



MODEL:  
**HDC-301EL-R10**

**PCI Express Video/Audio Capture Card with  
One HDMI Input Channel and One HDMI Output Channel,  
1920x1080@30p, H.264 Hardware Encoder**

## **User Manual**

# Revision

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Date	Version	Changes
September 2, 2015	1.01	Added Chapter 5: FAQ Updated Section 3.2: Driver Installation
April 2, 2015	1.00	Initial release

# Copyright

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# Manual Conventions

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**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

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## 1.1 Overview



**Figure 1-1: HDC-301EL Video/Audio Capture Card**

The low power HDC-301EL video/audio capture card supports 1080p Full HD video via HDMI connection. The HDC-301EL video/audio capture card is equipped with the high-performing codec component with one HDMI input channel and one HDMI output channel.

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

## HDC-301EL Video/Audio Capture Card

### 1.2 Features

Some of the HDC-301EL video/audio capture card 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

Some possible applications include:

- Video game
- DVD/Blue-ray player
- Camcorder
- Video surveillance
- Video analyzer
- Video post production

## 1.4 Connector Overview

**NOTE:**

The other connectors, jumpers and interfaces on the board not specified below are for R&D diagnostic purposes and should not be used by the end user.

The HDC-301EL comes with one HDMI input connector and one HDMI output connector. A PCIe edge connector on the bottom of the capture card enables the HDC-301EL to interface with a motherboard.

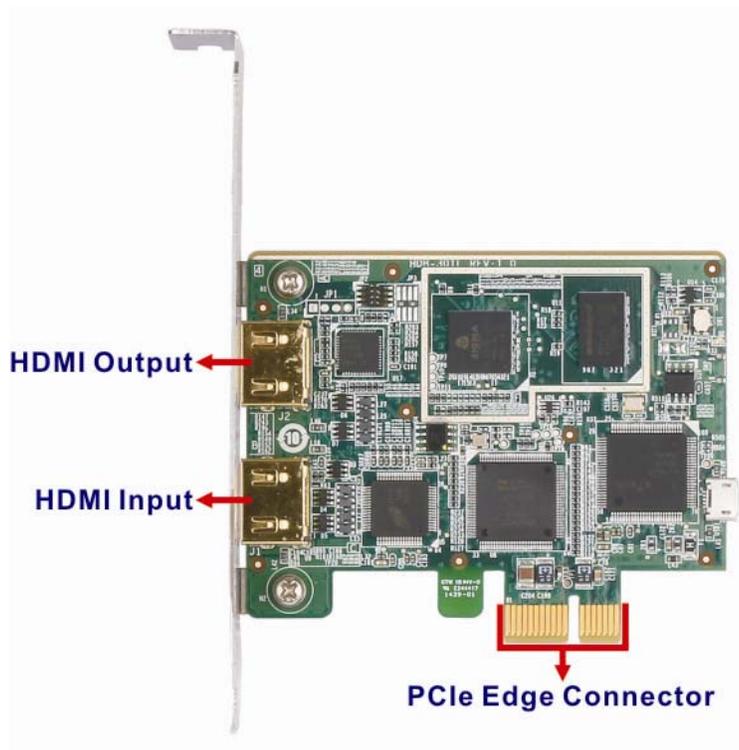


Figure 1-2: HDC-301EL Connector Overview

## HDC-301EL Video/Audio Capture Card

### 1.5 Specifications

The HDC-301EL specifications are listed in the table below:

HDC-301EL	
<b>PC Interface</b>	PCI Express x1
<b>INPUT PORT</b>	
<b>Video Input Channel</b>	One
<b>Video Input Type</b>	HDMI
<b>Audio Input Channel</b>	One
<b>Audio Input Type</b>	HDMI (stereo)
<b>NO DELAY HDMI PASSTHROUGH</b>	
<b>Video Output Channel</b>	One
<b>Video Output Type</b>	HDMI
<b>Audio Output Channel</b>	One
<b>Audio Output Type</b>	HDMI (stereo)
<b>VIDEO PROCESSING</b>	
<b>Video Compression</b>	H.264/AVC High Profile Level 4.1 (hardware compression)
<b>Recording Bitrate</b>	Up to 30 Mbps
<b>Input Resolution</b>	1920x1080 24p/25p/30p/50p/59.94p/60p 1920x1080 59.94i 1680x1050 60p 1440x900 60p 1360x768 50p 1280x1024 60p 1280x800 60p 1280x768 60p 1280x720 50p/59.94/60p 1024x768 60p 800x600 60p 720x576 50p 720x480 59.94p/60p 640x480 60p

<b>Recording Resolution</b>	1920x1080 24p/25p/30p
	1440x900 30p
	1360x768 50p
	1280x1024 30p
	1280x800 60p
	1280x768 60p
	1280x720 50p/60p
	1024x768 60p
	800x600 60p
	720x576 50p
	720x480 60p
	640x480 60p
<b>AUDIO PROCESSING</b>	
<b>Sampling Frequencies</b>	44.1 k, 48 kHz
<b>Audio Compression</b>	MPEG-4 AAC
<b>Recording Bitrate</b>	128 kbps
<b>FUNCTIONALITY</b>	
<b>Multiple Card Support</b>	8 channels
<b>Scaling</b>	Video scaling down compression
<b>SYSTEM REQUIREMENTS</b>	
<b>System</b>	2.4 GHz Intel® Core™2 Duo CPU or above
<b>Memory</b>	2 GB or more
<b>OS Environment</b>	<b>Windows:</b> Microsoft® Windows® 7 32-bit/64-bit Microsoft® DirectX 10.0c (32-bit)
	<b>Linux:</b> Ubuntu 10.04 (kernel version 2.6.35)
<b>SOFTWARE SUPPORT</b>	
<b>Device Driver</b>	Driver for Windows® 7 (32-bit/64-bit) and Ubuntu 10.04 (kernel version 2.6.35)
<b>SDK</b>	SDK provided with demo program

## HDC-301EL Video/Audio Capture Card

OTHERS	
<b>Dimensions (WxH)</b>	83.8 mm x 68.9 mm
<b>Operating Temperature</b>	0°C ~ 60°C (32°F ~ 140°F), non-condensing
<b>Power Consumption</b>	4.5 W

Table 1-1: Specifications

### 1.6 Dimensions

The dimensions for the HDC-301EL are listed below.

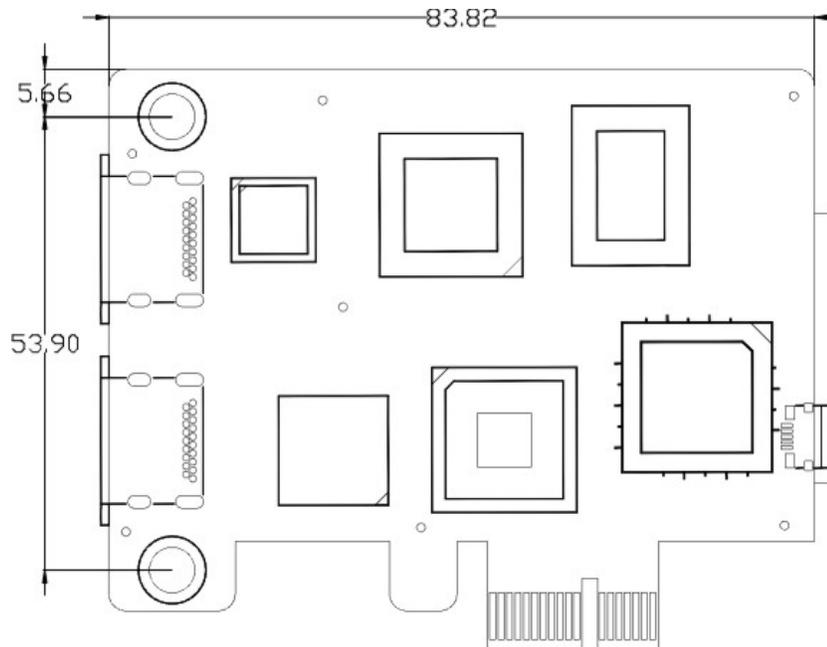


Figure 1-3: HDC-301EL Dimensions (mm)

Chapter

**2**

# Hardware Installation

---

## HDC-301EL Video/Audio Capture Card

### 2.1 Unpacking

#### 2.1.1 Anti-static Precautions



##### **WARNING:**

Failure to take ESD precautions during the installation of the HDC-301EL may result in permanent damage to the capture card and severe injury to the user.

---

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the video/audio capture card. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the video/audio capture card, 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 card, place it on an anti-static pad. This reduces the possibility of ESD damaging the video/audio capture card.
- **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 card 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 card does not fall out of the box.
- Make sure all the components listed in **Section 2.1.3** are present.

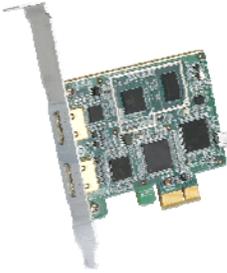
**2.1.3 Unpacking Checklist**



**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 HDC-301EL from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to [sales@ieiworld.com](mailto:sales@ieiworld.com).

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

Quantity	Item	Image
1	HDC-301EL video/audio capture card	
1	Utility CD	
1	Quick installation guide	

**Table 2-1: Package List Contents**

## 2.2 Installation Considerations

---



### NOTE:

The following installation notices and installation considerations should be read and understood before installation. All installation notices must be strictly adhered to. Failing to adhere to these precautions may lead to severe damage and injury to the person performing the installation.

---

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### WARNING:

The installation instructions described in this manual should be carefully followed in order to prevent damage to the components and injury to the user.

---

Before and during the installation please **DO** the following:

- Read the user manual:
  - The user manual provides a complete description of the HDC-301EL installation instructions and configuration options.
- Wear an electrostatic discharge cuff (ESD):
  - Electronic components are easily damaged by ESD. Wearing an ESD cuff removes ESD from the body and helps prevent ESD damage.
- Place the HDC-301EL on an anti-static pad:
  - When installing or configuring the motherboard, place it on an anti-static pad. This helps to prevent potential ESD damage.
- Turn all power to the HDC-301EL off:
  - When working with the HDC-301EL, make sure that it is disconnected from all power supplies and that no electricity is being fed into the system.

Before and during the installation of the HDC-301EL, **DO NOT**:

- Remove any of the stickers on the PCB board. These stickers are required for warranty validation.
- Use the product before verifying all the cables and power connectors are properly connected.
- Allow screws to come in contact with the PCB circuit, connector pins, or its components.

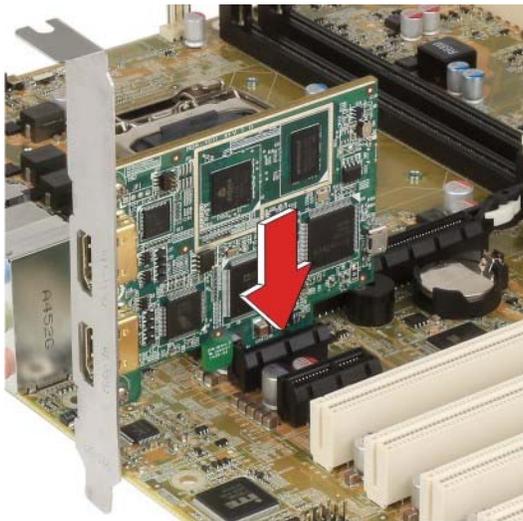
## 2.3 Video/Audio Capture Card Installation

The HDC-301EL video/audio capture card has a PCIe x1 interface. To install the HDC-301EL, please follow the steps below:

**Step 1:** Align the PCIe edge connector on the bottom of the video/audio capture card with the PCIe x1 slot on the system motherboard.

**Step 2:** Gently insert the video/audio capture card into the PCIe x1 slot.

**Step 3:** Push down gently on the video/audio capture card to make sure it is firmly inserted into the PCIe x1 slot.



**Figure 2-1: HDC-301EL Installation**

**Step 4:** Insert a retention screw through the top of the video/audio capture card external bracket into the chassis to secure the card to the chassis.

## HDC-301EL Video/Audio Capture Card

### 2.4 HDMI Devices Installation

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

- Step 1:** Insert the HDMI connector from the cable into the HDMI input connector on the HDC-301EL. Make sure the connection is secure.
- Step 2:** Insert the HDMI connector of the other end of the cable into the HDMI connector on the HDMI device. Make sure the connection is secure.
- Step 3:** Use another HDMI cable to connect the HDMI connector of the HDMI display device to the HDMI output connector on the HDC-301EL.

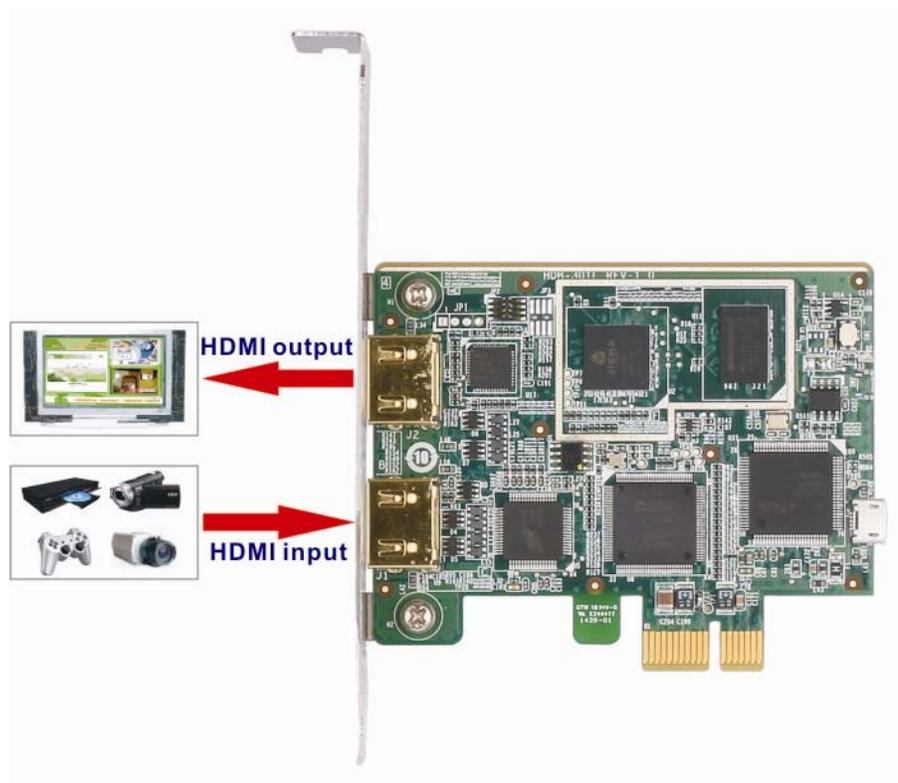


Figure 2-2: HDMI Devices Connect to the Video/Audio Capture Card

Chapter

**3**

# Driver Installation (Windows)

---

## HDC-301EL Video/Audio Capture Card

### 3.1 Overview

A CD is shipped with the video/audio capture card. The CD contains the driver for the video/audio capture controllers on the card. When the video/audio capture card is installed on the system, the driver must be installed. Failure to install the driver means that the video/audio capture card cannot be detected by the system.

### 3.2 Driver Installation

#### 3.2.1 USB to PCIe Driver

The user has to install the Etron USB to PCIe driver to the system before installing the HDC-301EL driver. Please follow the steps below to install the USB to PCIe driver.

**NOTE:**

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

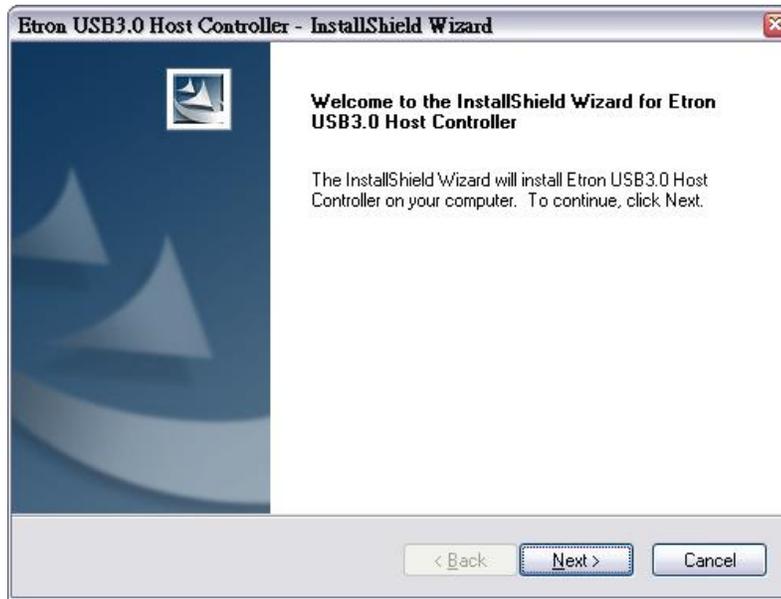
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**Step 1:** Make sure to log in the system as the administrator.

**Step 2:** Insert the driver CD.

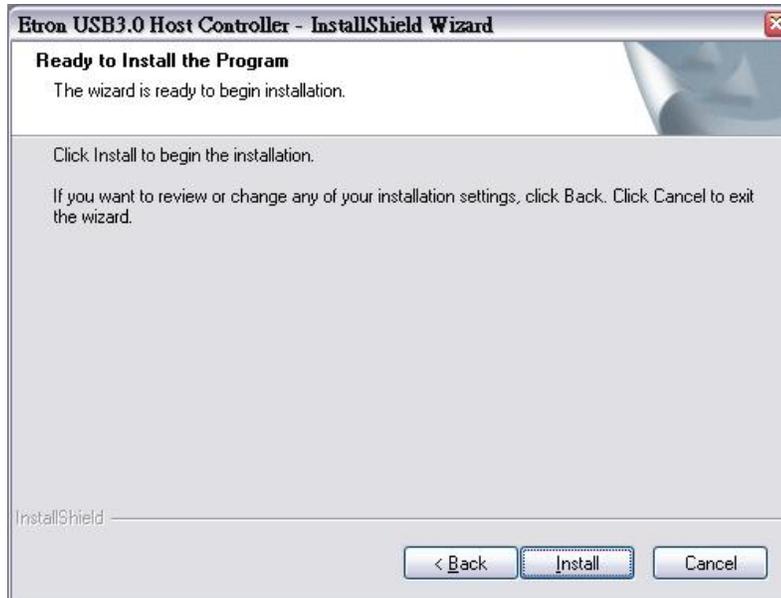
**Step 3:** Locate and double click the **SETUP\_0.119** file in the driver folder of the utility CD.

**Step 4:** The welcome window appears (**Figure 3-1**). Click **Next** to continue.



**Figure 3-1: InstallShield Wizard Welcome Window**

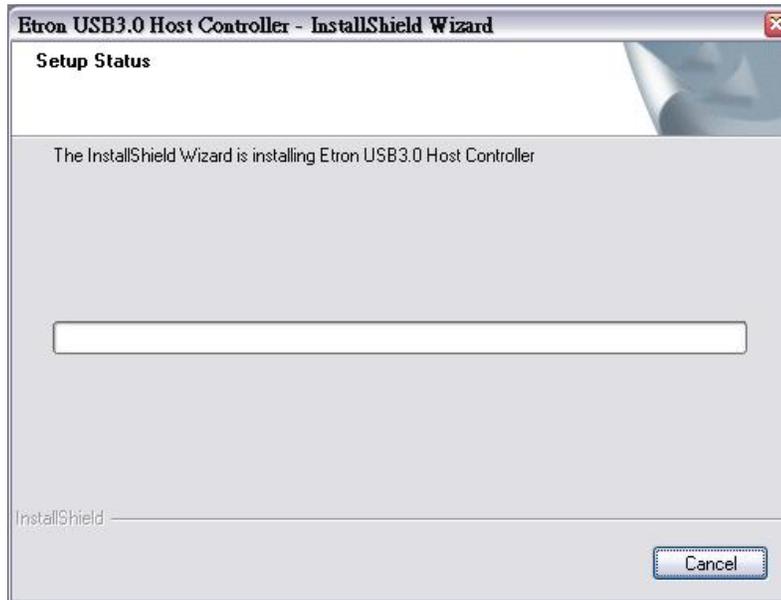
**Step 5:** The **Ready to Install the Program** window appears (Figure 3-2). Click **Install** to start the installation.



**Figure 3-2: Ready to Install the Program**

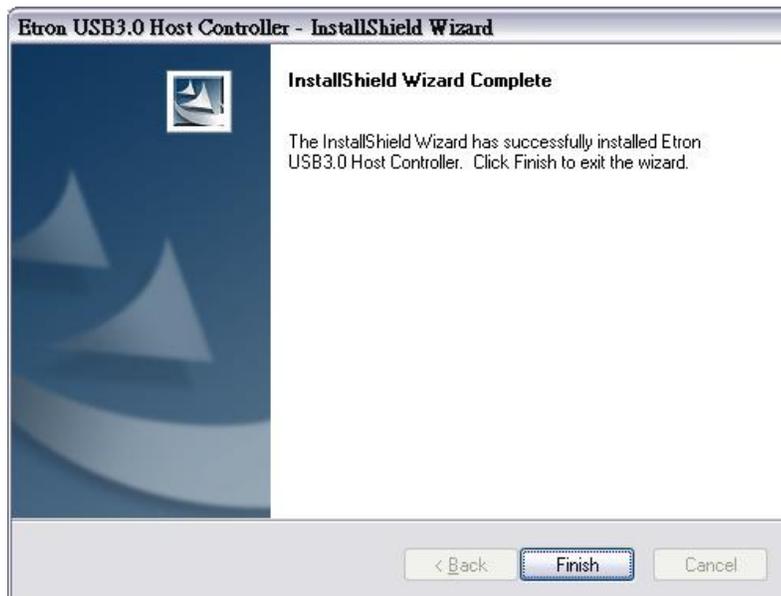
## HDC-301EL Video/Audio Capture Card

**Step 6:** The driver starts to install and the screen in **Figure 3-3** appears.



**Figure 3-3: Installation Status**

**Step 7:** When the driver installation is complete, click the **Finish** button to finish driver installation (**Figure 3-4**).



**Figure 3-4: Installation Complete**

### 3.2.2 HDC-301EL Driver

To install the HDC-301EL driver, please follow the steps below. If the HDC-301EL driver is already installed, please refer to **Section 3.3** to uninstall the driver first.

**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:** Insert the driver CD.

**Step 3:** Locate the .exe file in the driver folder of the utility CD.

For Windows 7 32-bit OS, please use the **DPIInst\_x86.exe** file.

For Windows 7 64-bit OS, please use the **DPIInst\_x64.exe** file.

**Step 4:** Double click the .exe file. The Device Driver Installation Wizard window appears.

Click **Next** to continue.

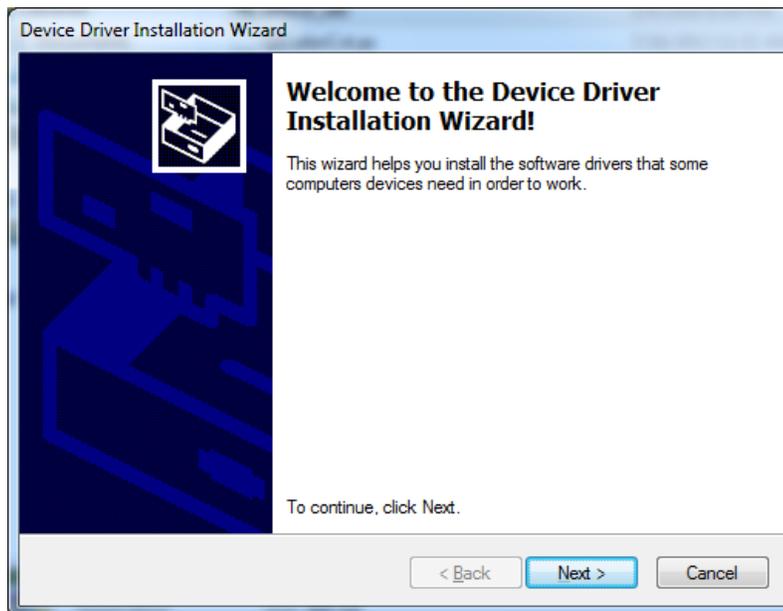
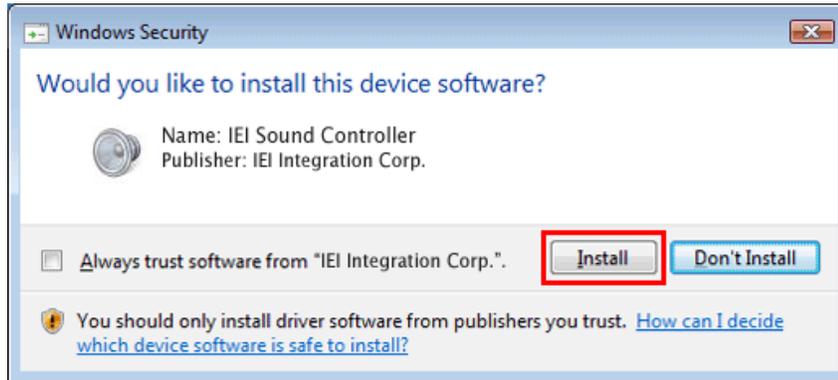


Figure 3-5: Device Driver Installation Wizard Welcome Window

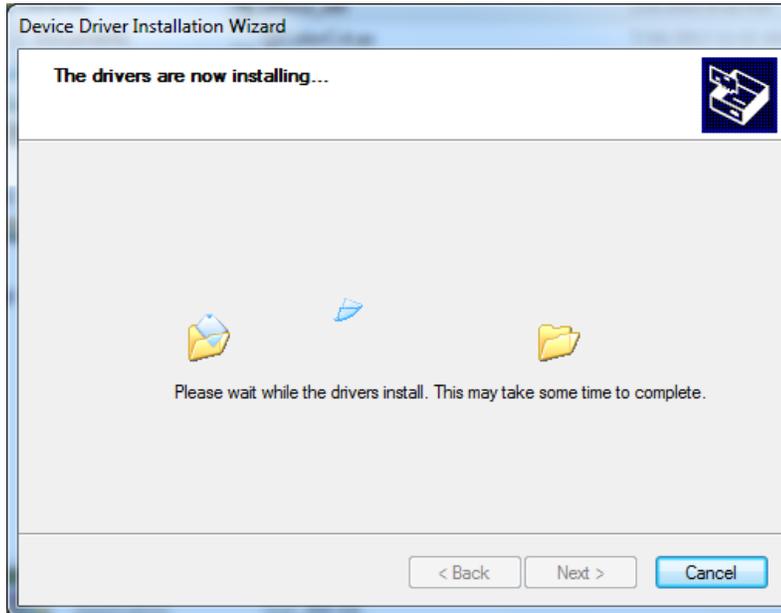
## HDC-301EL Video/Audio Capture Card

**Step 5:** The following window appears to confirm the installation. Click **Install**.



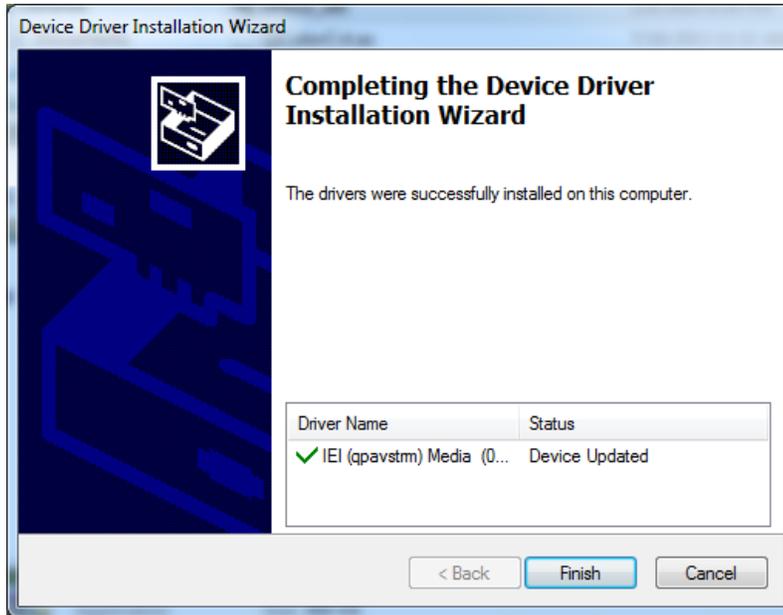
**Figure 3-6: Windows Security Window**

**Step 6:** The driver starts to install and the screen in **Figure 3-7** appears.



**Figure 3-7: Driver Installing**

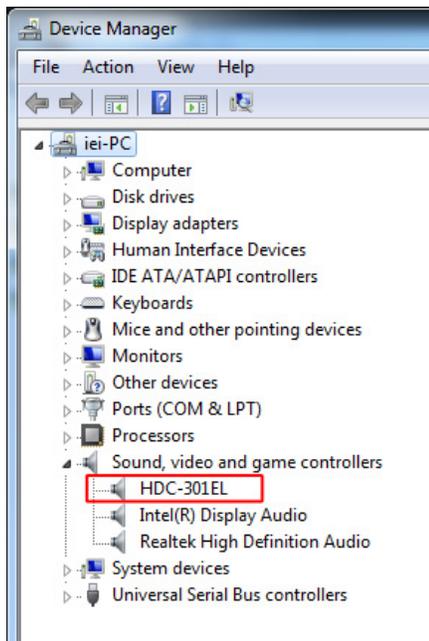
**Step 7:** When the driver installation is complete, click the **Finish** button to finish driver installation.



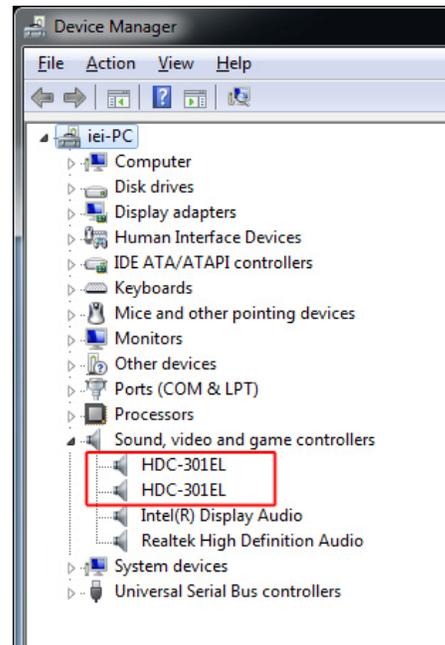
**Figure 3-8: Driver Installation Complete**

**Step 8:** Check the Device Manager in the Windows control panel to ensure the HDC-301EL driver has been properly installed.

**Single Card:**



**Multiple Cards:**



**Figure 3-9: Device Manager**

## HDC-301EL Video/Audio Capture Card

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### NOTE:

If the user fails to install the driver by following the above procedure, please install the HDC-301EL driver manually in the Device Manager. To do this, right click HDC-301EL in the Device Manager, and select Update Driver Software. Then, specify the **DPIInst\_x86.exe** or **DPIInst\_x64.exe** file in the utility CD for installation.

---

### 3.3 Uninstall Driver

To uninstall the driver, please follow the steps below.

- Step 1:** Make sure to login the system as the administrator.
- Step 2:** Go to Device Manager.
- Step 3:** Right click HDC-301EL in the Device Manager, and select **Uninstall** to uninstall the driver.

Chapter

**4**

# **IEI HD Capture AP (Windows)**

---

## HDC-301EL Video/Audio Capture Card

### 4.1 Software Installation (Windows)

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

#### 4.1.1 System Requirements

The supported OS versions are listed below:

- Microsoft Windows 7, 32-bit
- Microsoft Windows 7, 64-bit

After installing the driver, the following programs must be installed in order to use the IEI HD Capture AP demo program:

- Microsoft DirectX 9.0c
- Visual C++ 2005 & 2008 Redistributable

Please download the setup files of these programs from the official websites and install these programs in the system.

#### 4.1.2 IEI HD Capture AP Installation

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



#### NOTE:

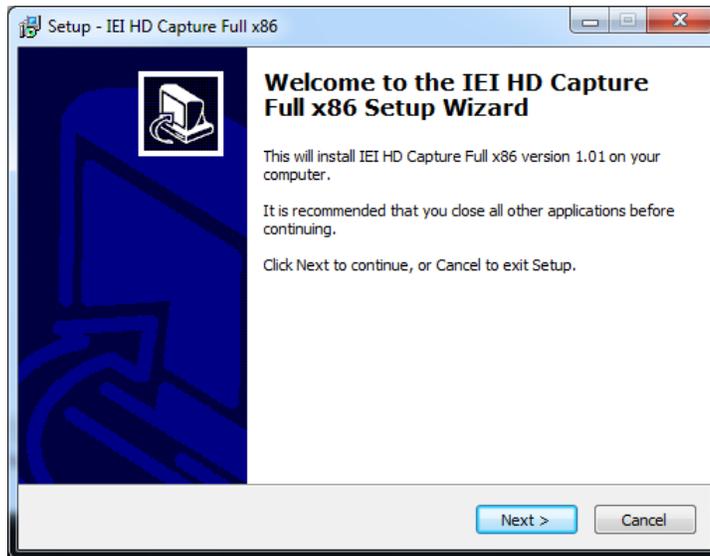
If the **User Access Control** dialog box appears during installation, click **Yes** to continue.

---

**Step 1:** Insert the driver CD. Double click the AP folder of the utility CD.

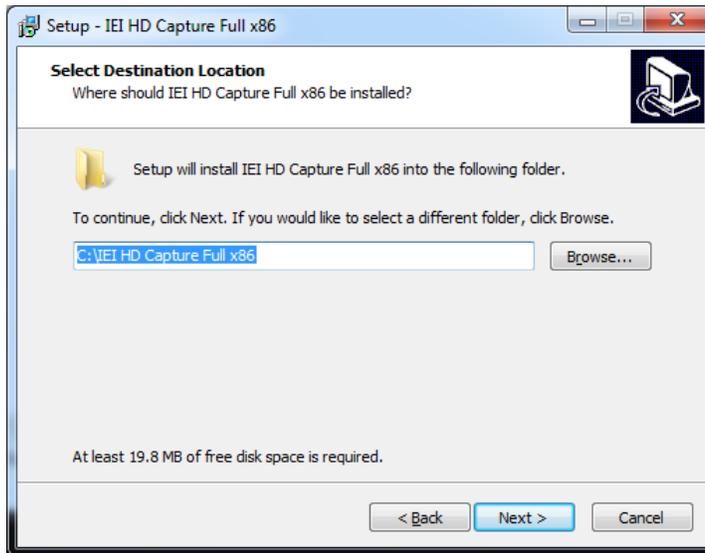
**Step 2:** Locate the **IEI\_HD\_Capture\_AP.exe** file in the **Release** folder.

**Step 3:** Double click the **IEI\_HD\_Capture\_AP.exe** file. The IEI HD Capture Full x86 Setup Wizard appears. Click **Next** to continue.



**Figure 4-1: IEI HD Capture Full x86 Setup Wizard Welcome Window**

**Step 4:** Select a folder for IEI HD Capture AP installation in **Figure 4-2**. Click **Next** to continue.



**Figure 4-2: Select Installation Folder**

**Step 5:** The following screen appears. Click **Install** to confirm the installation.

## HDC-301EL Video/Audio Capture Card

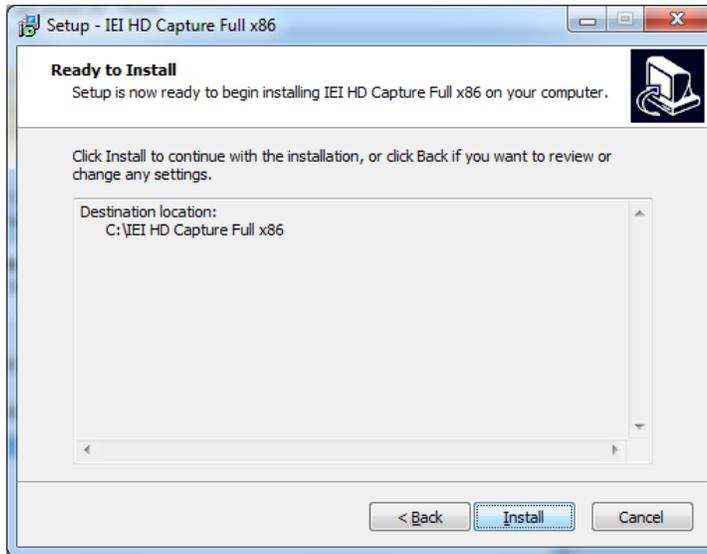


Figure 4-3: Confirm Installation

**Step 6:** The system starts installing the IEI HD Capture AP.

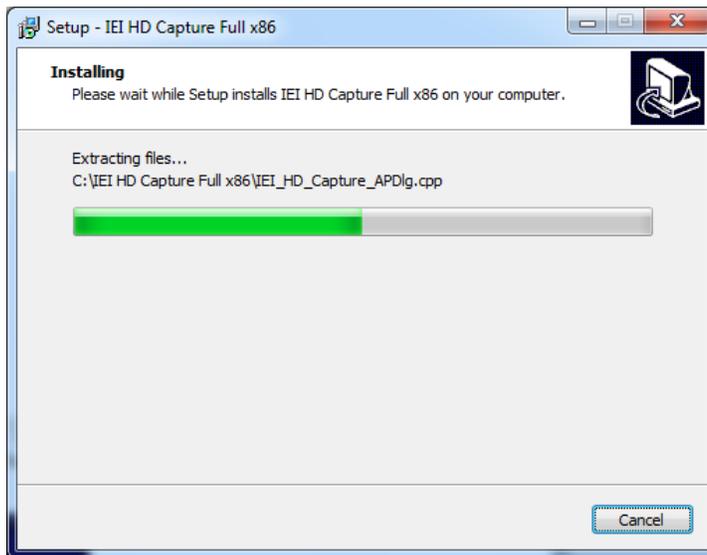
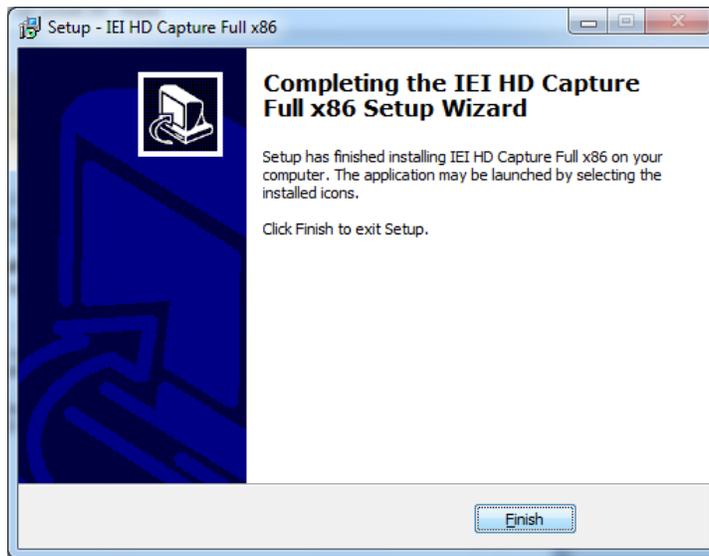


Figure 4-4: Installing IEI HD Capture AP

**Step 7:** When the IEI HD Capture AP is successfully installed, the following window appears. Click **Finish** to exit.



**Figure 4-5: Installation Complete**

## 4.2 Using IEI HD Capture Application

The IEI HD Capture AP is a video capture tool that allows user to capture video through the HDMI input ports in Windows environment.

To use the IEI HD Capture AP to capture video, follow the steps below. If the older version of the IEI HD Capture AP is already installed, please refer to **Section 4.3** to uninstall it.

**Step 1:** Launch the IEI HD Capture AP by double-clicking the **IEI\_HD\_Capture\_AP.exe** file under the "**X:\IEI\_HD\_Capture\_APIRelease**" directory, where "**X:\**" is the system CD drive.

**Step 2:** The IEI HD Capture AP user interface appears (**Figure 4-6**). Click the **Set** button to configure the settings.

## HDC-301EL Video/Audio Capture Card

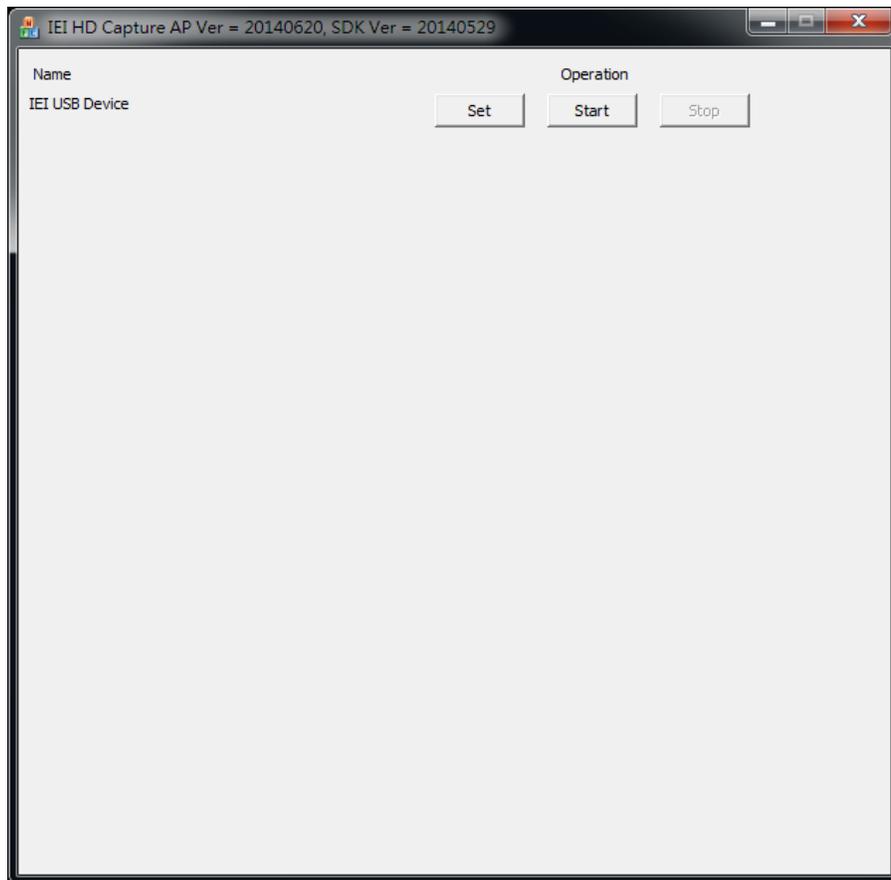
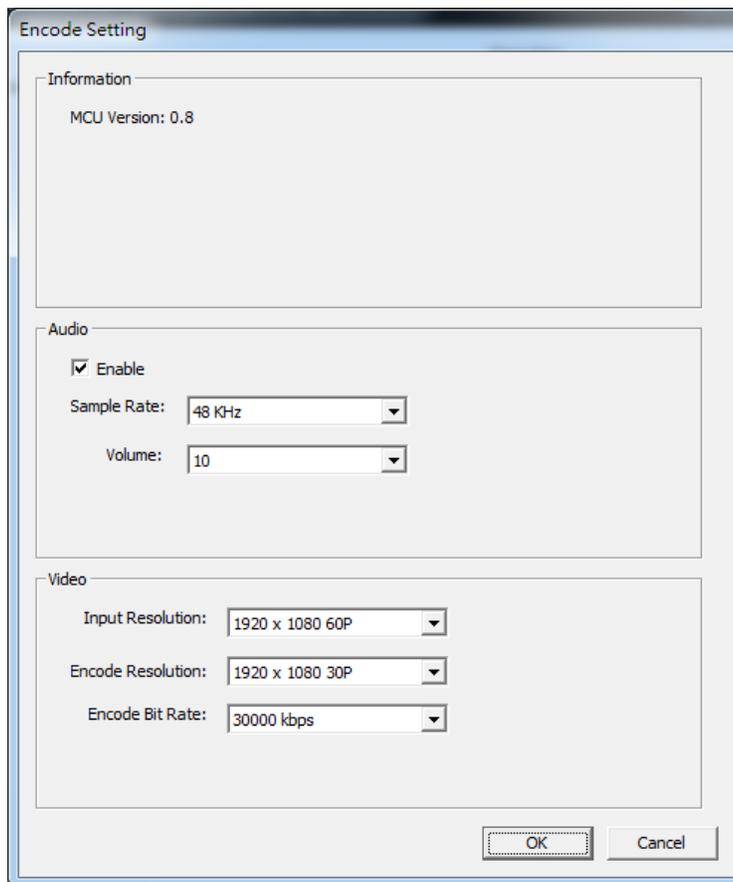


Figure 4-6: IEI HD Capture AP

**Step 3:** The Encode Setting window appears (Figure 4-7). Make necessary configuration setting by following the guideline below:

- **Audio**
  - Enable: check to enable the audio encoding
  - Sample Rate: select the sample rate of the audio
  - Volume: select the volume amount for encoding
- **Video**
  - Input Resolution: select a video input resolution which depends on the video device.
  - Encode Resolution: select an encoding resolution. The encoding resolution selected here must be same with the one selected in the Input Resolution.
  - Encode Bit Rate: select a video encoding bitrate



**Figure 4-7: Encode Setting**

- Step 4:** After finishing the setting configuration, click **OK** to save the settings.
- Step 5:** To start capture the video, click the **Start** button on the IEI HD Capture AP user interface. The Save File As window appears. Specify a location to save the encoded video file, and change the file name as necessary. Click **Save** to start capture the video.
- Step 6:** To stop capturing the video, click the **Stop** button on the IEI HD Capture AP user interface.

## HDC-301EL Video/Audio Capture Card

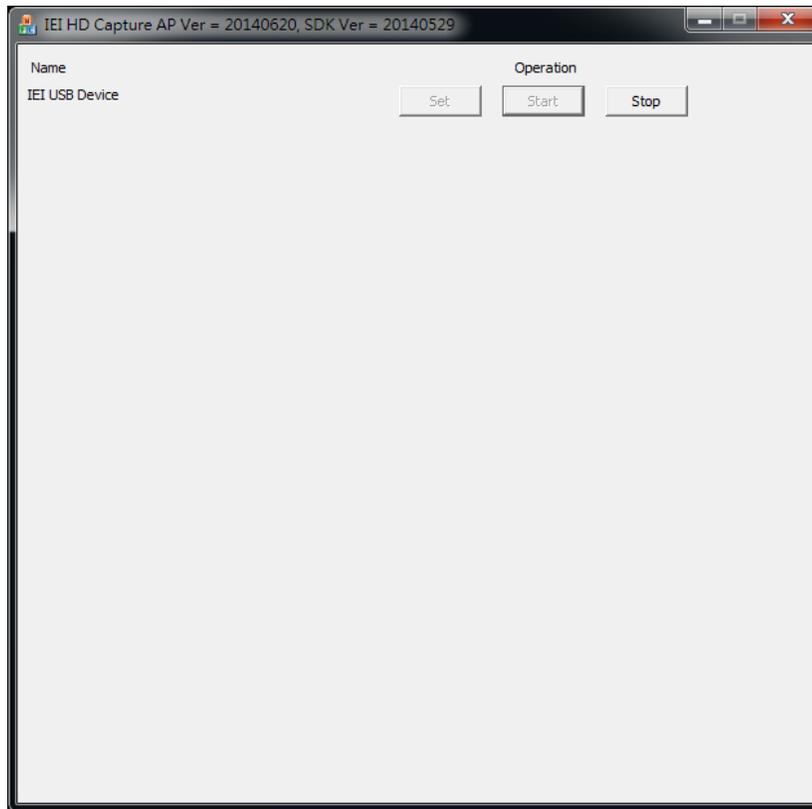


Figure 4-8: IEI HD Capture AP – Stop Button

### 4.3 Uninstall IEI HD Capture AP

To uninstall the IEI HD Capture AP, follow the steps below.

- Step 1:** Select **Control Panel** → **Programs** → **Programs and Features**.
- Step 2:** Select IEI HD Capture AP and click the **Uninstall** button.
- Step 3:** A confirmation window appears. Click **Yes** to uninstall the IEI HD Capture AP.

Chapter

**5**

**FAQ**

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## HDC-301EL Video/Audio Capture Card

**Q:** Capture card, driver, application and input source are all ready, but the recorded video is not displayed or displayed incorrectly.

**A:** In this situation, a H.264 video codec must be installed to display the recorded video -- the ffdshow codec for example.

**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:** Please go to <http://www.ieiworld.com/>. You can always find and download the latest driver from the "Support" page.

**Q:** How to play the encoding file?

**A:** The encoding file is in H.264 format. You need to use a media player or codec that supports H.264 format, such as VLC, ffdshow, etc.

**Q:** Where are the AP & SDK & sample code?

**A:** AP & SDK & sample code are in the folder which you specify when installing AP. The default path is C:\IEI HD Capture AP.

Appendix

**A**

# Regulatory Compliance

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### 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**

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## HDC-301EL Video/Audio Capture Card

### **B.1 Hazardous Material Disclosure Table for IPB Products Certified as RoHS Compliant Under 2002/95/EC Without Mercury**

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 the table on the next page.

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/T11363-2006

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/T11363-2006

## HDC-301EL Video/Audio Capture Card

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/T11363-2006 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/T11363-2006 标准规定的限量要求。