPPORT		
SDK	SDK provided with demo program	
OTHERS		
Dimensions	105 mm x 58 mm x 18 mm	
Operating Temperature	0°C ~ 60°C (32°F ~ 140°F), non-condensing	
Power Consumption	4 W (5V, 800mA)	

Table 1-1: Specifications

HDB-301R Full HD Capture Box

1.6 Recommended Hardware Requirements for Live Streaming and Preview

The recommended hardware requirements for live streaming/preview are listed in the table below:

Recommended Hardware Requirements for Live Streaming		
Software		
CPU	For recording videos with 1080P resolution, it is recommended to use 4 th generation Intel® Core™ i7 CPU or above	According to OBS official website, due to various factors to be considered, it is recommended to use Tools → Auto Configuration Wizard in OBS software to find appropriate hardware specifications for users.
Memory	8 GB or above	
Interface	USB 3.0	
<p>NOTE: The user may refer to the following XSplit or OBS official websites to find the recommended system requirements for live streaming.</p> <p>XSplit: https://www.xsplit.com/zh_tw/broadcaster/faq/general/what-are-the-system-requirements-of-xsplit-broadcaster</p> <p>OBS: https://obsproject.com/wiki/System-Requirements</p>		
Recommended Hardware Requirements for Preview		
Software	  	
CPU	3rd generation Intel® Core™ i5-34xx 2.3 GHz CPU or above	
Memory	4 GB (minimum)	
Interface	USB 3.0	

Table 1-2: Recommended Hardware Requirements for Live Streaming/Preview

1.7 Dimensions

The dimensions for the HDB-301R are listed below.

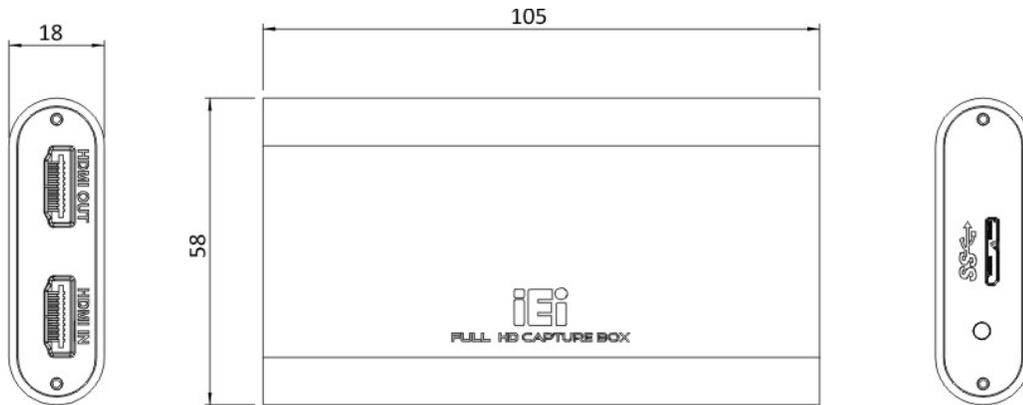


Figure 1-3: HDB-301R Dimensions (mm)

Chapter

2

Hardware Installation

2.1 Unpacking

2.1.1 Anti-static Precautions



WARNING:

Failure to take ESD precautions during the installation of the HDB-301R may result in permanent damage to the capture box and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the capture box. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the capture box, or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- **Wear an anti-static wristband:** Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- **Self-grounding:** Before handling the board, touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- **Use an anti-static pad:** When configuring the capture box, place it on an anti-static pad. This reduces the possibility of ESD damaging the capture box.
- **Only handle the edges of the PCB:** When handling the PCB, hold the PCB by the edges.

2.1.2 Unpacking Precautions

When the capture box is unpacked, please do the following:

- Follow the anti-static precautions outlined in **Section 2.1.1**.
- Make sure the packing box is facing upwards so the capture box does not fall out of the box.
- Make sure all the components listed in **Section 2.1.3** are present.

HDB-301R Full HD Capture Box

2.1.3 Unpacking Checklist



NOTE:

If some of the components listed in the checklist below are missing, please do not proceed with the installation. Contact the IEI reseller or vendor you purchased the HDB-301R from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@ieiworld.com.

The full HD capture box is shipped with the following components:

Quantity	Item	Image
1	HDB-301R full HD capture box	
1	USB 3.0 cable	
1	Quick installation guide	

Table 2-1: Package List Contents

2.2 Installation Precautions

During installation, be aware of the precautions below:

- **Read the user manual:** The user manual provides a complete description of the HDB-301R, installation instructions and configuration options.
- **Qualified Personnel:** The HDB-301R must be installed and operated only by trained and qualified personnel. Maintenance, upgrades, or repairs may only be carried out by qualified personnel who are familiar with the associated dangers.

2.3 Connecting to a Computer

The HDB-301R is equipped with a USB 3.0 connector that allows connection to a computer. Follow the steps below to connect the HDB-301R to a computer by using the supplied USB 3.0 cable.

- Step 1:** Locate the USB 3.0 connector on the HDB-301R. The location of the USB 3.0 connector is shown in **Figure 2-1**.
- Step 2:** Align the Micro B connector on the USB 3.0 cable with the USB 3.0 connector on the HDB-301R.
- Step 3:** Once aligned, gently insert the USB 3.0 cable Micro B connector into the USB 3.0 connector on the HDB-301R.
- Step 4:** Connect the other end (USB Standard Type A) of the USB 3.0 cable to the USB Type A receptacle of a computer.



Figure 2-1: Connecting the Capture Box to a Computer

HDB-301R Full HD Capture Box

2.4 HDMI Devices Installation

Various HDMI devices can be connected to the HDB-301R. Video input and video output are all supported. Follow the steps below to connect the HDMI devices to the HDB-301R.

Step 1: Use an HDMI cable to connect the HDMI device to the HDMI input connector on the HDB-301R.

Step 2: Use another HDMI cable to connect the HDMI output connector on the HDB-301R to the HDMI socket of a monitor/TV.



Figure 2-2: Connecting HDMI Devices to the Capture Box

Chapter

3

IEI HDB-301R AP (Windows)

HDB-301R Full HD Capture Box

3.1 Overview

The IEI HDB-301R AP allows playing back the uncompressed video from the HDMI input channel in real time. Refer to the following sections for the detailed information of the application.



NOTE:

The IEI HDB-301R AP supports the OS versions listed below:

- Microsoft® Windows® 7 32-bit & 64-bit
 - Microsoft® Windows® 8.1 32-bit & 64-bit
 - Microsoft® Windows® 10 32-bit & 64-bit
-

3.2 IEI HDB-301R AP Installation



NOTE:

To obtain the IEI HDB-301R AP setup file, please visit the IEI website.

To install the IEI HDB-301R AP, please follow the steps below. If the older version of the IEI HDB-301R AP is already installed, please refer to **Section 3.2.1** to uninstall it.



NOTE:

If the **User Access Control** dialog box appears during installation, click **Yes** to continue.

Step 1: Make sure to log in the system as the administrator.

Step 2: Connect the HDB-301R to the computer.

Step 3: Double click the IEI HDB-301R AP setup file downloaded from the IEI website.

Step 4: Select the display language for the Setup Wizard (**Figure 3-1**), and then click **OK** to continue.



Figure 3-1: Selecting the Display Language

Step 5: The IEI HDB-301R AP setup wizard appears. Click **Next** to continue.



Figure 3-2: IEI HDB-301R AP Setup Wizard Welcome Window

HDB-301R Full HD Capture Box

Step 6: Select a folder for IEI HDB-301R AP installation in **Figure 3-3**. Click **Install** to start the installation.

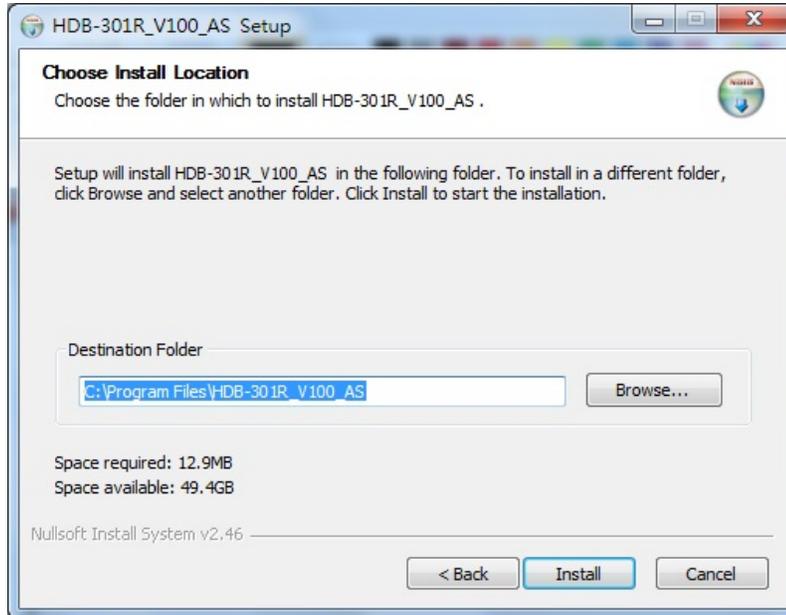


Figure 3-3: Selecting Installation Folder

Step 7: When the IEI HDB-301R AP is successfully installed, the following window appears. Click **Finish** to exit.

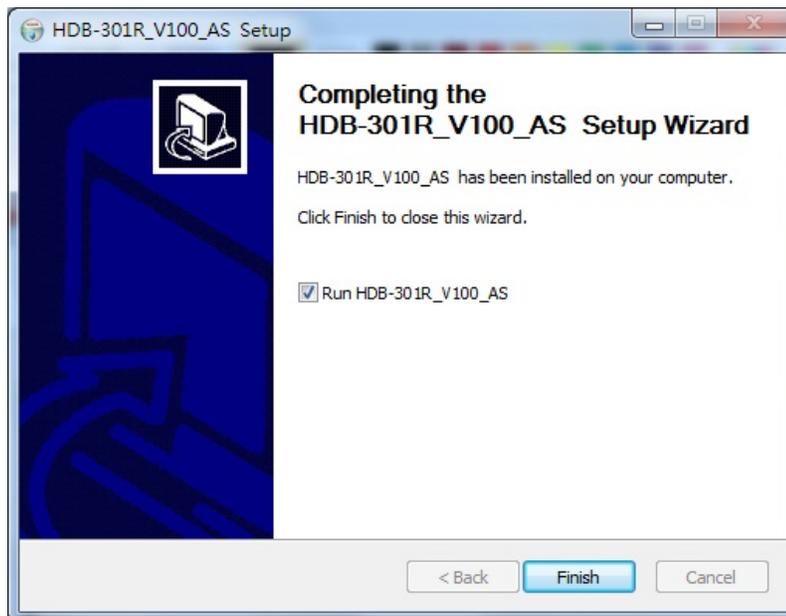


Figure 3-4: Installation Complete

Step 8: To ensure the HDB-301R has been properly installed, check the **Device Manager** in the Windows control panel (**Figure 3-5**).

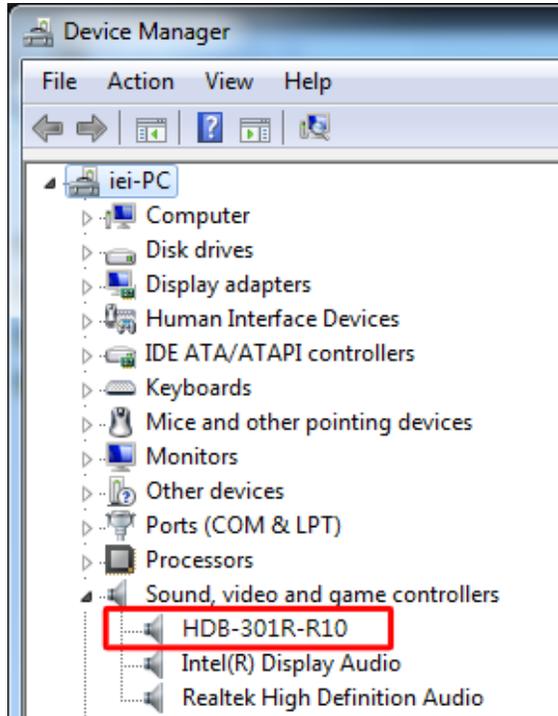


Figure 3-5: Device Manager

3.2.1 Uninstalling the Application

To uninstall the IEI HDB-301R AP, follow the steps below.

Step 1: Make sure to log in the system as the administrator.

Step 2: Click **Uninstall** from **Start** → **All Programs** → **HDB-301R_V100_AS** (**Figure 3-6**).

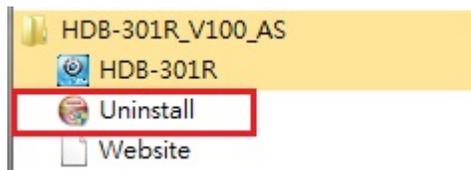


Figure 3-6: Uninstalling the Application

Step 3: A confirmation window appears. Click **Yes** to uninstall the IEI HDB-301R AP.

HDB-301R Full HD Capture Box

3.3 Using the IEI HDB-301R AP

To use the IEI HDB-301R AP to view the video from the HDMI input channel, follow the steps below.

- Step 1:** Ensure that the HDB-301R is connected to the video input source and the display device. Refer to **Section 2.4** for the HDMI devices installation.
- Step 2:** If the IEI HDB-301R AP is installed to the computer, an **HDB-301R** icon (**Figure 3-7**) should appear on the Windows desktop. Double click the icon to launch the application.



Figure 3-7: IEI HDB-301R AP Icon

The user may click **HDB-301R** from **Start** → **All Programs** → **HDB-301R_V100_AS** (**Figure 3-8**) to launch the application.

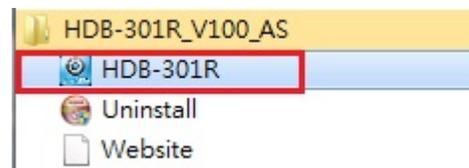


Figure 3-8: From the Windows Start Menu

- Step 3:** The IEI HDB-301R AP user interface appears (**Figure 3-9**). Click **Device** to display a dropdown list to select the video input source.

The user may click **Full screen** to display the video in full screen mode, use the Zoom Out/Zoom In function to enlarge/shrink the video, and check the **FR** box to display the frame rate on the display window.

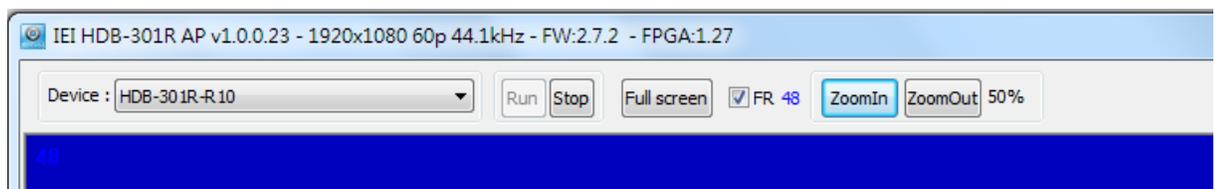


Figure 3-9: IEI HDB-301R AP

Step 4: To stop playing back the video, click **Stop**.

On the top of the IEI HDB-301R AP user interface, the user may see the AP version, the resolution and frame rate of the video, and the FW version and FPGA version of the HDB-301R (**Figure 3-10**).

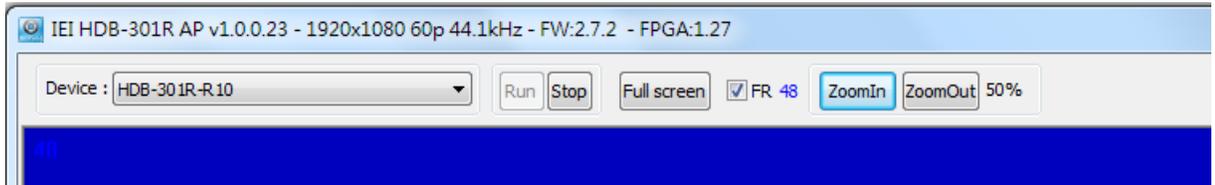


Figure 3-10: IEI HDB-301R AP – Stop Button

3.4 Audio Setting

If there is no sound during playback, please follow the steps below to work out the issue.

Step 1: Go to **Control Panel** → **Sound** → **Recording**, or right-click the audio icon on the Windows notification area, then click **Recording devices** (**Figure 3-11**).

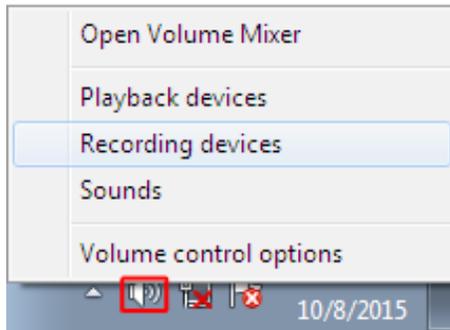


Figure 3-11: Recording Devices

Step 2: Select **HDB-301R-R10**, then click **Properties** (**Figure 3-12**).

HDB-301R Full HD Capture Box

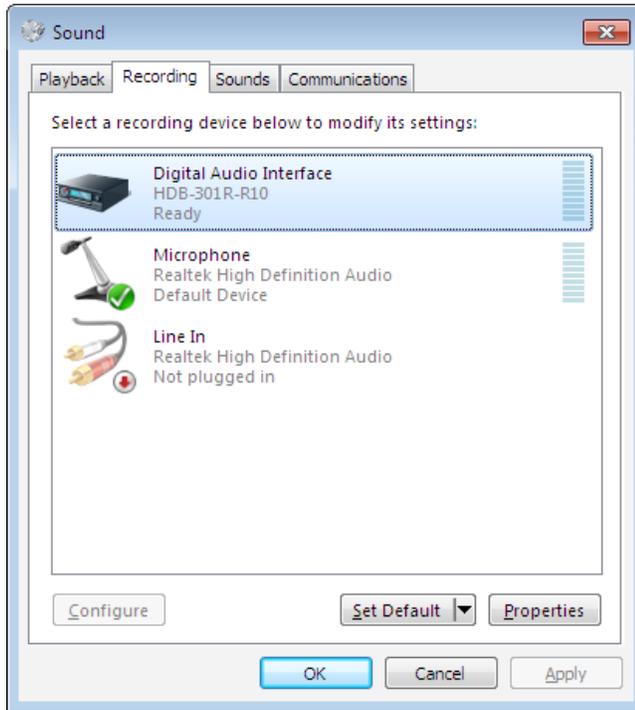


Figure 3-12: Digital Audio Interface

Step 3: Click the **Listen** tab (Figure 3-13).

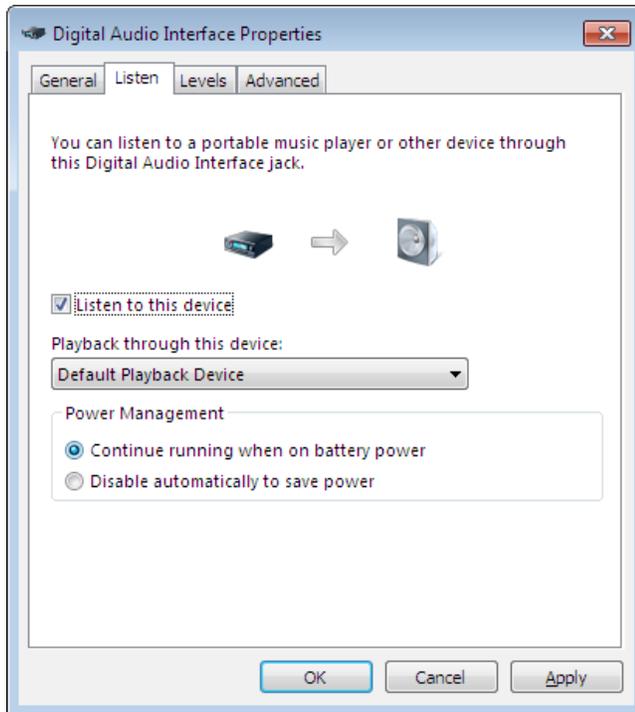


Figure 3-13: Digital Audio Interface – Properties

Step 4: Check the **Listen to this device** box, then click **Apply (Figure 3-13)**.



NOTE:

If the **Listen to this device** box is already checked, disable it, click **Apply**, and then repeat **Step 4**.



NOTE:

If there is no sound when using the IEI HDB-301R AP in Windows 10 OS, please restart the system to work around the issue.

Chapter

4

Using HDB-301R with Third-Party Software

4.1 Overview

The IEI HDB-301R AP provides only the image preview function. If the user needs to proceed with live streaming or video recording, please use the third-party software.

The HDB-301R is compatible with various live-streaming software with DirectShow architecture, such as OBS, XSplit, Wirecast, VLC and PotPlayer, and communication software, such as Skype and Google Hangout. Using the HDB-301R with the third-party software allows the user to rapidly edit, record, stream and share videos.

The following sections will provide brief instructions of how to add the HDB-301R to OBS and XSplit.

4.2 OBS Operating Instructions

Step 1: Launch OBS. Click + on the bottom left corner to add a new scene and source.

Step 2: Click + in the **Sources** field to add a **Video Capture Device**, then click **OK**.

Step 3: Select **HDB-301R-R10** in the **Device** field from the **Properties for 'Video Capture Device'** window, then click **OK**.

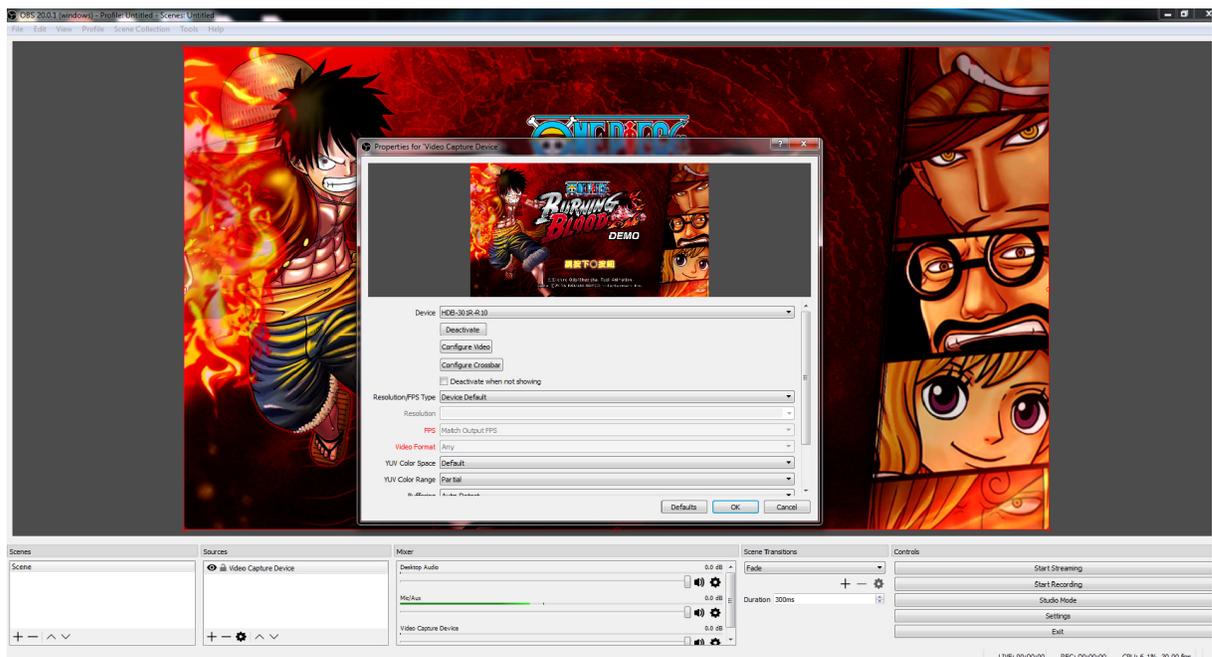


Figure 4-1: OBS Screenshot

HDB-301R Full HD Capture Box

4.3 XSplit Operating Instructions

- Step 1:** Launch XSplit. Click **Add** on the bottom left corner.
- Step 2:** Select **Devices (webcam, capture cards...)**.
- Step 3:** Select **Video**.
- Step 4:** Select **HDB-301R-R10**. The user can adjust the display size when the capture image from HDB-301R appears.

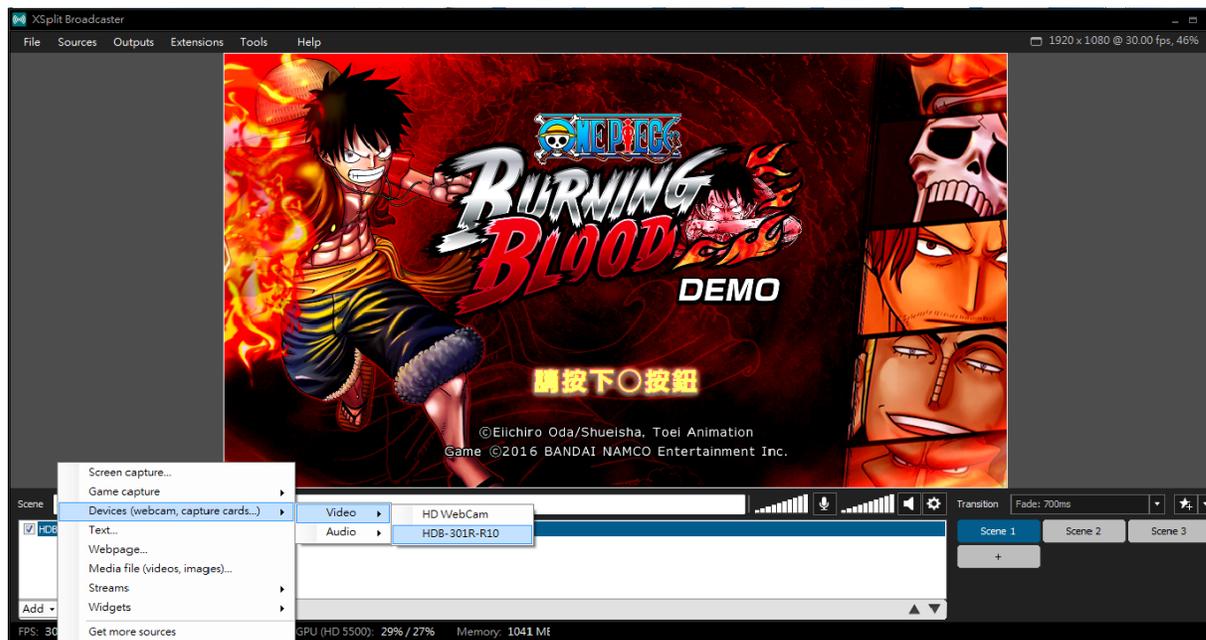


Figure 4-2: XSplit Screenshot



NOTE:

For detailed operating instructions, please go to IEI website: (<http://www.ieiworld.com/>). Click **Products** → **Capture Box** → **HDB-301R** → **Features**, then find and view the instruction videos of HDB-301R.

Chapter

5

HDB-301R SDK (Windows)

HDB-301R Full HD Capture Box

5.1 System Requirements

The SDK build environment requirements are listed below. If the build environment is not Microsoft Visual Studio 2010 SP1 or latter, you need to install Microsoft Visual C++ 2010 SP1 Redistributable Package (x86).

- Microsoft Windows 7 32-bit/64-bit or latter
- DirectX SDK – August 2007
- Windows SDK 7.1
- Microsoft Visual Studio 2010 SP1

5.2 HDB-301R SDK Installation

The HDB-301R SDK is installed simultaneously during the IEI HDB-301R AP installation. Please refer to **Section 3.2** for the application installation.

5.3 SDK Introduction

The following sections are the brief introduction of the SDK. You can find the details and usages in the sample code.

5.3.1 Error Code Definition

```
enum tagIEIDeviceErrCode
{
    IEIDeviceErrCode_NG = 0, //Device NG
    IEIDeviceErrCode_OK = 1, //Device OK
    IEIDeviceErrCode_Library_NoInit = 1000, //Library is not initial
    IEIDeviceErrCode_Device_NoInit, //device is not initial
    IEIDeviceErrCode_Device_InitOver, //device initial number is over
    IEIDeviceErrCode_NoDevice, //no device
    IEIDeviceErrCode_Device_Err, //device error
    IEIDeviceErrCode_InitParam_Err, //parameter initial error
    IEIDeviceErrCode_DimensionSizeX_Over, //dimension size X is over
    IEIDeviceErrCode_DimensionSizeY_Over, //dimension size Y is over
    IEIDeviceErrCode_DimensionSizeXY_Over, //dimension size XY is over
    IEIDeviceErrCode_TimeOut, //command is timeout
}
```

```
IEIDeviceErrCode_Callback_Err, //callback setting error
IEIDeviceErrCode_Surface_Over, //surface buffer over
IEIDeviceErrCode_Surface_Err, //surface buffer error

IEIDeviceErrCode_Param_Err, //parameter is error
IEIDeviceErrCode_Device_NotRun, // device is not run
IEIDeviceErrCode_Image_None, //no image in buffer
IEIDeviceErrCode_NoInit_HidDevice, //not initial HID controller
IEIDeviceErrCode_HidDeviceError, //HID device is error
IEIDeviceErrCode_No_Hid_Device, //no HID device
IEIDeviceErrCode_AES_Error, //AES command is error
};
enum tagIEIDeviceParam
{
    IEIDeviceParam_AutoExposure = 0,
    IEIDeviceParam_AutoControl = 1,
    IEIDeviceParam_Exposure,
    IEIDeviceParam_Gain,
    IEIDeviceParam_Brightness,
    IEIDeviceParam_Contrast,
    IEIDeviceParam_Hue,
    IEIDeviceParam_Saturation,
    IEIDeviceParam_Sharpness,
    IEIDeviceParam_Gamma,
    IEIDeviceParam_ColorEnable,
    IEIDeviceParam_WhiteBalance,
    IEIDeviceParam_BacklightCompensation,
    IEIDeviceParam_MaxSizeX,
    IEIDeviceParam_MaxSizeY,
    IEIDeviceParam_SizeX,
    IEIDeviceParam_SizeY,
    IEIDeviceParam_BufferSize,
    IEIDeviceParam_Depth,
    IEIDeviceParam_Channels,
    IEIDeviceParam_FrameRate,
```

HDB-301R Full HD Capture Box

```

    IEIDeviceParam_CaptureSpendTime,
    IEIDeviceParam_OneShot,
    IEIDeviceParam_SurfaceNum,
};

```

5.3.2 API Introduction

Prototype	void GetLibraryVersion (int *y, int *m, int *d, int *v)
Description	Get SDK version
Parameter	y : year. m : month. d : day. v : version.
Return	None

Prototype	IEIDevice Initialize_IEI_HDB ()
Description	Initialize IEI HDB library
Parameter	None.
Return	IEIDevice: tagIEIDeviceErrCode

Prototype	IEIDevice UnInitialize_IEI_HDB ()
Description	Release IEI HDB library
Parameter	None
Return	IEIDevice: tagIEIDeviceErrCode

Prototype	IEIDevice Get_IEI_HDB_DeviceName (int nID, char* sName, int nBufferSize)
Description	Get device name.
Parameter	nID: Device Index. sName: char array. nBufferSize: char array size.
Return	IEIDevice: tagIEIDeviceErrCode

Prototype	IEIDevice Get_IEI_HDB_DeviceNum (int &nName)
Description	Get total device number.
Parameter	nName: Device number.
Return	IEIDevice: tagIEIDeviceErrCode

HDB-301R Full HD Capture Box

Prototype	IEIDevice Open_IEI_HDB_Device (int nID, int &nDevice, void* p_hWnd)
Description	Open device.
Parameter	nID: Device index. nDevice: feedback device index. p_hwnd dialog HWND
Return	IEIDevice: tagIEIDeviceErrCode

Prototype	IEIDevice Close_IEI_HDB_Device (int nDevice)
Description	Close device.
Parameter	nDevice: device index.
Return	IEIDevice: tagIEIDeviceErrCode

Prototype	IEIDevice Init_IEI_HDB_Control (int nDevice)
Description	Init parameter control.
Parameter	nDevice: device index.
Return	IEIDevice: tagIEIDeviceErrCode

Prototype	IEIDevice Init_IEI_HDB_ProcAmp (int nID, int &nDevice)
Description	Init parameter procamp control.
Parameter	nDevice: device index.
Return	IEIDevice: tagIEIDeviceErrCode

Prototype	IEIDevice Get_IEI_HDB_DeviceParam (int nDevice, int nParam, long &IValue)
Description	Get device parameter.
Parameter	nDevice: device index. nParam: parameter define number. See tagIEIDeviceParam. IValue: get value.
Return	IEIDevice: tagIEIDeviceErrCode

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Prototype	IEIDevice Set_IEI_HDB_DeviceParam (int nDevice, int nParam, long lValue)
Description	Set device parameter.
Parameter	nDevice: device index. nParam: parameter define number. See tagIEIDeviceParam. lValue: Set value.
Return	IEIDevice: tagIEIDeviceErrCode

Prototype	IEIDevice Get_IEI_HDB_DeviceParamRange (int nDevice, int nParam, int &nMin, int &nMax, int &nStep)
Description	Get device parameter range.
Parameter	nDevice: device index. nParam: parameter define number. See tagIEIDeviceParam. nMin: min value. nMax: max value. nStep: value's step.
Return	IEIDevice: tagIEIDeviceErrCode

Prototype	IEIDevice Set_IEI_HDB_DeviceCallback (int nDevice, FRAMECALLBACK func)
Description	Register image's callback function's pointer.
Parameter	nDevice: device index. func: Callback function's pointer.
Return	IEIDevice: tagIEIDeviceErrCode

Prototype	IEIDevice Get_IEI_HDB_QueueBuffer (int nDevice, void* ImgBuffer)
Description	Get queue buffer's image data.
Parameter	nDevice: device index. ImgBuffer: Image buffer's pointer.
Return	IEIDevice: tagIEIDeviceErrCode

Prototype	IEIDevice Run_IEI_HDB (int nDevice)
Description	Run device.
Parameter	nDevice: device index.
Return	IEIDevice: tagIEIDeviceErrCode

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Prototype	IEIDevice Pause_IEI_HDB (int nDevice)
Description	Pause device.
Parameter	nDevice: device index.
Return	IEIDevice: tagIEIDeviceErrCode

Prototype	IEIDevice Stop_IEI_HDB (int nDevice)
Description	Stop device.
Parameter	nDevice: device index.
Return	IEIDevice: tagIEIDeviceErrCode

Prototype	IEIDevice Get_IEI_HDB_FWVersion (int nDevice, BYTE b[])
Description	Get device firmware version.
Parameter	nDevice: device index. b: fw version, length is 14. Ex: HDBD722V2.03
Return	IEIDevice: tagIEIDeviceErrCode

Prototype	IEIDevice Get_IEI_HDB_FPGAVersion (int nDevice, BYTE b[])
Description	Get device FPGA version.
Parameter	nDevice: device index. b: FPGA version, length is 2. Ex: 23
Return	IEIDevice: tagIEIDeviceErrCode

Prototype	IEIDevice Get_IEI_HDB_ParameterData (int nDevice, int *iResolutionX, int *iResolutionY, int *iFrameRate, int *iInterlaced)
Description	Get video source data.
Parameter	nDevice: device index. iResolutionX: Video source's resolution width, ex 1920. iResolutionY: Video source's resolution height, ex 1080. iFrameRate: video source's frame rate, ex 60. iInterlaced: video source is progressive(0) or interlacing(1).
Return	IEIDevice: tagIEIDeviceErrCode

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Prototype	IEIDevice Set_IEI_HDB_FWReset (int nDevice)
Description	Set device reset.
Parameter	nDevice: device index.
Return	IEIDevice: tagIEIDeviceErrCode

Prototype	IEIDevice Get_IEI_HDB_BypassPortEnable (int nDevice, bool *bEnable)
Description	Get device's bypass port is enable / disable
Parameter	nDevice: device index. bEnable: bypass is enable(true) / disable(false).
Return	IEIDevice: tagIEIDeviceErrCode

Prototype	IEIDevice Set_IEI_HDB_BypassPortEnable (int nDevice, bool bEnable)
Description	Set device's bypass port is enable / disable
Parameter	nDevice: device index. bEnable: bypass is enable(true) / disable(false).
Return	IEIDevice: tagIEIDeviceErrCode

Prototype	IEIDevice Get_IEI_HDB_FrameFlag (int nDevice, bool *bOdd)
Description	Get receive frame is odd or even.
Parameter	nDevice: device index. bOdd: Odd frame is true, even frame is false. For interlacing.
Return	IEIDevice: tagIEIDeviceErrCode

Prototype	IEIDevice Set_IEI_HDB_SoundRenderEnable (int nDevice, bool bSoundEnable)
Description	Set sound renderer is enable / disable
Parameter	nDevice: device index. bSoundEnable renderer is enable(true) / disable(false).
Return	IEIDevice: tagIEIDeviceErrCode

Prototype	IEIDevice Set_IEI_Device_WindowPosition (int nDevice, RECT rect)
Description	Set IVideoWindow size
Parameter	nDevice: device index. rect: window size
Return	IEIDevice: tagIEIDeviceErrCode

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Prototype	IEIDevice Set_IEI_Device_SetRendererStatus (int nDevice, int nRenderer)
Description	Set device's renderer status to NULL renderer / Default renderer.
Parameter	nDevice: device index. nRenderer: Renderer index
Return	IEIDevice: tagIEIDeviceErrCode

Chapter

6

HDB-301R SDK (Linux)

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6.1 System Requirements

The following program must be installed in order to use the IEI HDB-301R AP SDK in Linux:

- Kernel: 3.16.0 (please update to 3.16.0 version or latest linux kernel for the HDB-301R)
- OS: Ubuntu 14.04 Distribution 32-/64-bit

6.2 Software Installation



NOTE:

To obtain the IEI HDB-301R AP SDK file, please visit the IEI website.

To install the IEI HDB-301R AP SDK to a system running Linux, please follow the steps in the following sub-sections.

6.2.1 Bin File Only

Step 1: Login as root by typing:

```
# sudo -i
```

Step 2: Enter the password:

```
password: *****
```

Step 3: Copy the **IEI_hdb301xx_1_0_5_bin_3.16.0-30-generic_20150923_5560**

(1_0_5 release version, 20150923 release date, 5560 svn version, 3.16.0-30-generic kernel version) file downloaded from the IEI website to the system hard drive.

Step 4: Unzip the file by typing:

```
# tar zxvf IEI_hdb301xx_(version)_bin_(kernel version) (date)(svn version).tar.gz  
#tar zxvf IEI_hdb301xx_1_0_5_bin_3.16.0-30-generic_20150923_5560.tar.gz
```

Step 5: Change to SDK directory by typing:

```
# cd IEI_hdb301xx_ (version)_bin_(kernel version) (date)(svn version)
# cd IEI_hdb301xx_1_0_5_bin_3.16.0-30-generic_20150923_5560
```

Step 6: If your kernel is 3.16.0 or latest version, please skip steps 6 and 7.

```
#!/update_kernel_3-16-0.sh
.....
```

Step 7: Please reboot your system.

Step 8: Install the IEI HDB-301R AP SDK by typing:

```
#!/env.sh
```

Please press ENTER.

```
A good blender ppa is here -
https://launchpad.net/~irie/+archive/blender

To further extend this ppa to libav11 check here -
https://launchpad.net/~mc3man/+archive/ubuntu/testing6

To repeat -
*Please note that if using this ppa I would *not* try upgrading to 14.10/15.04
ay on 14.04*
If upgrading anyway use ppa-purge first -
sudo ppa-purge ppa:mc3man/trusty-media

Also note that with apt-get a sudo apt-get dist-upgrade is needed for initial
More info: https://launchpad.net/~mc3man/+archive/ubuntu/trusty-media
Press [ENTER] to continue or ctrl-c to cancel adding it
█
```

Please press Y to confirm the system update.

```
Reading state information... Done
The following extra packages will be installed:
  libpthread-stubs0-dev libx11-dev libx11-doc libxau-dev libxcb1-dev
  libxdmcp-dev libxext-dev x11proto-core-dev x11proto-input-dev
  x11proto-kb-dev x11proto-video-dev x11proto-xext-dev xorg-sgml-doctools
  xtrans-dev
Suggested packages:
  libxcb-doc libxext-doc
The following NEW packages will be installed:
  libpthread-stubs0-dev libx11-dev libx11-doc libxau-dev libxcb1-dev
  libxdmcp-dev libxext-dev libxv-dev x11proto-core-dev x11proto-input-dev
  x11proto-kb-dev x11proto-video-dev x11proto-xext-dev xorg-sgml-doctools
  xtrans-dev
0 upgraded, 15 newly installed, 0 to remove and 110 not upgraded.
Need to get 3,729 kB of archives.
After this operation, 18.3 MB of additional disk space will be used.
Do you want to continue? [Y/n] █
```

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Please press Y to confirm the system update.

```

Reading state information... Done
The following extra packages will be installed:
  i965-va-driver libass5 libenca0 libfdk-aac0 libmp3lame0 libopencore-amrnb0
  libopencore-amrwb0 libopus0 libsdl1.2debian libsoxr0 libva1 libvdpau1
  libvidstab1.0 libvo-aacenc0 libx264-142 libx265-59 libxvidcore4
  va-driver-all vdpau-va-driver
Suggested packages:
  opus-tools nvidia-vdpau-driver vdpau-driver libx265-59-dbg
The following NEW packages will be installed:
  ffmpeg i965-va-driver libass5 libenca0 libfdk-aac0 libmp3lame0
  libopencore-amrnb0 libopencore-amrwb0 libopus0 libsdl1.2debian libsoxr0
  libva1 libvdpau1 libvidstab1.0 libvo-aacenc0 libx264-142 libx265-59
  libxvidcore4 va-driver-all vdpau-va-driver
0 upgraded, 20 newly installed, 0 to remove and 110 not upgraded.
Need to get 32.6 MB of archives.
After this operation, 117 MB of additional disk space will be used.
Do you want to continue? [Y/n] y

```

Step 9: Check the HDB-301R video device.

```

#ls -al /dev/video0

crw-rw----+ 1 root video 81, 0 2015-04-23 00:39 /dev/video0

#dmesg | grep -i HDB-301R

[ 2588.853968] usb 4-4: Product: HDB-301R-R10

[ 2588.863941] uvcvideo: Found UVC 1.10 device HDB-301R-R10 (2933:d722)

```

6.2.2 Source Code

Step 1: Login as root by typing:

```
$ sudo su
```

Step 2: Enter the password:

```
password: *****
```

Step 3: Copy the **IEI_hdb301xx_(SDK VERSION)_(RELEASE DATE)_(SVN VERSION).tar.gz** file downloaded from the IEI website to the system hard drive.

Step 4: Unzip the file by typing:

```

tar zxvf IEI_hdb301xx_(SDK VERSION)_(RELEASE DATE)_(SVN VERSION).tar.gz
tar zxvf IEI_hdb301xx_1_0_3_5560.tar.gz

```

Step 5: Change to SDK directory by typing:

```
$ cd hdb301xx_(version) /api/linux/
$ cd hdb301xx_1_0_3/hdb301r_ffplay/
```

Step 6: Install the IEI HDB-301R AP SDK by typing:

```
# make
```

Step 7: The system starts to compile the IEI HDB-301R AP SDK.

6.3 Using the IEI HDB-301R AP SDK in Linux



NOTE:

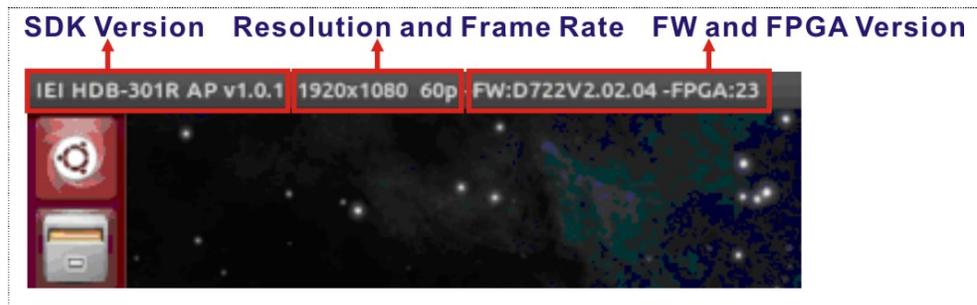
If the interval of resolution switching is too short, a device error might occur. To avoid this situation, the minimum interval of resolution switching is four seconds.

Step 1: Change to < IEI_hdb301xx_1_0_5_bin_3.16.0-30-generic_20150922_5549> folder.

Step 2: To launch the IEI HDB-301R AP SDK in Linux, type “./iei_ffplay” as below:

```
$ ./iei_ffplay
```

Step 3: The system starts to launch the SDK. The user may see the SDK version, the resolution and frame rate of the video, and the FW version and FPGA version of the HDB-301R.



Chapter

7

FAQ

Q: How to obtain the latest drivers?

A: The HDB-301R is a UVC and UAC compliant device. You do not need to install the driver.

Q: Where are the AP, SDK and sample code?

A: The AP and sample code are included in the SDK. To obtain the latest AP, SDK and sample code, please go to IEI website: <http://www.ieiworld.com/>. Click **Products** → **Capture Box** → **HDB-301R** → **Download**, and then find and download the latest AP, SDK and sample code.

Appendix

A

Regulatory Compliance

DECLARATION OF CONFORMITY

This equipment has been tested and found to comply with specifications for CE marking. If the user modifies and/or installs other devices in the equipment, the CE conformity declaration may no longer apply.

FCC WARNING

This equipment complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Appendix

B

Linux Open Source Code

Linux Open Source Code

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Version 2, June 1991

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If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

```
Gnomovision version 69, Copyright (C) year name of author
```

```
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
```

```
This is free software, and you are welcome to redistribute it under certain conditions; type `show c' for  
details.
```

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```
Yoyodyne, Inc., hereby disclaims all copyright interest in the program  
`Gnomovision' (which makes passes at compilers) written by James Hacker.
```

```
<signature of Ty Coon>, 1 April 1989
```

```
Ty Coon, President of Vice
```

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Lesser General Public License instead of this License.

Appendix

C

Hazardous Materials Disclosure

HDB-301R Full HD Capture Box

The details provided in this appendix are to ensure that the product is compliant with the Peoples Republic of China (China) RoHS standards. The table below acknowledges the presences of small quantities of certain materials in the product, and is applicable to China RoHS only.

A label will be placed on each product to indicate the estimated “Environmentally Friendly Use Period” (EFUP). This is an estimate of the number of years that these substances would “not leak out or undergo abrupt change.” This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.

Please refer to below table.

Part Name	Toxic or Hazardous Substances and Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
Housing	O	O	O	O	O	O
Display	O	O	O	O	O	O
Printed Circuit Board	O	O	O	O	O	O
Metal Fasteners	O	O	O	O	O	O
Cable Assembly	O	O	O	O	O	O
Fan Assembly	O	O	O	O	O	O
Power Supply Assemblies	O	O	O	O	O	O
Battery	O	O	O	O	O	O

O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in SJ/T 11363-2006 (now replaced by GB/T 26572-2011)

X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in SJ/T 11363-2006 (now replaced by GB/T 26572-2011)

此附件旨在确保本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有“环境友好使用期限”的标签，此期限是估算这些物质“不会有泄漏或突变”的年限。本产品可能包含有较短的环境友好使用期限的可替换元件，像是电池或灯管，这些元件将会单独标示出来。

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
壳体	○	○	○	○	○	○
显示	○	○	○	○	○	○
印刷电路板	○	○	○	○	○	○
金属螺帽	○	○	○	○	○	○
电缆组装	○	○	○	○	○	○
风扇组装	○	○	○	○	○	○
电力供应组装	○	○	○	○	○	○
电池	○	○	○	○	○	○

○: 表示该有毒有害物质在该部件所有物质材料中的含量均在SJ/T 11363-2006 (现由GB/T 26572-2011取代) 标准规定的限量要求以下。

X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T 11363-2006 (现由GB/T 26572-2011取代) 标准规定的限量要求。