

**MODEL:  
HDC-301MS-R10**

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

# **User Manual**

# Revision

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Date	Version	Changes
September 4, 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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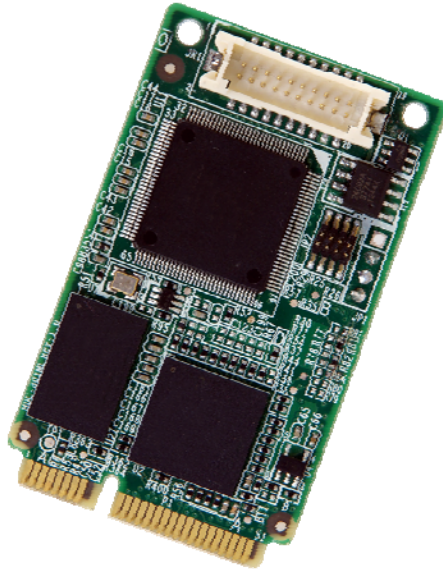
Chapter

1

# Introduction

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## 1.1 Overview



**Figure 1-1: HDC-301MS Video Capture Card**

The low power HDC-301MS video capture card supports 1080p Full HD video via HDMI connection. The HDC-301MS video capture card is equipped with the high-performing encoder component with the HDMI video input channel and either audio input 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.

## 1.2 Features

Some of the HDC-301MS video 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)

## HDC-301MS Video Capture Card

### 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-301MS comes with one HDMI input connector. A PCIe Mini edge connector on the bottom of the capture card enables the HDC-301MS to interface with a motherboard.

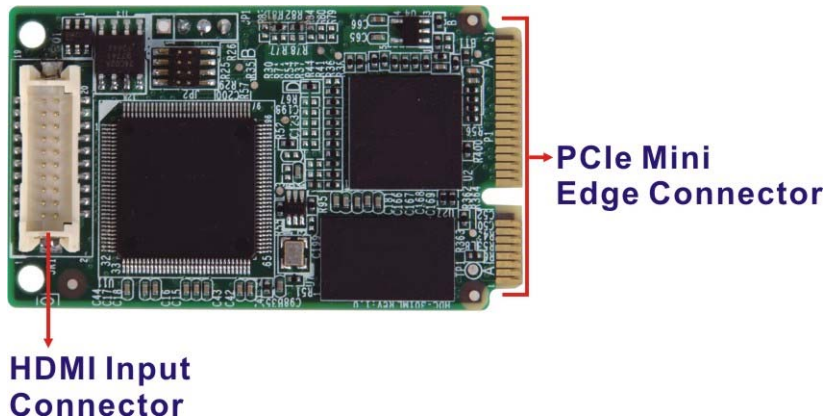


Figure 1-2: HDC-301MS Connector Overview

### 1.5 Specifications

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

	<b>HDC-301MS</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	
<b>PC Interface</b>	PCIe Mini	
<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	

## HDC-301MS Video Capture Card

HDC-301MS	
<b>Recording Resolution</b>	1920 x 1080 24p/25p/30p
	1440 x 900 30p
	1360 x 768 50p
	1280 x 1024 30p
	1280 x 800 60p
	1280 x 768 60p
	1280 x 720 50p/60p
	1024 x 768 60p
	800 x 600 60p
	720 x 576 50p
	720 x 480 60p
640 x 480 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>	4 cards
<b>Scaling</b>	Video scaling down compression
<b>SYSTEM REQUIREMENTS</b>	
<b>System</b>	Intel® Core™ Duo 2.4 GHz or above
<b>Memory</b>	2 GB or more
<b>OS Environment</b>	<p><b>Windows:</b> Microsoft Windows 7 32-bit/64-bit Microsoft DirectX 10.0c (32-bit)</p> <p><b>Linux:</b> Ubuntu 10.04 (Kernel version 2.6.35)</p>
<b>SOFTWARE SUPPORT</b>	
<b>Device Driver</b>	Driver for Windows 7 (32-bit/64-bit) and Linux Ubuntu 10.04 (Kernel version 2.6.35)

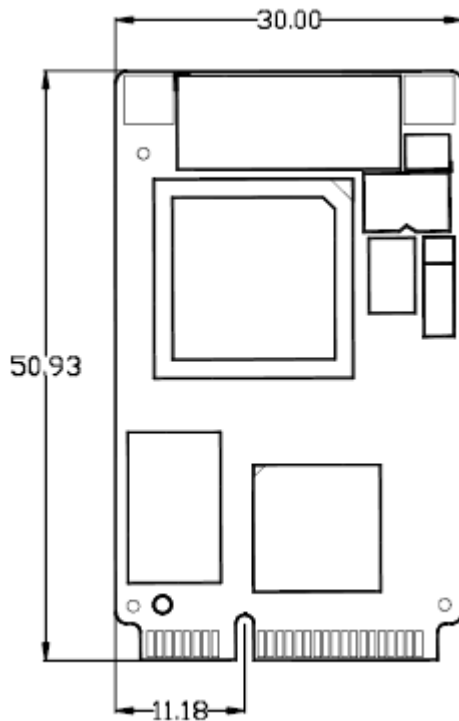


	HDC-301MS
<b>SDK</b>	SDK provided with demo program
<b>OTHERS</b>	
<b>Dimensions (WxH)</b>	51 mm x 30 mm
<b>Operating Temperature</b>	0°C - 60°C (32°F - 140°F), non-condensing
<b>Power Consumption</b>	3 W

**Table 1-1: Specifications**

## 1.6 Dimensions

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



**Figure 1-3: HDC-301MS Dimensions (mm)**



Chapter

**2**

# Hardware Installation

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## 2.1 Unpacking

### 2.1.1 Anti-static Precautions



#### **WARNING:**

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

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

## HDC-301MS Video Capture Card





### 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 video capture card 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 capture card is shipped with the following components:

Quantity	Item	Image
1	HDC-301MS video capture card	
1	HDMI input kit (100mm, $\Phi$ 5.0*7.0mm)	
1	Utility CD	
1	Quick installation guide	

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

## 2.2 Hardware Installation

To install the HDC-301MS video capture card into a system and connect the HDMI input cable, please follow the steps below:

- Step 1:** Connect the HDMI input cable to the HDMI input connector on the HDC-301MS.
- Step 2:** Insert into the PCIe Mini slot on the system motherboard. Line up the notch on the HDC-301MS with the notch on the connector. Slide the HDC-301MS into the socket at an angle of about 20°.
- Step 3:** Secure the card and the ground cable with a retention screw. Push the other end of the card down. Use a screw to secure the ground cable and the card to the motherboard.
- Step 4:** Connect the HDMI cable from the HDMI devices to the HDMI input cable on the HDC-301MS.

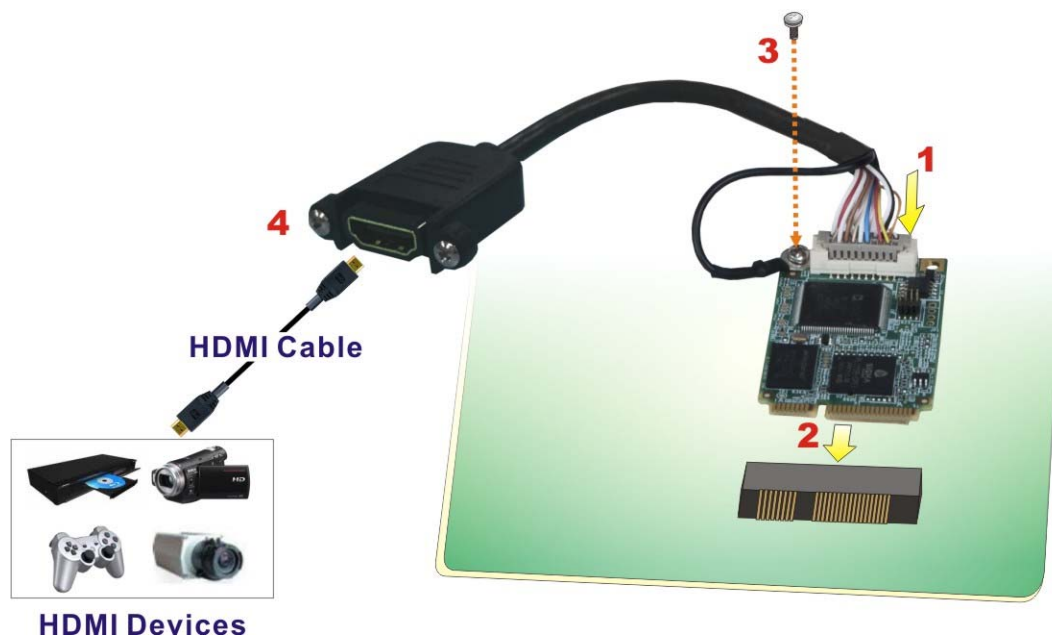


Figure 2-1: HDC-301MS Installation

## HDC-301MS Video Capture Card

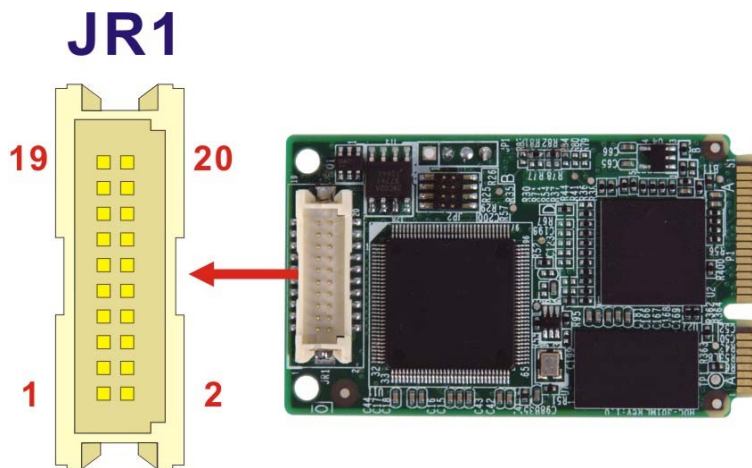
### 2.2.1 HDMI Input Connector (JR1)

The HDMI input connector connects to the HDMI input cable that provides an HDMI input port. Pinouts for the connector are shown in **Table 2-2**.

Pin No.	Description	Pin No.	Description
1	HDMI_IN_RX2+	11	GROUND
2	GROUND	12	HDMI_IN_RXC-
3	HDMI_IN_RX2-	13	N/A
4	HDMI_IN_RX1+	14	N/A
5	GROUND	15	HDMI_IN_DCLK
6	HDMI_IN_RX1-	16	HDMI_IN_DSDA
7	HDMI_IN_RX0+	17	GROUND
8	GROUND	18	VCC_5V
9	HDMI_IN_RX0-	19	HDMI_IN_HPD
10	HDMI_IN_RXC+	20	N/A

**Table 2-2: HDMI Input Connector Pinouts**

Figure 2-2 shows the location of the HDMI input connector.



**Figure 2-2: HDC-304E HDMI Output Kit Connector Location**



Chapter

**3**

# Driver Installation (Windows)

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## HDC-301MS Video Capture Card

### 3.1 Overview

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

### 3.2 Driver Installation

To install the HDC-301MS driver, please follow the steps below: If the HDC-301MS 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.

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

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

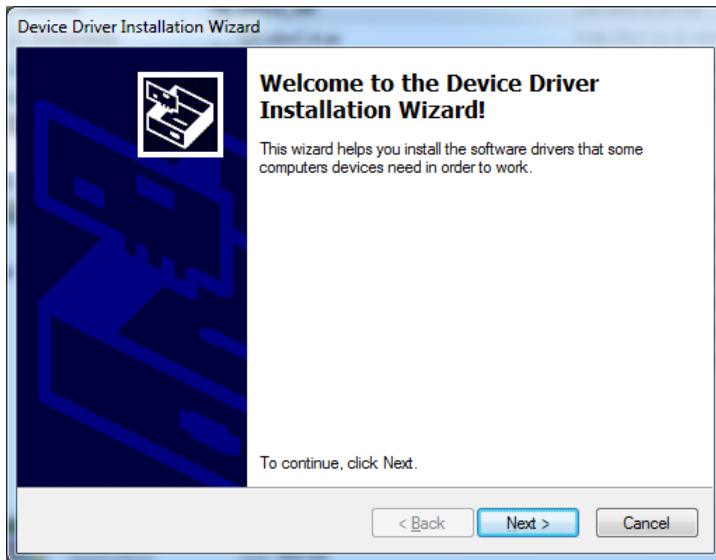
**Step 3:** Locate the .exe file in the driver folder of the utility CD.

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.

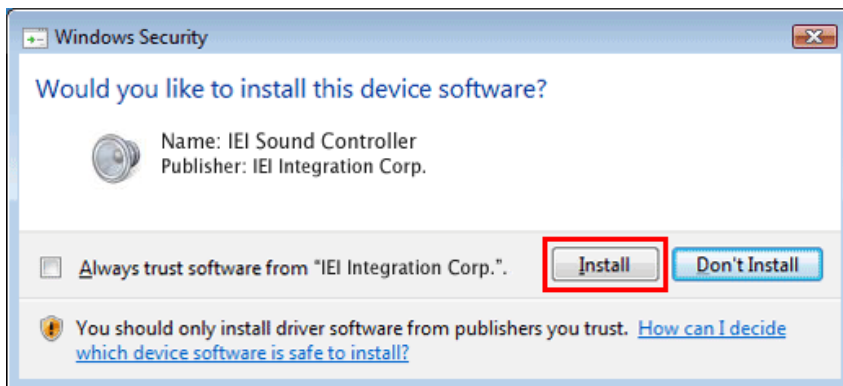
**Step 4:** Double click the .exe file. The Device Driver Installation Wizard window appears.

Click **Next** to continue.



**Figure 3-1: Device Driver Installation Wizard Welcome Window**

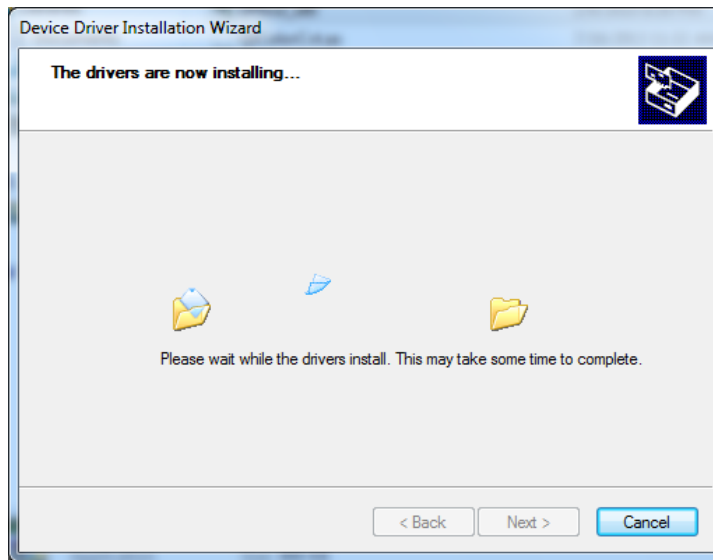
**Step 5:** The following window appears to confirm the installation. Click **Install**.



**Figure 3-2: Windows Security Window**

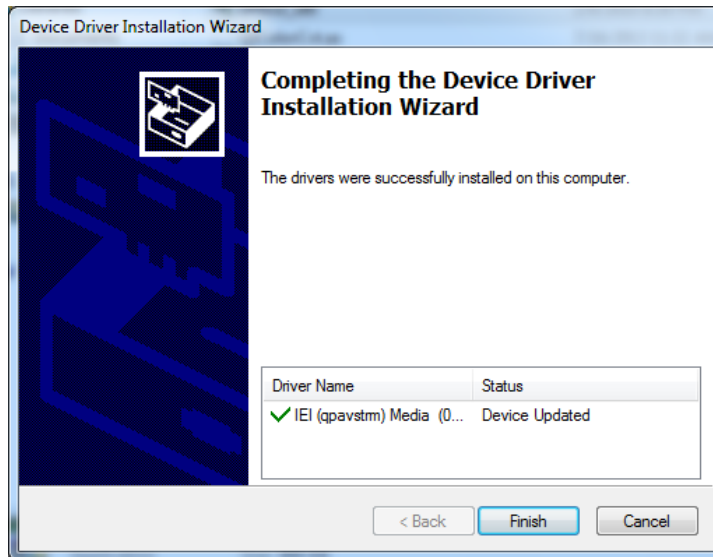
**Step 6:** The driver starts to install and the screen in **Figure 3-3** appears.

## HDC-301MS Video Capture Card



**Figure 3-3: Driver Installing**

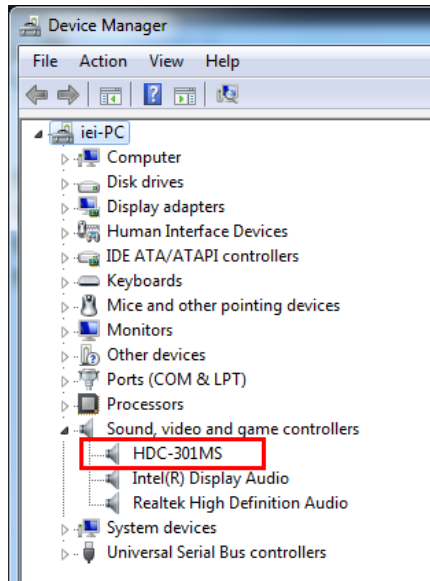
**Step 7:** When the driver installation is complete, click the **Finish** button to finish driver installation.



**Figure 3-4: Driver Installation Complete**

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

### Single Card:



### Multiple Cards:

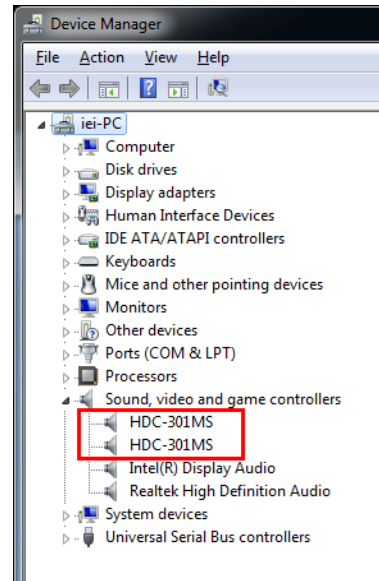


Figure 3-5: Device Manager



### NOTE:

If the user fails to install the driver by following the above procedure, please install the HDC-301MS driver manually in the Device Manager. To do this, right click HDC-301MS in the Device Manager, and select Update Driver Software. Then, specify the **DPInst\_x86.exe** or **DPInst\_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-301MS in the Device Manager, and select **Uninstall** to uninstall the driver.

Chapter

**4**

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

---



## 4.1 Software Installation (Windows)

The HDC-301MS 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.

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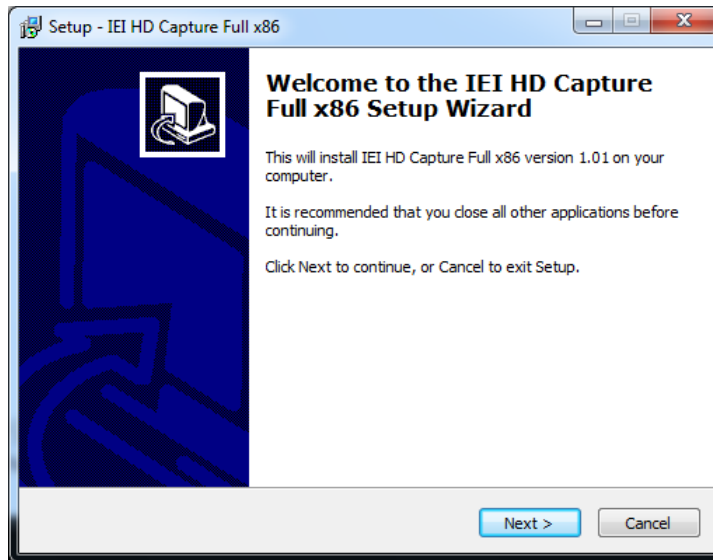
**Step 1:** Insert the driver CD. Double click the AP folder of the utility CD.

**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.

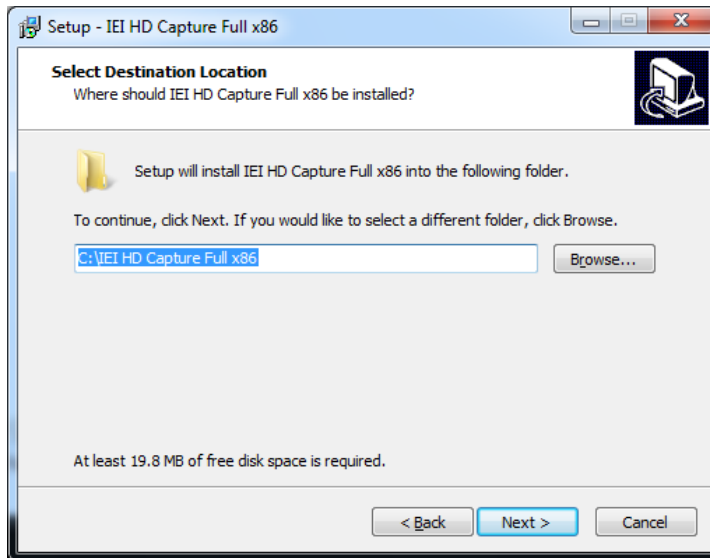


## HDC-301MS Video Capture Card



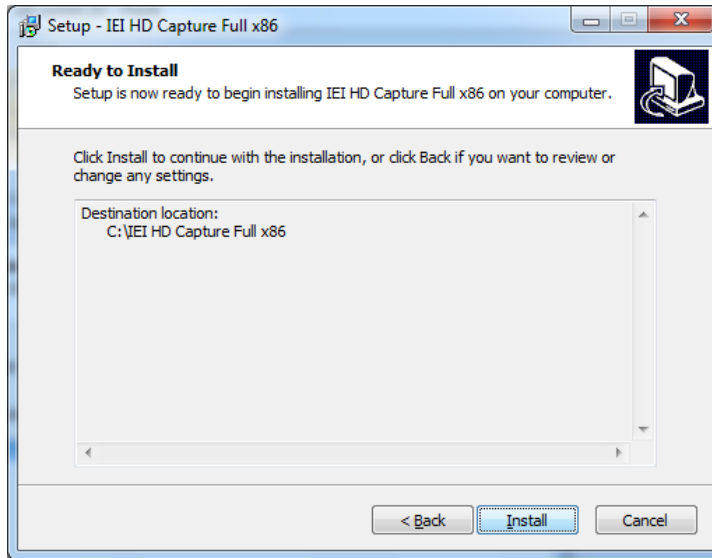
**Figure 4-1: IEI HD Capture Full x86 Setup Wizard Welcome Window**

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



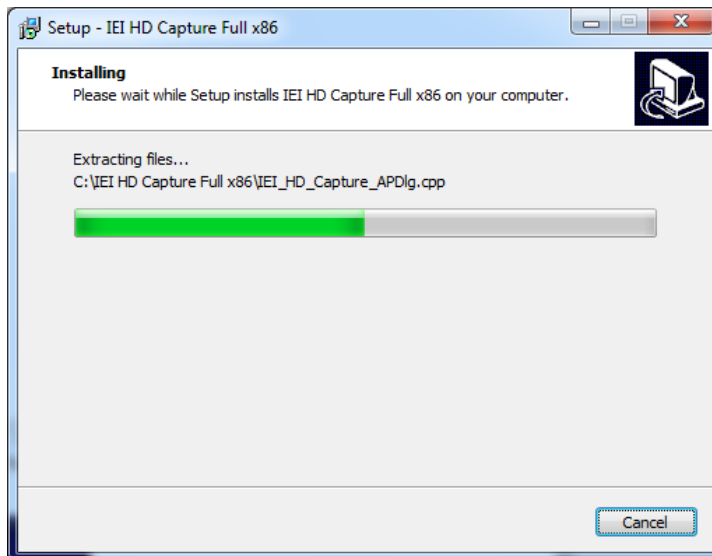
**Figure 4-2: Select Installation Folder**

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



**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.

## HDC-301MS Video Capture Card

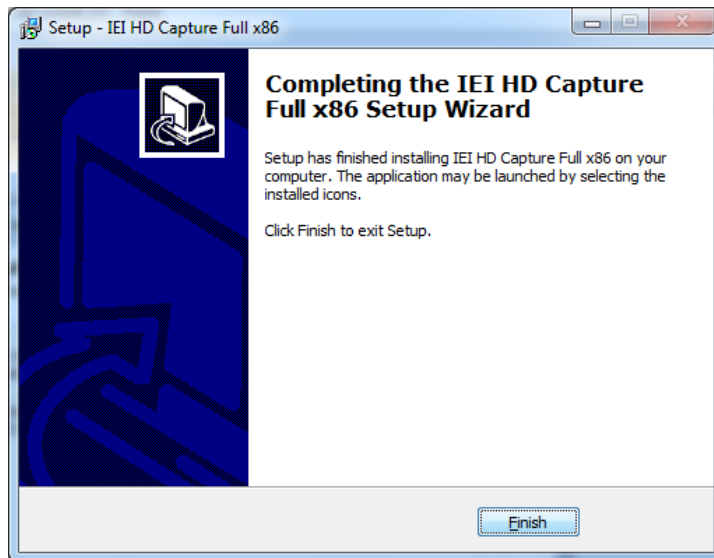


Figure 4-5: Installation Complete

### 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\_API\Release**" 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.

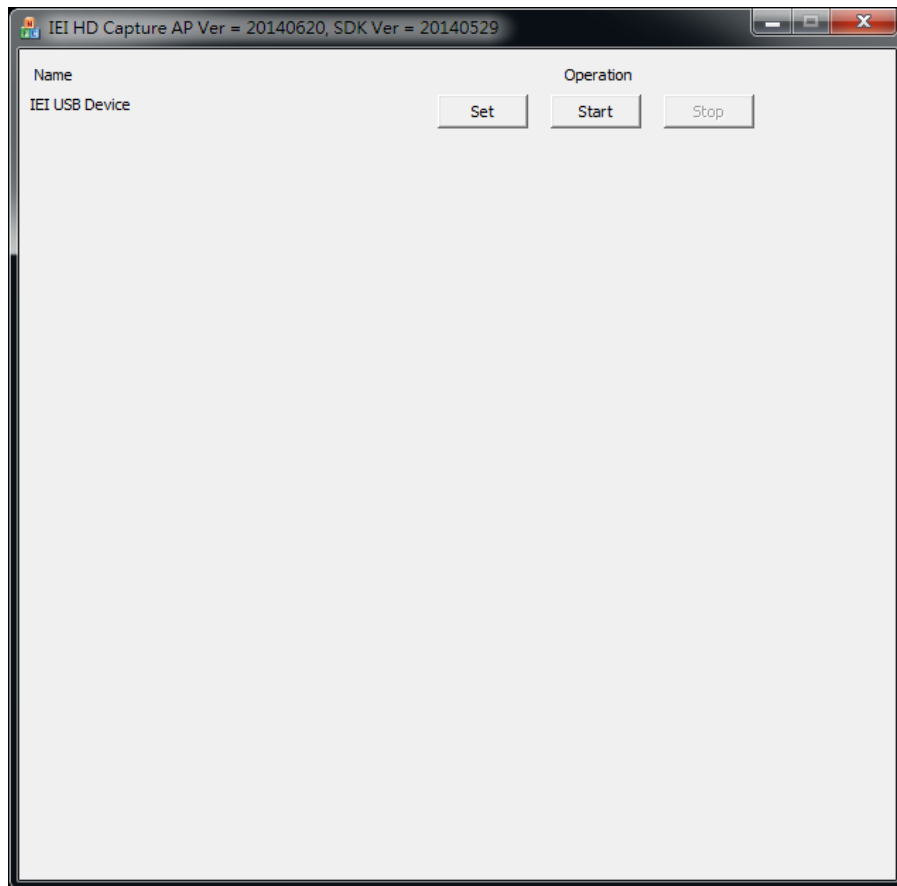
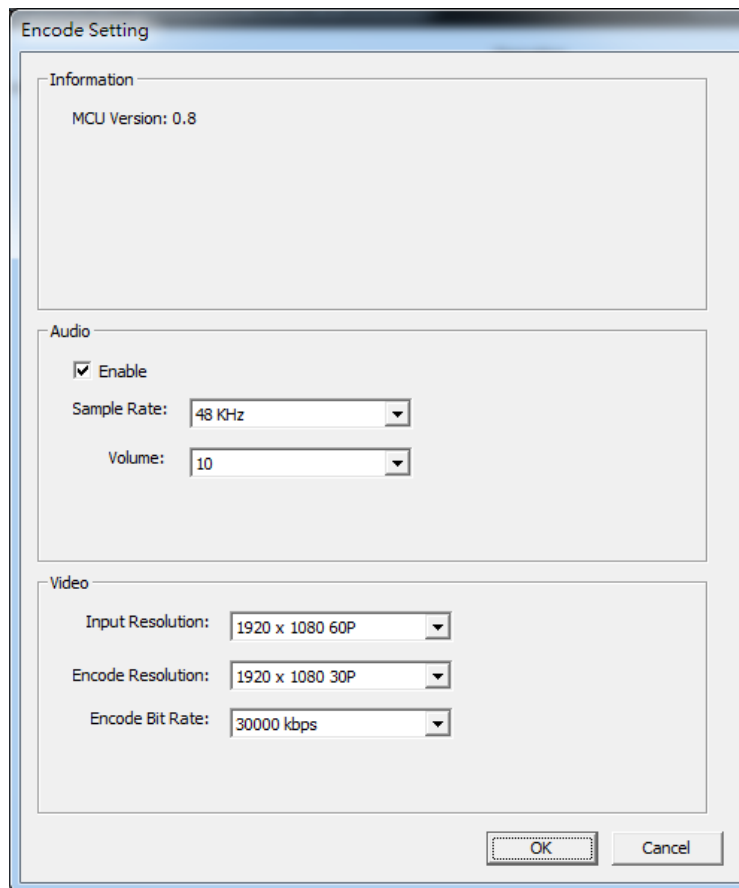


Figure 4-6: IEI HD Capture AP

**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

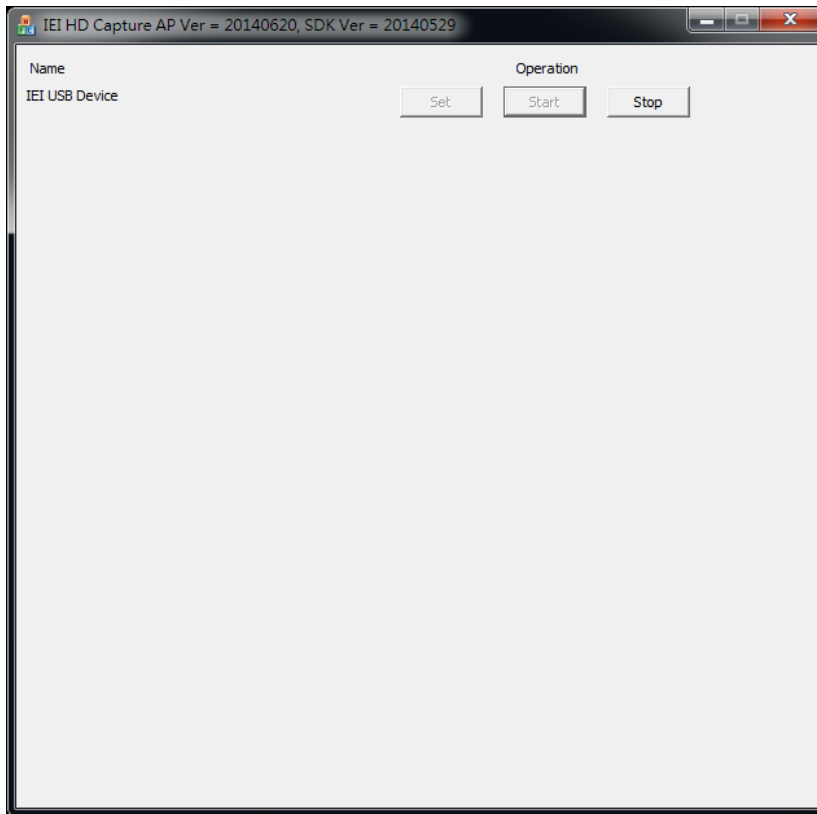
## HDC-301MS Video Capture Card



**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.





**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**

---

**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

---

**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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### **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.

## HDC-301MS Video Capture Card

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/T11363-2006</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/T11363-2006</p>						

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。