



**MODEL:
HDB-301L**

**USB 2.0 Video/Audio Capture Box with
One HDMI Input Channel and One HDMI Output Channel,
1920x1080@30p, H.264 Hardware Encoder**

User Manual

Revision

Date	Version	Changes
June 23, 2017	1.02	Updated IEI HD Capture application
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August 5, 2015	1.00	Initial release

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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-301L Video/Audio Capture Box

The HDB-301L USB 2.0 video/audio capture box supports 1080p Full HD video via HDMI connection. The HDB-301L video/audio 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 available and the flexible system architecture simplifies the integration of cameras, video signal processing, storage and video management and or security applications.

HDB-301L Video/Audio Capture Box

1.2 Features

Some of the HDB-301L video/audio capture box features are listed below.

- Encoding up to 1920x1080@30p
- HDMI input channel with 1920x1080@60p
- Pass through for transmitting uncompressed video up to 1080p resolution
- Capture or record HD video in H.264 format
- Reduce the amount of hard disk space needed by real-time H.264 recording compression capability
- Low power consumption
- Software development kit (SDK)

1.3 Applications

The HDB-301L 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

1.4 Connector Overview

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



Figure 1-2: HDB-301L Connector Overview

HDB-301L Video/Audio Capture Box

1.5 Specifications

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

HDB-301L	
PC Interface	USB 2.0
INPUT PORT	
Video Input Channel	One
Video Input Type	HDMI
Audio Input Channel	One
Audio Input Type	HDMI (stereo)
LOOP-THROUGH OUTPUT PORT	
Video Output Channel	One
Video Output Type	HDMI
Audio Output Channel	One
Audio Output Type	HDMI (stereo)
VIDEO PROCESSING	
Video Engine	H.264/AVC High Profile Level 4.1
Bit Rate	Up to 30 Mbps
Video Input Resolution	1920x1080 24p/25p/30p/50p/60p 1920x1080 60i/59.94i/50i 1280x1024 30p 1280x800 60p 1280x768 60p 1280x720 50p/60p 1024x768 60p 800x600 60p 720x576 50p 720x480 60p 640x480 60p

Video Capture Resolution (Encoding)	1920x1080 24p/25p/30p
	1280x1024 30p
	1280x800 60p
	1280x768 60p
	1280x720 50p/60p
	1024x768 60p
	800x600 60p
	720x576 50p
	720x480 60p
640x480 60p	
AUDIO PROCESSING	
Sampling Frequencies	44.1 k, 48 kHz
Audio Format	MPEG-4 AAC
Bit Rate	128 kbps
FUNCTIONALITY	
Multiple Card Support	4 boxes, 4 channels
Scaling	Video scaling down compression
SYSTEM REQUIREMENTS	
System	2.4 GHz Intel® Core™2 Duo CPU or above
Memory	2 GB or more
OS Environment	Windows: Microsoft® Windows® 7/8.1/10 32-bit/64-bit Microsoft® DirectX 10.0c (32-bit)
	Linux: Ubuntu 16.04 (64-bit) (kernel version 4.4.0-21-generic)
SDK	Provides SDK and demo program with sample source code
OTHERS	
Dimensions	89 mm x 74.83 mm x 21.6 mm
Operating Temperature	0°C ~ 60°C (32°F ~ 140°F), non-condensing
Power Consumption	4.5 W

Table 1-1: Specifications

HDB-301L Video/Audio Capture Box

1.6 Dimensions

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

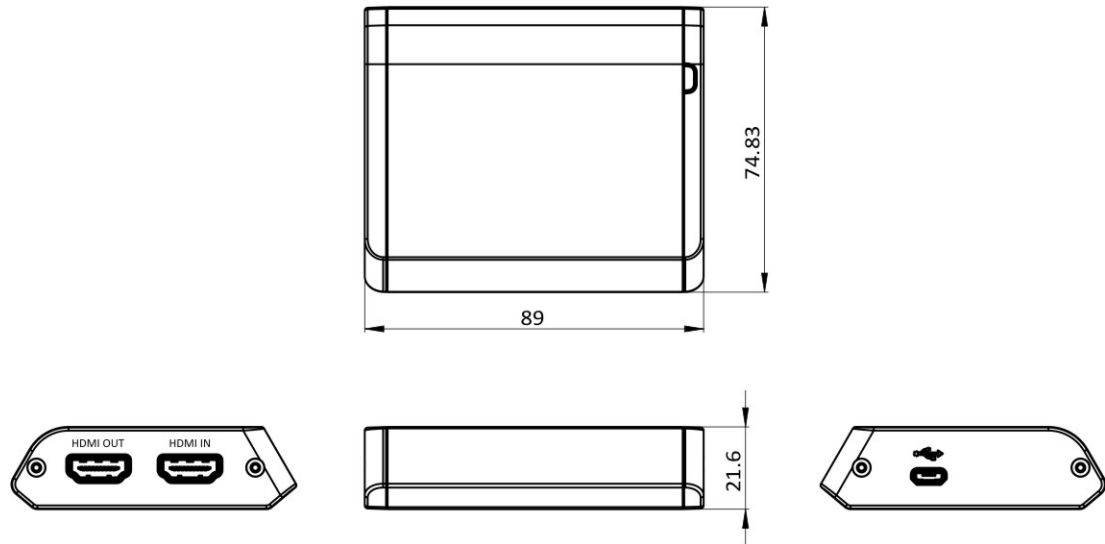


Figure 1-3: HDB-301L Dimensions (mm)

Chapter

2

Hardware Installation

HDB-301L Video/Audio Capture Box

2.1 Unpacking

2.1.1 Anti-static Precautions

**WARNING:**

Failure to take ESD precautions during the installation of the HDB-301L 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 video/audio capture box. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the video/audio 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 video/audio capture box, place it on an anti-static pad. This reduces the possibility of ESD damaging the video/audio 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 video/audio 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 video/audio capture box does not fall out of the box.
- Make sure all the components listed in **Section 2.1.3** are present.

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-301L from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@ieiworld.com.

The video/audio capture box is shipped with the following components:




Quantity	Item	Image
1	HDB-301L video/audio capture box	
1	USB cable	
1	Quick installation guide	

Table 2-1: Package List Contents

HDB-301L Video/Audio Capture Box

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-301L, installation instructions and configuration options.
- **DANGER! Disconnect Power:** Power to the HDB-301L must be disconnected during the installation process. Failing to disconnect the power may cause severe injury to the body and/or damage to the system.
- **Qualified Personnel:** The HDB-301L 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-301L is equipped with a Micro USB connector that allows connection to a computer. Follow the steps below to connect the HDB-301L to a computer by using the supplied USB cable.

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



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

2.4 HDMI Devices Installation

Various HDMI devices can be connected to the HDB-301L, such as the gaming console (PS4, Xbox One, Xbox 360) and camcorder. Follow the steps below to connect the HDMI devices to the HDB-301L.

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

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

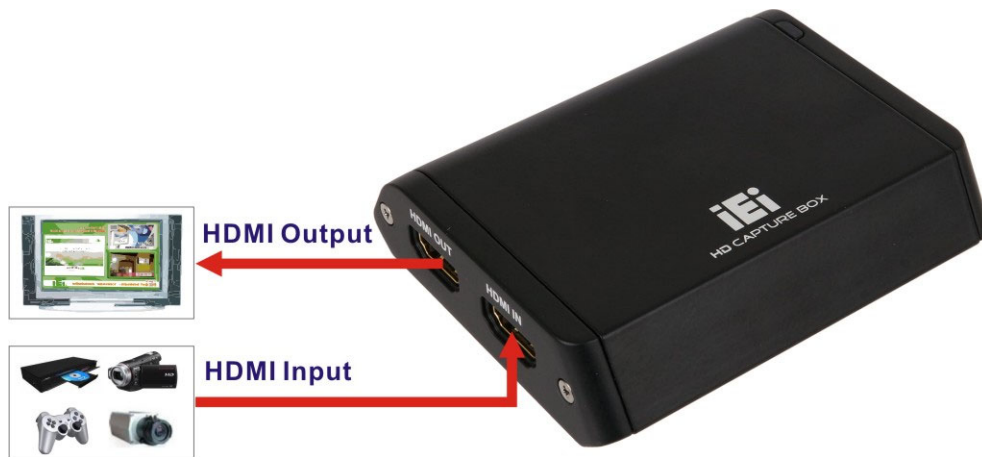


Figure 2-2: Connecting HDMI Devices to the Video/Audio Capture Box

Chapter

3

IEI HD Capture (Windows)

3.1 Software Installation (Windows)

The HDB-301L comes with a video capture application – IEI HD Capture. This section describes how to install the application in Windows environment.

3.1.1 System Requirements

The supported OS versions are listed below:

- Microsoft Windows 7, 32-bit/64-bit
- Microsoft Windows 8.1, 32-bit/64-bit
- Microsoft Windows 10, 32-bit/64-bit

3.1.2 IEI HD Capture Installation

To install the IEI HD Capture, please follow the steps below:



NOTE:

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

Step 1: Go to IEI website (<http://www.ieiworld.com>). Click **Products** → **Capture Box**.

Enter the HDB-301L page by clicking the product photo.

Step 2: Click the **Download** button on the product page. Find and download the latest IEI HD Capture installer: **IEI_HDCapture_V1xxAD_XXXXXX.exe** (where x is version and date characters).

Step 3: Run the IEI HD Capture installer which will install IEI HD Capture application, the USB to PCIe driver and the device driver.

Step 4: The IEI_HDCapture_AP Setup Wizard appears. Click **Next** to continue.

HDB-301L Video/Audio Capture Box

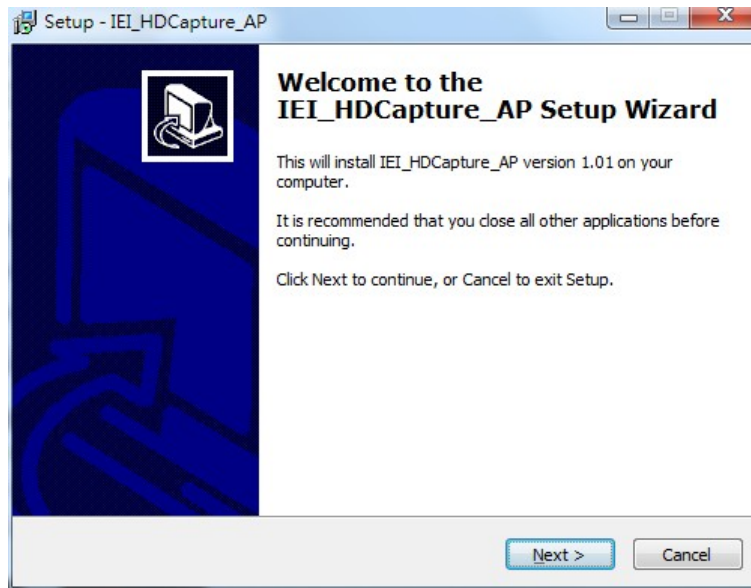


Figure 3-1: IEI_HDCapture_AP Setup Wizard Welcome Window

Step 5: Select a folder for IEI HD Capture installation as shown in Figure 3-2.

Click **Next** to continue.

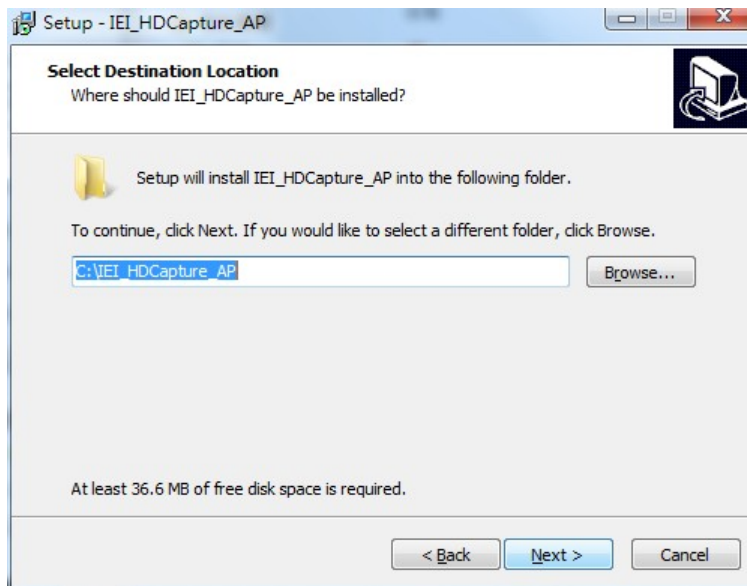


Figure 3-2: Select Installation Folder

Step 6: The following screen appears. Click **Install** to confirm the installation.

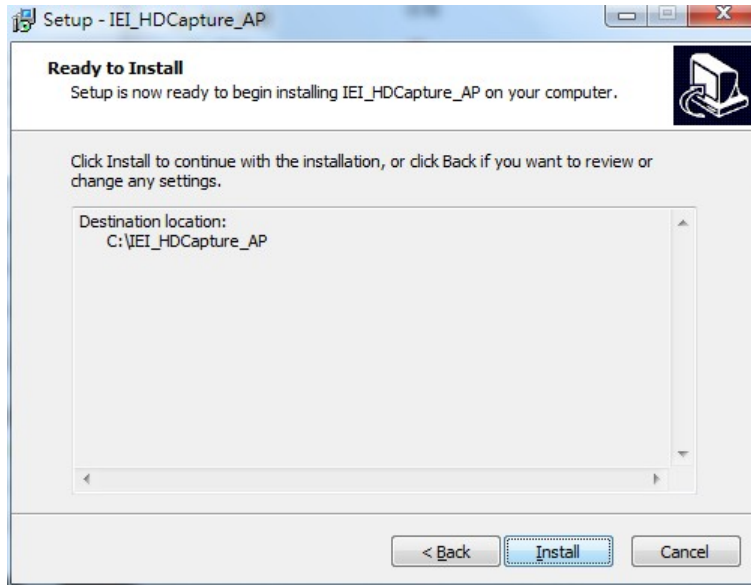


Figure 3-3: Confirm Installation

Step 7: The system starts installing the IEI HD Capture.

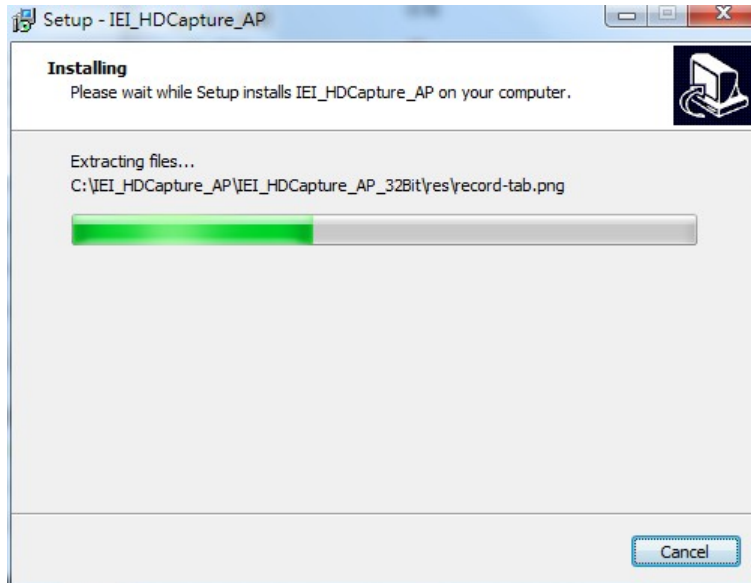


Figure 3-4: Installing IEI HD Capture

HDB-301L Video/Audio Capture Box

Step 8: When the IEI HD Capture installation is complete, the following window appears to guide you to install the USB to PCIe driver. Click **Next** to continue.

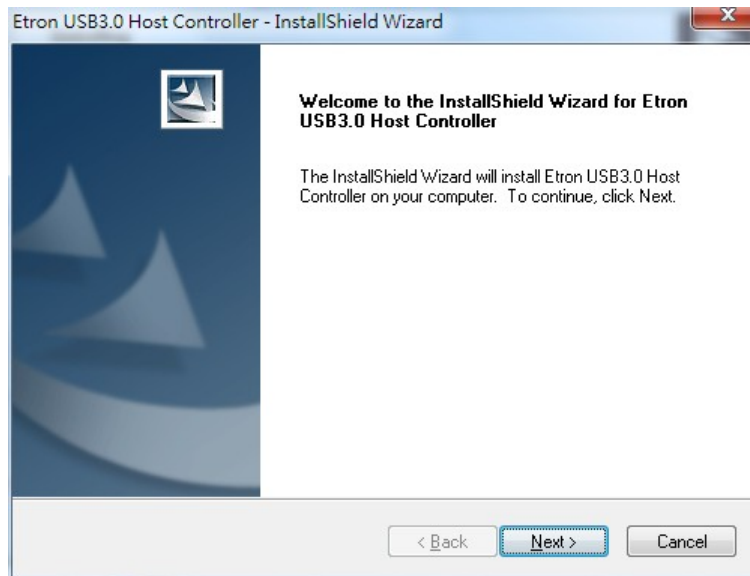


Figure 3-5: USB to PCIe Driver Installation Wizard



CAUTION:

1. IEI HDC-301MS, HDC-301EL and HDB-301L capture devices use this same installer for software and driver installation. Therefore, the USB to PCIe driver which is needed by the HDC-301EL is also included in the installer package.
 2. The program may uninstall your previous installation of Etron USB to PCIe driver during the process. If this happens, run the installer again to re-install the USB to PCIe driver.
-

Step 9: The following screen appears. Click **Install** to confirm the installation.

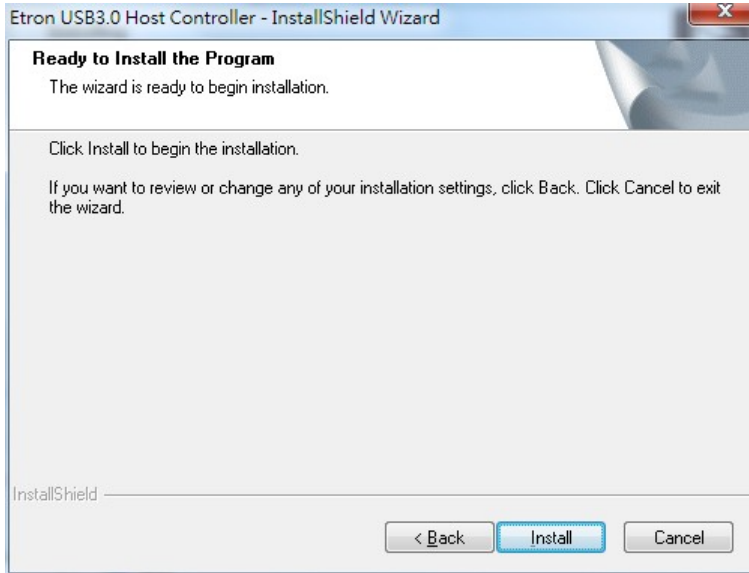


Figure 3-6: Confirm USB to PCIe Driver Installation

Step 10: When the USB to PCIe driver installation is complete, click the **Finish** button to finish the USB to PCIe driver installation.

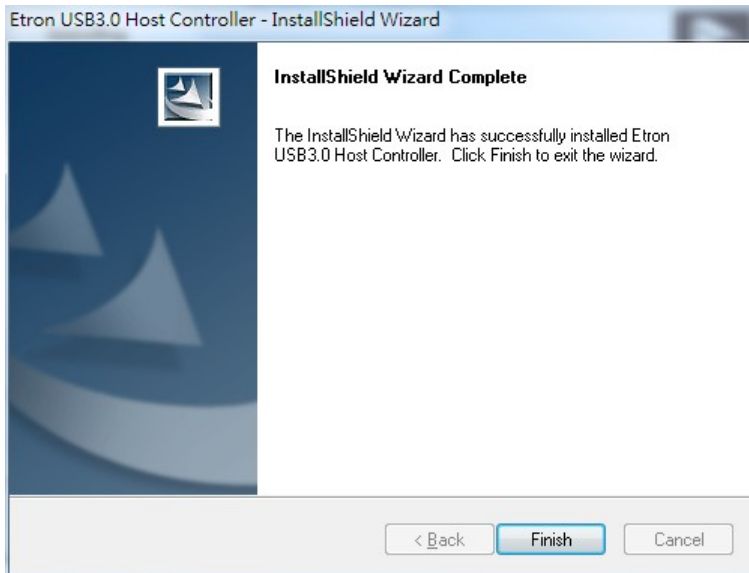


Figure 3-7: USB to PCIe Driver Installation Complete

HDB-301L Video/Audio Capture Box

Step 11: When the USB to PCIe driver is complete, the following window appears to guide you to install the device driver. Click **Next** to start installing the driver.

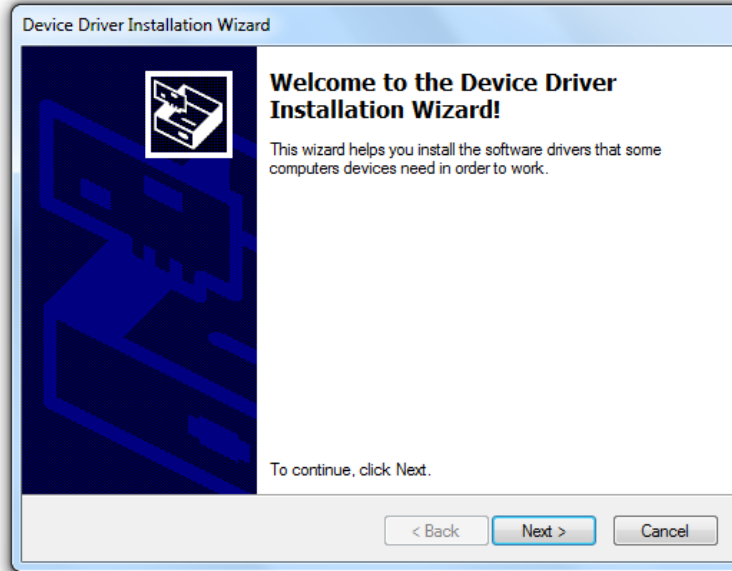


Figure 3-8: Device Driver Installation Wizard Welcome Window

Step 12: If the following window appears before installation, click **Install** to continue.

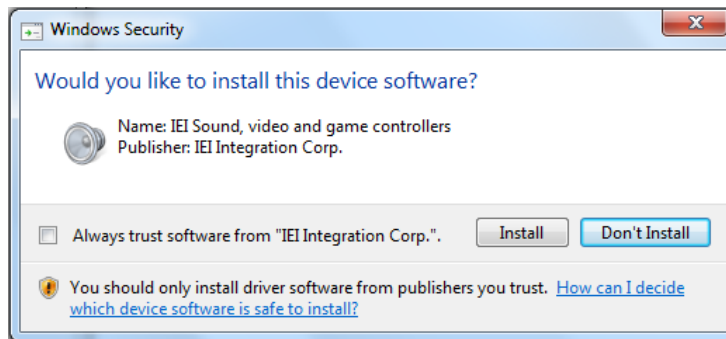


Figure 3-9: Window Security

Step 13: The following window appears. Click **Finish** to exit.

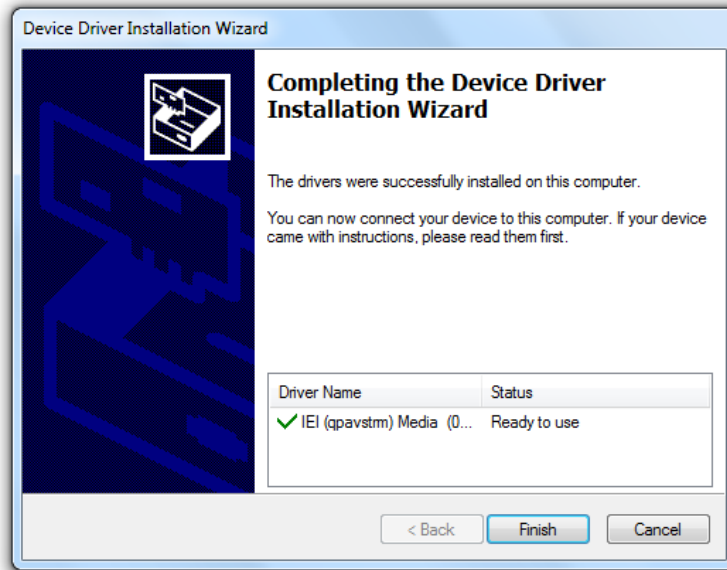


Figure 3-10: Device Driver Installation Complete

HDB-301L Video/Audio Capture Box

3.2 Using IEI HD Capture Application

This section describes how to use IEI HD Capture in Windows environment.

3.2.1 IEI HD Capture Interface Overview







Figure 3-11: IEI HD Capture

①	Device: the IEI capture box installed in the computer for capturing video
②	Video Input: displays the video input resolution from the HDMI device
③	Device Audio: adjusts the volume amount for encoding.
④	Recording Resolution: the selected recording resolution
⑤	Recording Quality: the recording quality of the selected recording resolution
⑥	Keyboard shortcut setup
⑦	Software interface language
⑧	Schedule recording to automatically start/stop recording at a specific time
⑨	File Path: the directory to save the encoded video file
⑩	Recorded: displays the elapsed time of the recording
⑪	Record/Stop button
⑫	Click to locate and play a video recorded previously

3.2.2 Capture Video

To use the IEI HD Capture to capture video, follow the steps below.

- Step 1:** Launch the IEI HD Capture by double-clicking the  icon on the desktop.
- Step 2:** The IEI HD Capture user interface appears (See **Figure 3-11**). Follow the instructions described below to make necessary configuration settings.
- ① **Device:** Select the model name of the capture box installed in the computer.
 - ③ **Device Audio:** Adjust the volume amount for encoding.
Click  to mute audio.
 - ④ **Recording Resolution:** Select a recording resolution. The available recording resolution may vary upon the video input resolution from the HDMI device.
 - ⑤ **Recording Quality:** Drag to set the recording quality of the selected recording resolution.
- Step 3:** Click  button (**Figure 3-11** ⑨) to specify a location to save the encoded video file. The Open Folder window appears. Specify a location to save the encoded video file.
- Step 4:** To start capturing the video, click the **REC** button (**Figure 3-11** ⑪). IEI HD Capture starts displaying the elapsed time of the recording (**Figure 3-11** ⑩).
- Step 5:** To stop capturing the video, click  button on the IEI HD Capture.




WARNING:

Do not use IEI HDB-301L to record HDCP- or copyright-protected content. Unauthorized use of screenshots or videos may infringe the rights of the copyright owner and violate the law.

HDB-301L Video/Audio Capture Box

3.2.3 Play Video

To use the IEI HD Capture to play the video recorded previously, follow the steps below.

Step 1: Click  button (Figure 3-11 ⑫) to specify a video recorded previously.

Step 2: The selected video shows on the screen and starts to play.

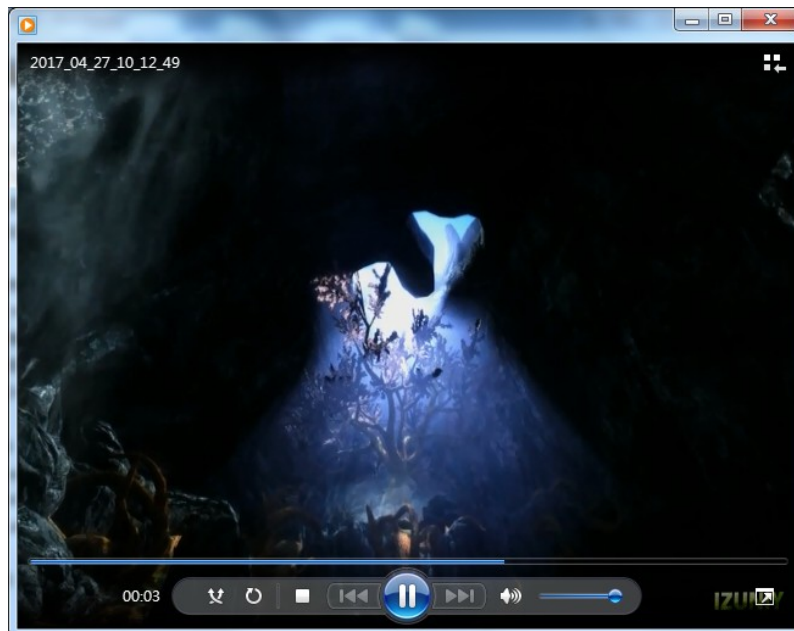



Figure 3-12: Playing the Video

3.2.4 Assign Keyboard Shortcut

The user can assign a keyboard shortcut for the REC button to start recording or stop recording in HD Capture. To assign keyboard shortcuts, following the steps below.

Step 1: Click  button (Figure 3-11 ⑥). The following window appears.

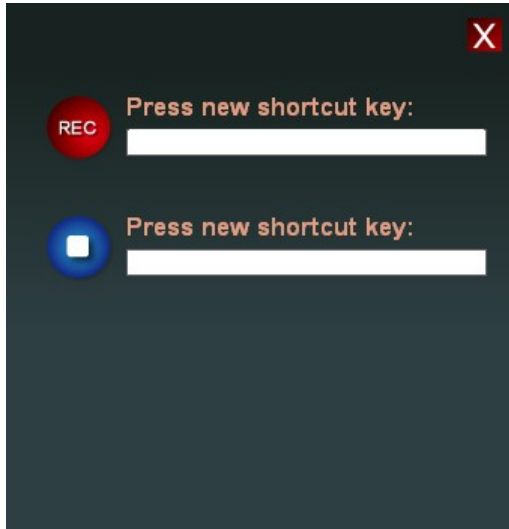


Figure 3-13: Keyboard Shortcut Setup Window

Step 2: Click on the empty field and press the combination of keys that you want to assign.

Step 3: Close the window to save the settings.



WARNING:

Do not assign the keyboard shortcuts defined in Windows system (such as Ctrl+C or Ctrl+V) to IEI HD Capture application. Otherwise, it will cause conflict and make the Windows shortcuts stop working while running IEI HD Capture.

HDB-301L Video/Audio Capture Box

3.2.5 Schedule Recording

IEI HD Capture allows users to schedule recording. Users can specify the time for the recording to start and stop, and IEI HD Capture will start automatically at the specified time to perform the recording and stop automatically. To use the IEI HD Capture to schedule recording, follow the steps below.

Step 1: Click the recording schedule tab (Figure 3-11 ⑧), and the following screen appears.



Figure 3-14: Recording Schedule Screen

Step 2: Click the **New** button to schedule a new recording. The following schedule setting window appears.



NOTE:

To modify or delete a scheduled recording, select the schedule in the list and click the **Edit** button to modify the settings or click the **Delete** button to delete the schedule.

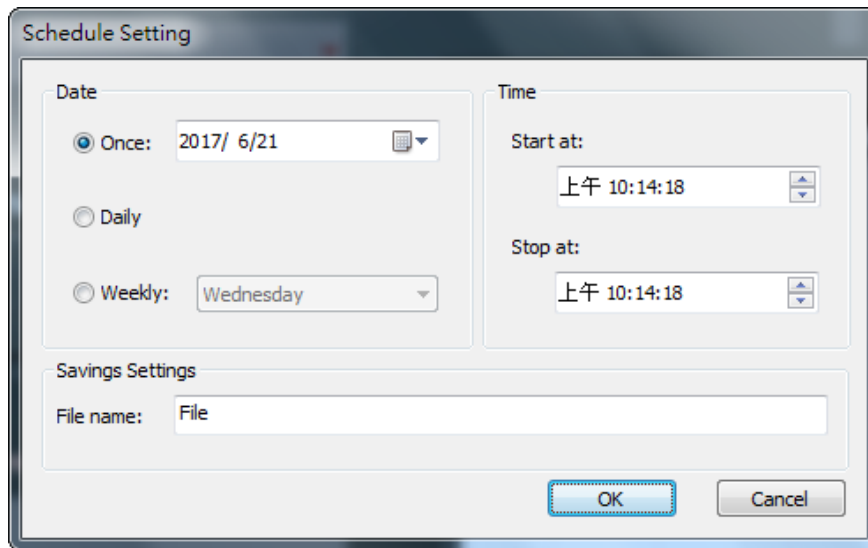


Figure 3-15: Schedule Setting Window

Step 3: To perform the scheduled recoding for one time, select **Once** and specify the date on the left side of the window.

To perform the scheduled recoding daily or weekly for the specified duration, select **Daily** or **Weekly**.

Step 4: Specify the start time and the stop time on the right side of the window.

Step 5: Specify the name of the schedule. Click **OK** to save the settings and exit.



NOTE:

- An alert message will prompt when the hard disk space is less than 30 GB; another alert will prompt when the disk space is less than 500 MB.
- The bitrate of the scheduled recording is corresponding to the bitrate set in the recording quality (Figure 3-11 ⑤).
- The maximum number of scheduled tasks is 336.

Chapter

4

FAQ

Q:	How to play the recorded video of HDB-301L?
A:	Please use a media player that supports H.264 format, such as VLC. If your media player doesn't support H.264 format, please install H.264 codec to decode the video, for example, ffdshow.
Q:	How to know the current DirectX version used on the system?
A:	In Windows, start Run and type 'dxdiag', then press Enter. You can find the current version in DirectX Diagnostic Tool window.
Q:	How to obtain the latest drivers?
A:	The drivers are included in the IEI HD Capture software. To obtain the latest drivers, please go to IEI website: http://www.ieiworld.com/ . Click Products → Capture Box → HDB-301L → Download , and then find and download the latest IEI HD Capture software.
Q:	How to obtain the latest SDK and sample code?
A:	The sample code is included in the SDK. To obtain the latest SDK and sample code, please go to IEI website: http://www.ieiworld.com/ . Click Products → Capture Box → HDB-301L → Download , and then find and download the latest 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

Hazardous Materials Disclosure

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
<p>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)</p> <p>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)</p>						

HDB-301L Video/Audio Capture Box

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。