



## Blackbird™ H.265 HDMI® over IP Kit



P/N 39686, 39687

## User's Manual

## SAFETY WARNINGS AND GUIDELINES

Please read this entire manual before using this device, paying extra attention to these safety warnings and guidelines. Please keep this manual in a safe place for future reference.

- This device is intended for indoor use only.
- Do not expose this device to water or moisture of any kind. Do not place drinks or other containers with moisture on or near the device. If moisture does get in or on the device, immediately unplug it from the power outlet and allow it to fully dry before reapplying power.
- Do not touch the device, the power cord, or any other connected cables with wet hands.
- Do not expose this device to excessively high temperatures. Do not place it in, on, or near a heat source, such as a fireplace, stove, radiator, etc. Do not leave it in direct sunlight.
- Do not place or install this device in an area where it can be exposed to excessive amounts of dust, humidity, oil, smoke, or combustible vapors.
- Prior to operation, check the unit and power cord for physical damage. Do not use if physical damage has occurred.

- Before plugging the unit into a power outlet, ensure that the outlet provides the same type and level of power required by the device.
- Unplug this device from the power source when not in use.
- Take care to prevent damage to the power cord. Do not allow it to become crimped, pinched, walked on, or become tangled with other cords. Ensure that the power cord does not present a tripping hazard.
- Never unplug the unit by pulling on the power cord. Always grasp the connector head or adapter body.
- Ensure that power is turned off and disconnected before making any electrical connections.
- Clean using a soft, dry cloth only. Do not use chemical cleaners, solvents, or detergents. For stubborn deposits, moisten the cloth with warm water.
- This device has no user serviceable parts. Do not attempt to open, service, or modify this device.

# INTRODUCTION

The Blackbird™ H.265 HDMI® over IP Kit allows you to distribute an HDMI video signal to distances up to 328 feet (100 meters) over a single Cat5e/6 Ethernet cable. In addition to a normal connection between the Encoder/Transmitter and Decoder/Receiver, the Encoder can be connected directly to a computer and the signal can be decoded using the VLC® free, open-source media player. It can also connect to one or more Decoders/Receivers through an Ethernet switch, thereby allowing distribution to multiple displays. It supports the H.264 and H.265 codecs and video resolutions up to 1900x1200@60Hz YCbCr 4:4:4.

## FEATURES

- Compliant with the HDMI® 1.4b and HDCP™ 1.4 specifications
- Supports 10.2 Gbps bandwidth
- Supports video resolutions up to 1900x1200@60Hz YCbCr 4:4:4
- Supports the H.264 and H.265 codecs
- Transmits to distances up to 328 feet (100 meters) over a single Cat5e/6 Ethernet cable
- Supports broadband IR extension

## CUSTOMER SERVICE

The Monoprice Customer Service department is dedicated to ensuring that your ordering, purchasing, and delivery experience is second to none. If you have any problem with your order, please give us an opportunity to make it right. You can contact a Monoprice Customer Service representative through the Live Chat link on our website [www.monoprice.com](http://www.monoprice.com) or via email at [support@monoprice.com](mailto:support@monoprice.com). Check the website for support times and links.

## PACKAGE CONTENTS

Please take an inventory of the package contents to ensure you have all the items listed below. If anything is missing or damaged, please contact Monoprice Customer Service for a replacement.

1x Encoder/Transmitter

1x Decoder/Receiver

1x IR Receiver

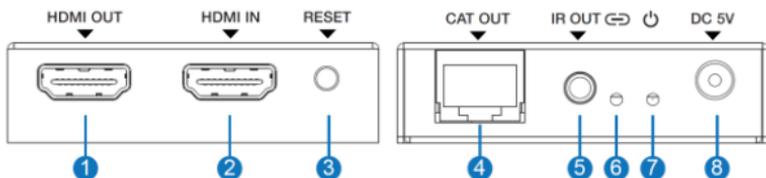
1x IR Transmitter

2x AC Power Adapters (5 VDC, 1A)

1x User's Manual

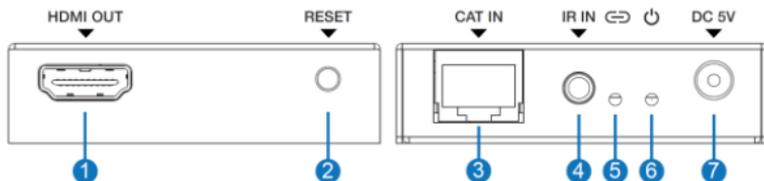
# PRODUCT OVERVIEW

## Encoder/Transmitter



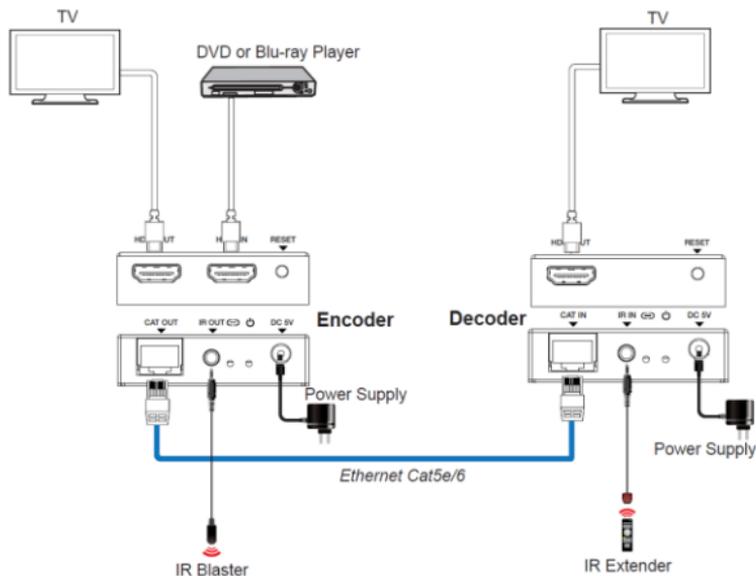
1. **HDMI OUT:** HDMI® pass-through connector for connecting a local display.
2. **HDMI IN:** HDMI input for connecting the video source device.
3. **RESET:** Press the button to reset the Encoder to the factory default values, including the IP address, encoding information, and the default EDID® of 1920x1080p@60Hz.
4. **CAT OUT:** RJ45 jack for connecting a Cat5e/6 Ethernet cable for connecting to the Decoder, a computer, or an Ethernet switch.
5. **IR OUT:** 3.5mm jack for connecting the included IR transmitter.
6. **LINK:** The LED flashes blue when connected to the Decoder or an Ethernet switch.
7. **POWER:** The LED illuminates blue when power is applied.
8. **DC 5V:** DC barrel connector for connecting one of the included AC power adapters.

## Decoder/Receiver



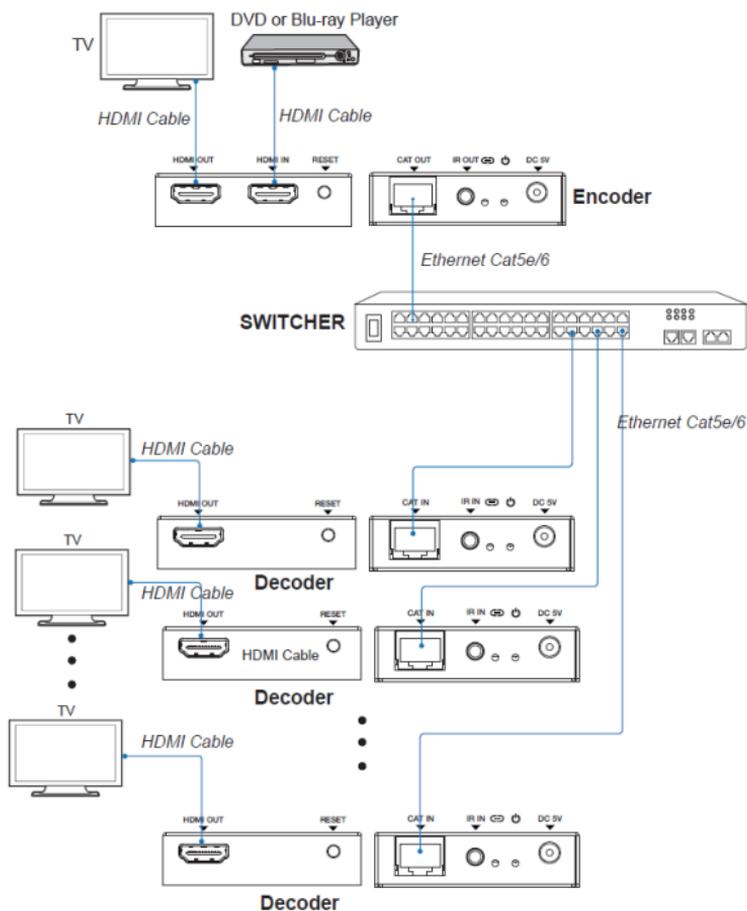
1. **HDMI OUT:** HDMI® connector for connecting an HDMI display.
2. **RESET:** Momentarily press the button to reset the Encoder to the factory default values, including the IP address, encoding information, and the default EDID® of 1920x1080p@60Hz. Press and hold the button for 3 seconds to copy the EDID® information of the connected display to the HDMI source device.
3. **CAT IN:** RJ45 jack for connecting an Ethernet cable from the Encoder or a connected Ethernet switch.
4. **IR IN:** 3.5mm jack for connecting the included IR receiver.
5. **LINK:** The LED flashes blue when connected to the Encoder or an Ethernet switch.
6. **POWER:** The LED illuminates blue when power is applied.
7. **DC 5V:** DC barrel connector for connecting one of the included AC power adapters.

# STANDARD CONNECTION



The standard method of using the kit is to connect the Encoder to the Decoder using a Cat5e or Cat6 Ethernet cable, as shown in the sample connection diagram above.

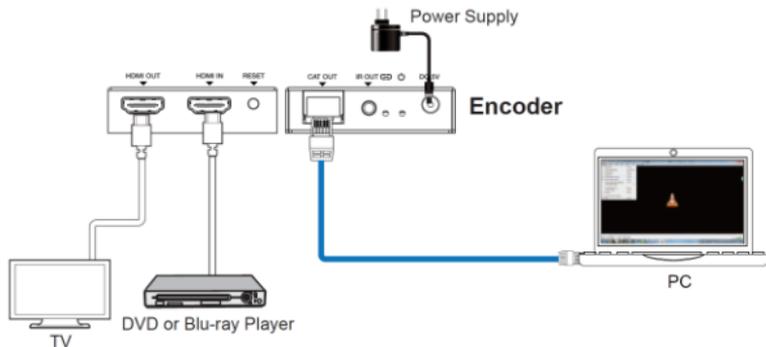
# NETWORK CONNECTION



You can also connect the Encoder to an Ethernet switch, which allows you to connect multiple Decoders to the switch to distribute the video signal to multiple displays, as shown in the sample connection diagram above.

## DIRECT CONNECTION

### Physical Installation



The third connection method is to connect the Encoder directly to a PC. The video stream can then be decoded using the free, open source VLC media player®.

Perform the following steps to use the direct connection method.

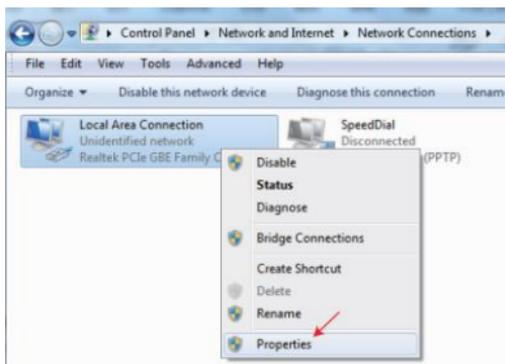
1. Plug one end of a Cat5e or Cat6 Ethernet cable (not included) to the LAN jack on your computer, then plug the other end into the **CAT OUT** jack on the Encoder.

2. Using a High Speed HDMI® Cable (not included), plug one end into the **HDMI IN** port on the Encoder, then plug the other end into the HDMI out port on your video source device (e.g., Blu-ray Disc™ player).
3. (Optional) Using a High Speed HDMI Cable (not included), plug one end into the HDMI in port on a local display, then plug the other end into the **HDMI OUT** port on the Encoder.
4. Plug one of the included AC power adapters into the **DC 5V** connector on the Encoder, then plug the adapter into a nearby AC power outlet.

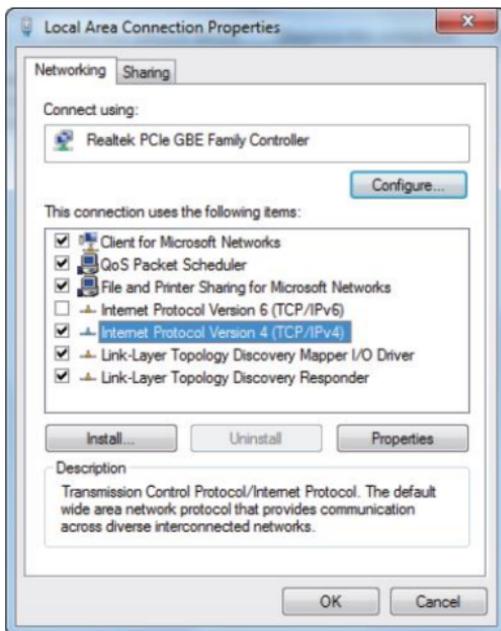
## Network Configuration

Perform the following steps to configure your PC to connect with the Encoder.

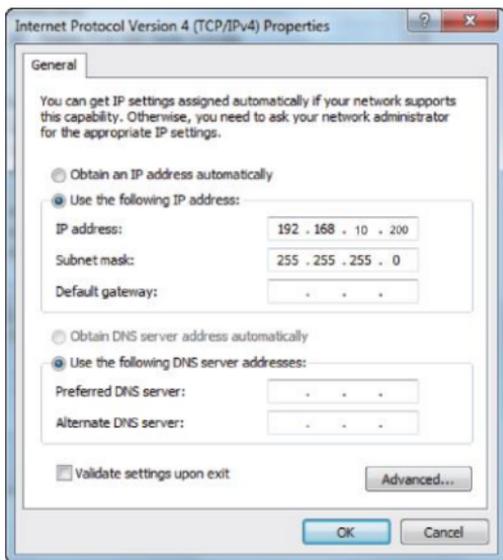
1. Open Control Panel on your PC, then select **Network and Internet > Network Connections**.
2. Right click the **Local Area Connections** option and select **Properties**.



3. Double-click the **Internet Protocol Version 4 (TCP/IPv4)** entry.



4. Select the **Use the following IP address option**.
5. Input **192.168.10.200** in the IP address field and **255.255.255.0** as the Subnet mask.



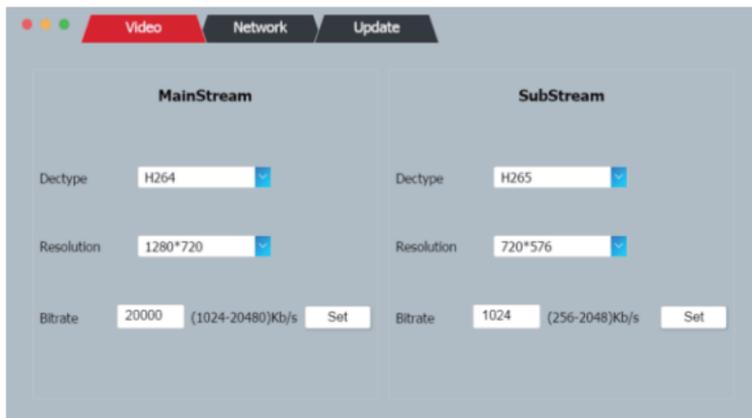
6. Click the **OK** button twice to save the settings and close the dialogs.

Note that your PC and the Encoder must be in the same network segment. Since the Encoder's IP address is 192.168.10.10, the computer's IP should be 192.168.10.X, where X is any number between 1 and 255, except 10.

## Encoder GUI

Once your PC is connected to the Encoder and configured, you can access the Encoder's built-in Graphical User Interface (GUI), which allows you to change the Encoder's default settings. To access the GUI, open a web browser on your computer and type **192.168.10.10** in the address bar.

### Video Tab



This screen allows you to set the codec (Dectype), video resolution, and bit rate for the Main and Sub streams.

- **Dectype:** Use the drop-down list to select either **H.264** or **H.265** as the codec for each of the two streams.

- **Resolution:** Use the drop-down list to select the video resolution for each of the two streams. The **MainStream** can use **1920x1080** or **1280x720**. The **SubStream** can use **720x576**, **640x480**, or **352x288**.
- **Bitrate:** Type the desired bitrate into the Bitrate field, then click the **Set** button to set the value. The **MainStream** can use any bitrate from **1024 ~ 20480** kbps. The **SubStream** can use any bitrate from **256 ~ 2048** kbps.

Note that you can use either the MainStream or the SubStream in the VLC media player®. The MainStream has a higher resolution and bitrate and therefore has a clearer picture than the SubStream.

## Network Tab

The screenshot shows a software interface with three tabs: 'Video', 'Network' (selected), and 'Update'. The 'Network' tab is divided into two sections: 'Network Configuration' and 'Status Log'.

**Network Configuration:**

- DHCP:** A toggle switch is turned on (green).
- Status:** A button to check the network status.
- IP:** Input field containing '192\_168\_10\_10'.
- Subnet:** Input field containing '255\_255\_255\_0' with a 'Set' button to its right.
- Gateway:** Input field containing '192\_168\_10\_1'.
- port:** Input field containing '80' with a 'Set' button to its right.

**Status Log:**

```

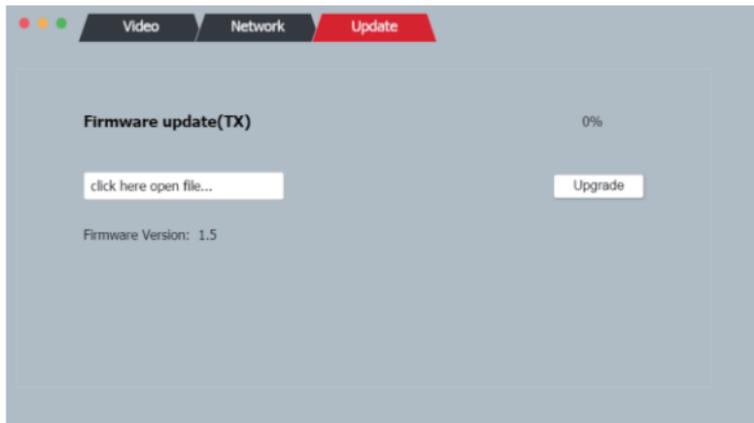
DHCP: ON
IP: 192.168.10.10
Subnet: 255.255.255.0
Gateway: 192.168.10.1
Port: 80
MAC: fe:c0:9f:dc:bd:13
  
```

This screen allows you to change the network settings of the Encoder.

- **DHCP:** When set to **ON**, the Encoder will automatically obtain its IP address, Subnet, and Gateway. When set to **OFF**, you can change the network settings. The IP address and the Gateway must use the same network segment, with the first three numbers in the address having the same value and the last number should be different. Click the **Status** button to display the network settings in the **Status Log**.
- **Addresses:** If DHCP is set to **OFF**, you can input an IP address, Subnet mask, and Gateway. The first three numbers of the IP address and Gateway must be the same, with the last number different. Note that if you change the IP address, you can continue using the current connection, but when you reconnect later, you must use the new IP address. Click the **Set** button to save the new address settings. The default IP address is 192.168.10.10, the default Subnet mask is 255.255.255.0, and the default Gateway is 192.168.10.1.
- **port:** Input the desired net port, then click the **Set** button to save the value. The default port is 80.

Note that we recommend using the default network settings. Press the **Reset** button on the Encoder to reset the network settings to their default values.

## Update Tab



In the event of a firmware update being released, you can use this screen to flash the firmware on the Encoder.

Once you have downloaded the firmware update file, click in the field to select the file, then click the **Upgrade** button to begin the update.

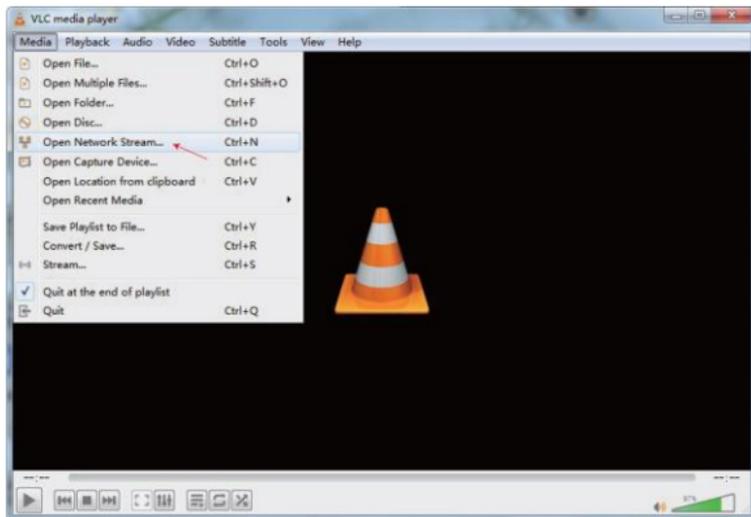
Note that if the update file is very large, the upgrade process could be "stuck" on 99% for some time. This is normal. Do not

remove power or press the **Reset** button until the upgrade process is 100% complete.

## VLC Media Player

Perform the following steps to configure the VLC media player® for use with the Encoder.

1. Download and install the VLC media player, then double-click the desktop icon to launch the program.
2. Click **Media > Open Network Stream...**

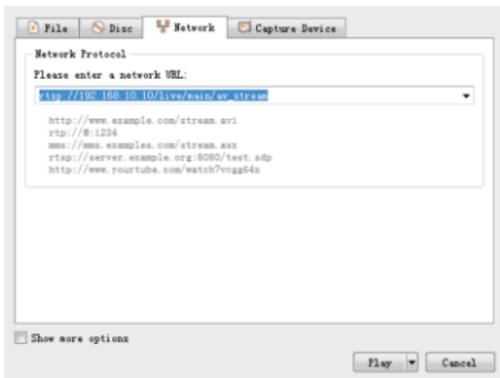


3. Input the network URL of the desired stream. The MainStream URL is:

**rtsp://192.168.10.10/live/main/av\_stream**

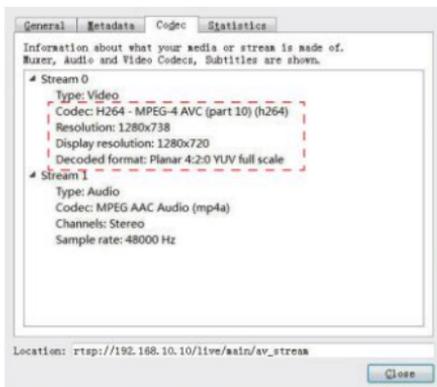
The SubStream URL is:

**rtsp://192.168.10.10/live/sub/av\_stream**

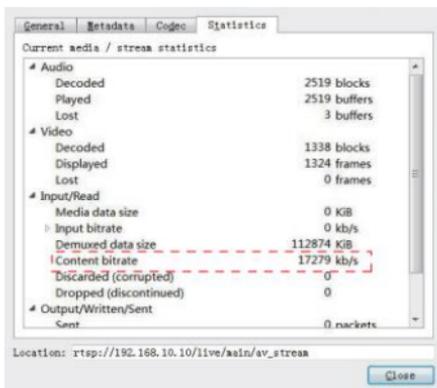


4. Click the **Play** button to start watching the video stream.

Click **Tools > Codec information** in VLC®, then click the **Codec** tab to display the current codec and resolution.



Click the **Statistics** tab to display the current bitrate. Note that the bitrate can fluctuate on the display. This is normal.



Note that you can change the codec and resolution on the **Video** tab of the built-in GUI.

## FAQ

Q1: What are the maximum lengths for connected HDMI® and Ethernet cables?

A1: The connected HDMI cables can be up to 49 feet (15 meters) each and the connected Ethernet cable can be up to 328 feet (100 meters) to support resolutions up to 1920x1200@60Hz YCbCr 4:4:4.

## TECHNICAL SUPPORT

Monoprice is pleased to provide free, live, online technical support to assist you with any questions you may have about installation, setup, troubleshooting, or product recommendations. If you ever need assistance with your new product, please come online to talk to one of our friendly and knowledgeable Tech Support Associates. Technical support is available through the online chat button on our website **[www.monoprice.com](http://www.monoprice.com)** or through email by sending a message to **[tech@monoprice.com](mailto:tech@monoprice.com)**. Check the website for support times and links.

## SPECIFICATIONS

Model	Full Kit: 39686 Decoder Only: 39687
Maximum Resolution	1920x1200@60Hz
Video Bandwidth	10.2 Gbps
Supported HDMI® Audio Format	LPCM 2.0CH, 48kHz
HDMI Version	1.4b
HDCP™ Version	1.4
Color Spaces	RGB, YCbCr 4:4:4, YCbCr 4:2:0
Color Depth	8-bit
IR Frequency	20 ~ 60 kHz
Compression Technology	H.264 and H.265
Input Power	5 VDC, 1A
AC Adapter Input Power	100 ~ 240 VAC, 50/60 Hz
Power Consumption	Encoder: 1.5 watts Decoder: 1.25 watts
Operating Temperature	+14 ~ +122°F (-10 ~ +50°C)

Storage Temperature	-4 ~ +140°F (-20 ~ +60°C)
Operating Humidity	20 ~ 90% RH, noncondensing
Dimensions (each)	3.5" x 2.4" x 0.7" (88 x 61 x 17 mm)
Weight	Encoder: 5.5 oz. (155g) Decoder: 5.3 oz. (150g)

## REGULATORY COMPLIANCE

### Notice for FCC



This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Modifying the equipment without Monoprice's authorization may result in the equipment no longer complying with FCC requirements for Class B digital devices. In that event, your right to use the equipment may be limited by FCC regulations, and you

may be required to correct any interference to radio or television communications at your own expense.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

## Notice for Industry Canada

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

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*EDID® is a registered trademark of the Video Electronics Standards Association.*

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