

# User's Manual for 4K2K HDMI

The **GE-4K100T/R** uses Gigabit compression technology to send a visually lossless up to 4K2K image and 8-channel digital audio across a 1000BT LAN (UHD over IP), also supports the following amazing and practical features:

- Limitless A/V Distribution including one-to-one, one-to-many, many-to-one and many-to-many matrix switch.
- Video Wall (up to 8x16)
- Video Scaler (like 4K in/1080P out, 1080P in/4K out)
- Video Rotation for 180/270 degree
- KM over IP (for KVM application)
- USB over IP (for all kinds of USB HID devices)
- Audio over IP (automatically switch off the HDMI audio)
- HDMI audio extraction to the line out on Client
- RS232 over IP

## Installation:

- **Host**



1. **DC5~12V:** Connect to an electrical outlet with the power adapter in package.
2. **HDMI In:** Connect to an HDMI source with an HDMI cable.
3. **USB 2.0:** Connect to the PC USB port with a USB adapter cable.
4. **Gigabit LAN:** Connect to a Client or to a Gigabit Ethernet Switch using a CAT6 cable.
5. **RS232:** Connect to the RS232 port of the device you want to control with a proper RS232 cable.
6. **Link LED:** Indicate the network connection.
7. **Power LED:** Indicate unit power on and boot up.
8. **Line In:** Plug in the stereo source.

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9. **Group ID:** Set up the Host's group ID by adjusting the 4-pin DIP switch, ON means "1", OFF means "0", there are 16 groups available to set up.

## ● Client



1. **DC5~12V:** Connect to an electrical outlet with the power adapter in package.
2. **HDMI Out:** Connect to an HDMI monitor with an HDMI cable.
3. **Group ID:** Set up the Client's group ID by adjusting the 4-pin DIP switch to receive the signals from the Host of the same group ID, ON means "1", OFF means "0", there are 16 groups available to set up.
4. **Gigabit LAN:** Connect to a Host or to a Gigabit Ethernet Switch using a CAT6 cable.
5. **RS232:** Connect to the RS232 port of the device you want to control with a proper RS232 cable.
6. **USB 2.0:** Plug in the keyboard & mouse for KVM extension function.
7. **Link LED:** Indicate the network connection.
8. **Power LED:** Indicate unit power on and boot up.
9. **Line Out:** Plug in the stereo speakers.

## ● One-to-one Extension

- Extend the Ultra HD source up to 120 meters over a single CAT6 cable.

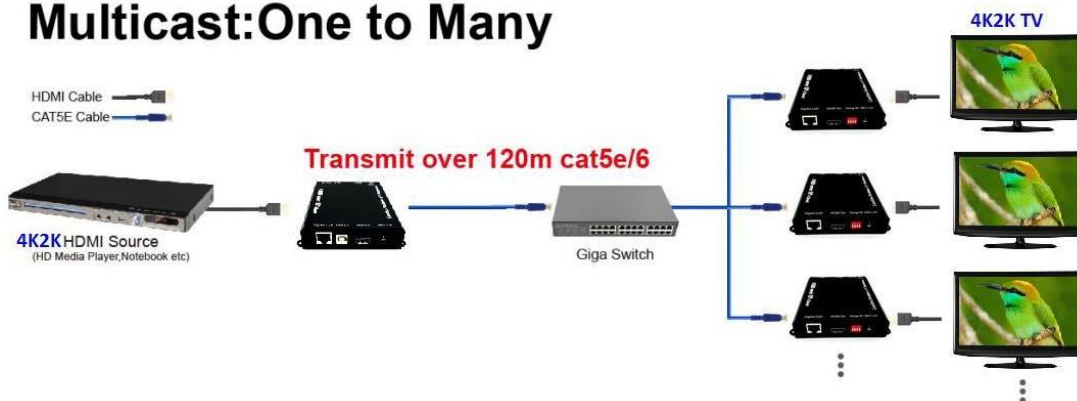


## ● One-to-many Distribution

- Distribute the Ultra HD source to hundreds of remote displays through the general Gigabit switches.
- **The Jumbo Frame of Gigabit switch must be enabled.**

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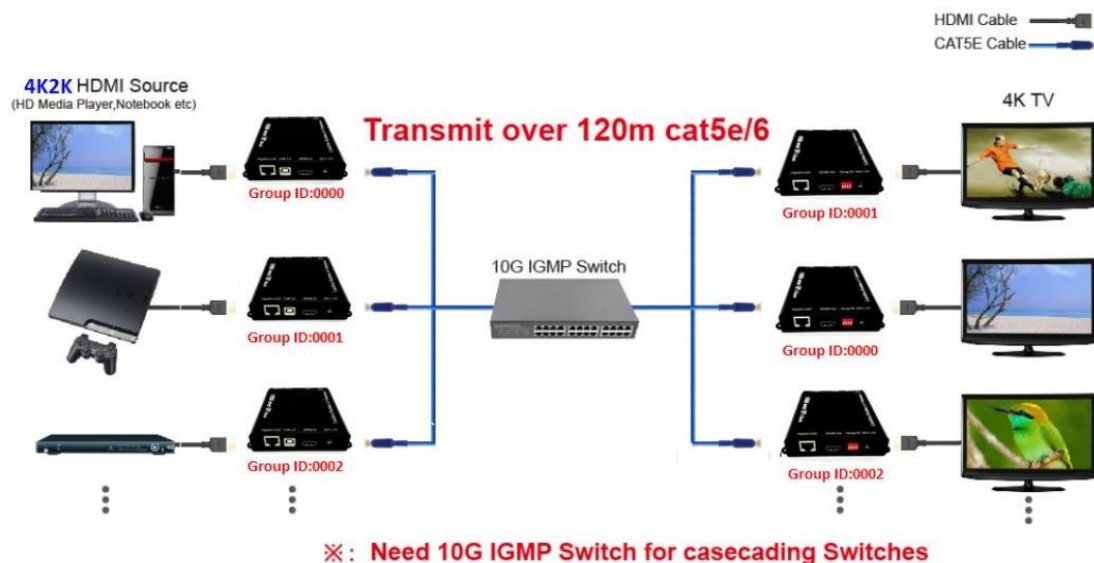
## Multicast: One to Many



### ● Many-to-many Fixed Matrix Network

- You can build up a fixed matrix network by setting the Group ID of Host's and Client's. It can support 16 groups maximum, the Host will send the signals to all the Clients of the same group ID.
- **The IGMP and Jumbo Frame of Gigabit switch must be enabled.**

## Matrix: Many to Many

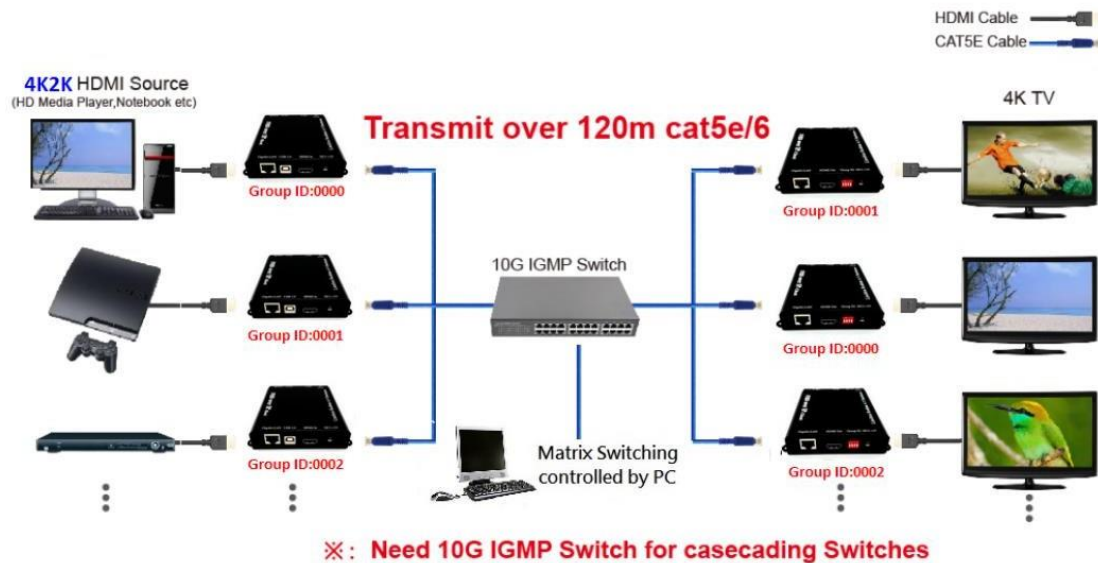


### ● Many-to-many Switchable Matrix Network

- You also can build up a switchable matrix network by the IGMP-enabled Gigabit switches and the matrix control software developed by yourselves. You just need to set the Host's group ID and keep all the Clients' ID as "0000". It's the same to support 16 groups maximum.
- **The IGMP and Jumbo Frame of Gigabit switch must be enabled.**

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## Matrix:Many to Many



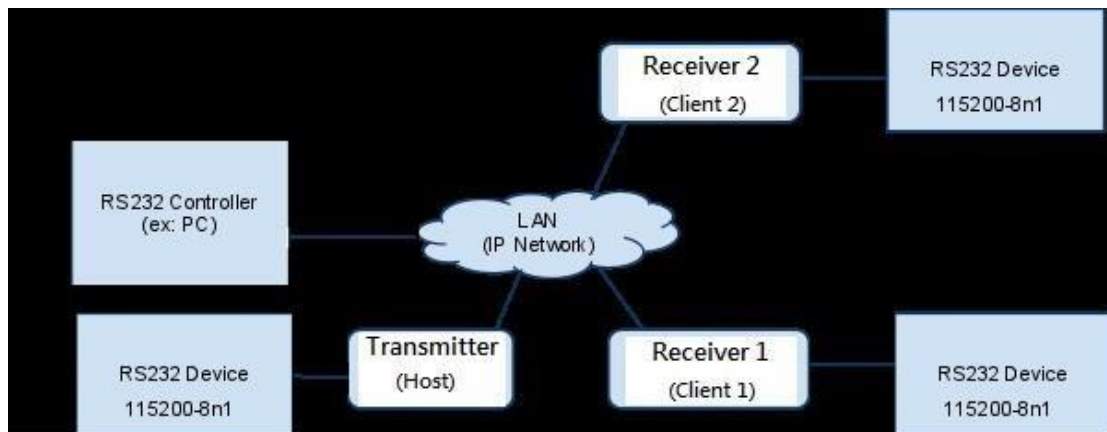
## How to Use RS232 over Ethernet

The RS232 over Ethernet can implement the full management to the source players and displays by supporting transparent binary data transmission, it can send/receive data directly to device by console (PC, telnet) or TCP (software).

The RS232 Controller should always use 115200-8n1 to connect to Transmitter or Receiver with the following steps:

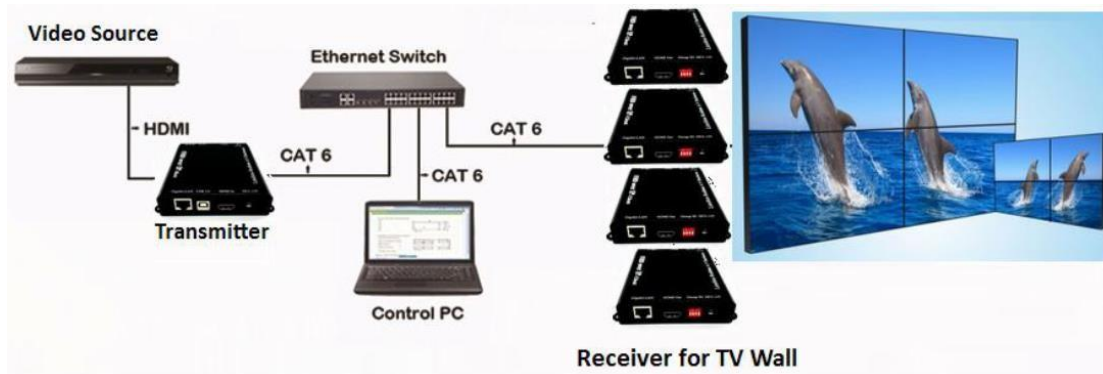
- 1) Use the Telnet to connect TX/RX at **PORT 6752**, you can locate the TX/RX by its IP address or Host name. The TX's host name is composed of ast2-gateway<Group ID>.local. For example, the TX's group ID is "0000" and then its host name is ast2-gateway0000.local. The RX's host name is composed of ast2-client<MAC address>.local. For example, the RX's MAC address is C20000001A6C and then its host name is ast2-clientC20000001A6C.local. On the RX's GUI screen, you can find its IP/MAC addresses and the connected TX's IP address.
- 2) Sending the data from console or TCP will output from the RS232 port of TX/RX, vice versa the data coming into RS232 port of TX/RX will appear on the console or obtained by recv () function of TCP.

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## How to Set Up Video Wall

- **Hardware Connection:**



1. Connect the host (Transmitter) to the Video Source using a HDMI cable and to the Gigabit Ethernet Switch with a CAT6 cable.
2. Connect the client (Receiver) to each screen using a HDMI cable and then connect all the clients to the Gigabit Ethernet Switch with the CAT6 cables.
3. Connect a PC to the Ethernet Switch as the Control PC for system setup.
4. Plug in the host and clients with the power adaptors and then turn on the video source, Ethernet Switch and all the screens.
5. Play the video source, all the screens will display the source individually.

- **System Setup:**

The following is the system setup figure for a 3x3 video wall:



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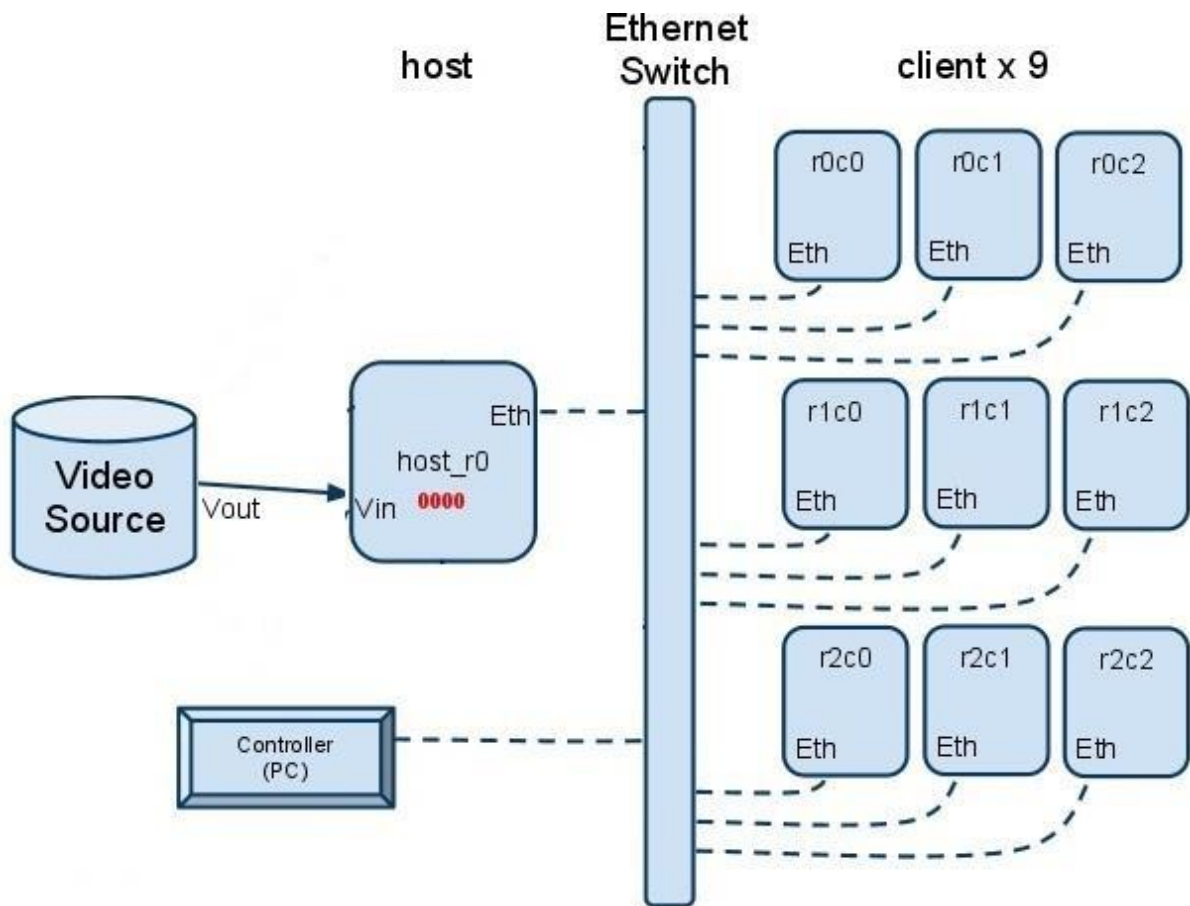


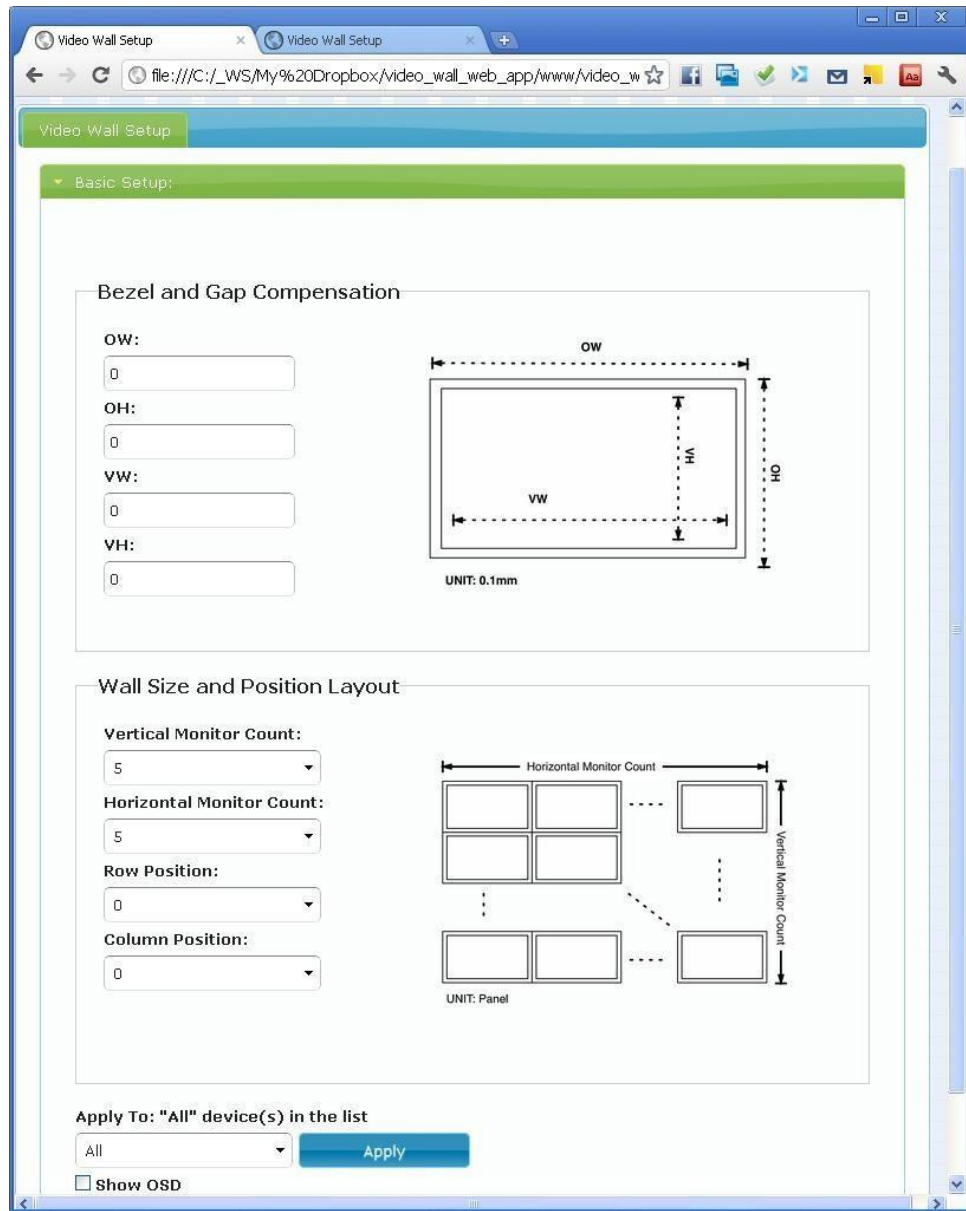
Figure 1

## Notes:

- The host's GROUP ID must be set as 0000.
  - The Ethernet switch must support Gigabit, Jumbo Frame and IGMP snooping.
  - The controller (PC) uses web browser to link to control portal's web UI.
  - You can connect a monitor with the video source through a HDMI splitter to see the entire screen.
1. If the control PC (Windows OS) doesn't install Bonjour SDK yet, please install it. Google "Bonjour SDK download" for the installation file or download it here: <http://developer.apple.com/opensource/>
  2. Configure the control PC's network setting to use 169.254.xxx.xxx IP domain with netmask 255.255.0.0.

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3. Open PC's web browser (Google Chrome performs best. IE is not recommended). Link to the control portal by following web address <http://ast3-gateway0000.local/>
  - a. The 0000 part in above web address is mapping to the value of 4bits DIP switch on host.
  - b. If link success, you will see the web page as following:



4. Once you complete the following steps in "Basic Setup", a basic video wall configuration is done.
5. Step 1: Set common values of all devices:

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- a. Set Bezel and Gap Compensation:
    - i. This step is used to configure the bezel and gap compensation. If you don't need this, just set all values to 0.
    - ii. Follow the picture and input the size of the monitor used.  
Note that the unit is 0.1mm and the value MUST be integer.
  - b. Set Wall Size:
    - i. Set "Vertical Monitor Count" to 3.
    - ii. Set "Horizontal Monitor Count" to 3.
  - c. Select "All" in apply to list and press "Apply" button.
  - d. You will notice that all screens refresh.
6. Step 2: Set up Row and Column Position for Each Screen:
- a. Check "Show OSD". The Screens' number in the "apply list" will show on each screen.
  - b. Go through all client devices one by one and set the corresponding "Row Position" and "Column Position", then apply.
  - c. Un-check "Show OSD" when completed.
7. Basic Setup is done, all the screens will display an entire image to form a video wall.

## Specifications:

	Host	Client
Size	12.3x10.3x2.5(h) cm, 400g	12.3x10.3x2.5(h) cm, 400g
Ethernet Port	UTP/STP 1000Mbps (8K Jumbo Frame required)	
Protocol	IP, UDP, TCP, ICMP, IGMP	
HDMI Port*	19 pin type A female	
RS232 Port	DB-9 Male	
DC Jack (Power)	φ2.0/DC5V, 2A	
Audio Jack (LINE IN/OUT)	3.5mm	
USB Port	Type-B USB2.0	Type-A USB2.0
Power LED (Blue)	<ul style="list-style-type: none"><li>- Blinking: power on and the unit is booting up.</li><li>- On: power on and the unit is active</li></ul>	



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Link LED (Yellow)	<ul style="list-style-type: none"> <li>- Blinking: 1) the unit is connecting with Host or Client. 2) the HDMI source is removed.</li> <li>- On: all the connections are working.</li> </ul>	
LAN Bandwidth	850Mbps max. for each source	
Max. Supported Timing	2160p 30Hz @30fps	
Max Distance	120M (UTP) between 2 devices (Host/Client/Ether Switch)	
Built-in Output Scaler		<ul style="list-style-type: none"> <li>- Downscale to 1/2</li> <li>- Upscale from horizontal pixels≤1920</li> </ul>
Video Wall	<ul style="list-style-type: none"> <li>- Up to 8x16 displays</li> <li>- Image rotate (180/270 degree)</li> <li>- Accurate frame gap compensation</li> <li>- Tearing free in single host mode</li> </ul>	
USB Redirection	<ul style="list-style-type: none"> <li>- KM over IP: dedicated for KVM application, doesn't support touch screen</li> <li>- USB over IP: support any kind of USB HID devices</li> </ul>	
HDMI Audio Redirection	2 Ch LPCM 8 Ch LPCM 5.1 Ch NLPCM 7.1 Ch NLPCM	
HDMI Audio Extraction		2 Ch LPCM (32KHz~96KHz)
Stereo Audio Redirection	LINE IN (switch off HDMI audio)	LINE OUT
RS232 Redirection	Transparent binary data transmission	
HDMI 3D Support	HDMI 1.4b 3D: TnB, SbS, F.P.	
Compression Technology	Patented visually lossless video compression algorithm	
Certificate	CE/FCC	
Compliance	HDMI 1.4b/HDCP 1.4/RoHS	
Operating Temperature	0~70°C	
Operating Humidity	10~85% RH (no condensation)	
Storage Temperature	-10~80°C	
Storage Humidity	5~95% RH (no condensation)	

\* Support DVI-D with HDMI-to-DVI adapter cable