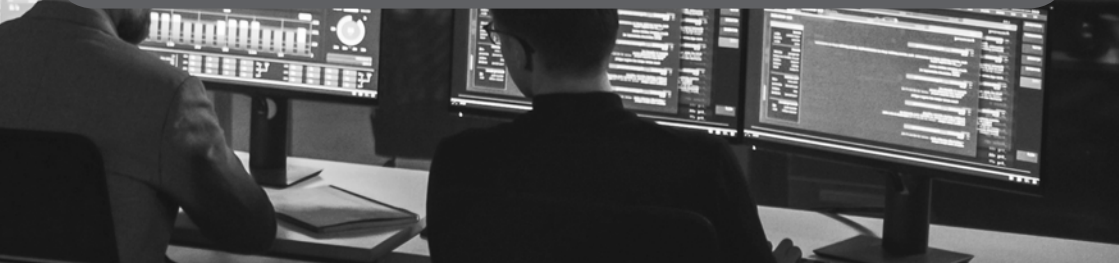


geratech®



EGE-UHD-EXTIP-KVM

HDMI / VGA over IP Extender with
scaler and KVM functions



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SAFETY PRECAUTIONS

Please read all instructions before attempting to unpack, install or operate this equipment and before connecting the power supply.

Please keep the following in mind as you unpack and install this equipment:

- Always follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Never spill liquid of any kind on or into this product.
- Never push an object of any kind into this product through any openings or empty slots in the unit, as you may damage parts inside the unit.
- Do not attach the power supply cabling to building surfaces.
- Use only the supplied power supply unit (PSU). Do not use the PSU if it is damaged.
- Do not allow anything to rest on the power cabling or allow any weight to be placed upon it or any person walk on it.
- To protect the unit from overheating, do not block any vents or openings in the unit housing that provide ventilation and allow for sufficient space for air to circulate around the unit.

REVISION HISTORY

VERSION NO.	DATE (DD/MM/YY)	SUMMARY OF CHANGE
RDV1	03/02/17	Preliminary release
RDV2	20/04/17	silkscreen and description

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1. INTRODUCTION

This 4K UHD Multi-Function Extender with KVM over TCP/IP allows you to transmit HDMI or VGA signals over CAT5e/6/7 network cable. This extender supports the transmission of Ultra High-Definition signals (up to 4K@30Hz YUV 4:4:4 or 4K@60Hz YUV 4:2:0) along with audio and USB up to 100m on a single cable. The transmission distance can be further extended (up to 100m per segment) by using gigabit network switches allowing the user to cascade the system without signal loss or introducing delay. It is also possible to have the Transmitter operate in multicast mode, allowing you to send a single AV signal to a virtually multi number of Receivers within the same local network. This system is perfect for both residential and commercial installation environments. This system also features bi-directional IR and RS-232 pass-through, analog line level in/out, and a microphone input (on the Receiver), providing the user with a variety of audio options. The USB functionality allows the system to act like a remote USB hub which, when combined with the VGA input/output feature, provides a flexible remote KVM platform. Configuration information is provided via On Screen Display (OSD) and control is by WebGUI and front panel controls.

2. APPLICATIONS

- HDMI, USB, Audio, RS-232 Extender
- Broadcasting system over single CAT5e/6/7
- Multimedia display on a large number of displays via multi-cast
- Hotel or convention center display multi-monitor broadcast and multi-data sharing
- Long distance data sending with cascade
- Matrix network system
- System control over RS-232 and equipment control over IR
- Remote KVM control of a system

3. PACKAGE CONTENTS

- 1 x HDMI/USB/RS-232/IR over single CAT5e/6/7 Transmitter
- 1 x HDMI/USB/RS-232/IR over single CAT5e/6/7 Receiver
- 1 x 5V/2.6A DC Power Adaptor
- 1 x 5V/4A DC Power Adaptor
- Operation Manual

4. SYSTEM REQUIREMENTS

- HDMI or VGA source equipment such as media players, video game consoles PCs or set-top boxes.
- HDMI or VGA receiving equipment such as HDTVs, monitors or audio amplifiers.
- Analog audio receiving equipment such as headphones, audio amplifiers or powered speakers.
- A Gigabit Ethernet network switch with jumbo frame support is required.
- A Gigabit Ethernet switch with “IGMP snooping” is required for proper multicast support.
- 8K jumbo frames are strongly recommended.

Note: The text may displayed incompletely once uses PC as source at resolution of 4K2K@60 YUV420.

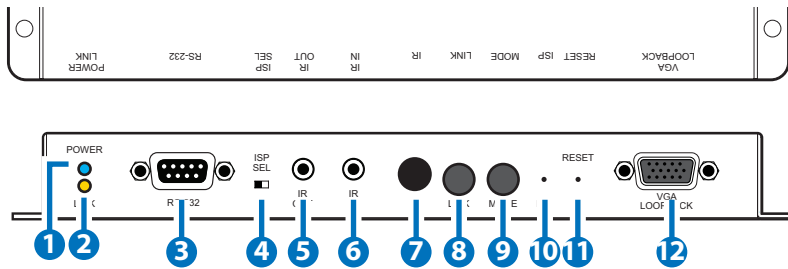
5. FEATURES

- HDMI 2.0 and DVI 1.0 compatible, HDCP 2.2/1.4 compliant
- 1xHDMI input and output, 1xVGA input and output & 1xVGA bypass output
- Video, audio and control transmission over TCP/IP
- HDMI input resolutions up to 4K@60Hz (YUV 4:2:0) or 4K@30Hz (YUV 4:4:4)
- HDMI output resolutions up to 4K@30Hz (YUV 4:4:4)
- 4K@50/60Hz (YUV 4:2:0) sources are automatically converted to 4K@25/30Hz (YUV 4:4:4) for output
- Supports pass-through of audio formats including LPCM 2.0/5.1/7.1, Bitstream, and HD Bitstream
- Audio line in on Transmitter sends audio to the line out on connected Receivers

- Microphone input on Receiver for transmission to the Transmitter
- Supports USB keyboard and mouse extension
- Supports IR and RS-232 bypass
- Device has an info OSD and can be controlled via WebGUI and front panel controls

6. OPERATION CONTROLS AND FUNCTIONS

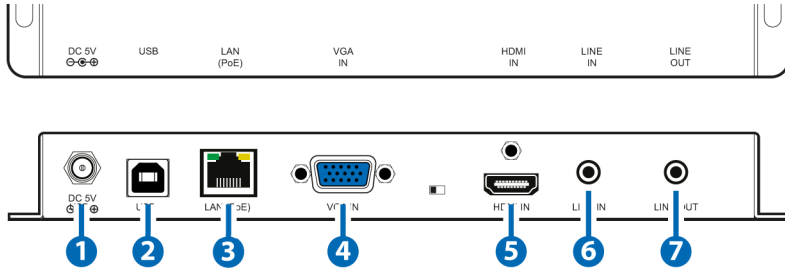
6.1 Transmitter's Front Panel



- 1 POWER LED:** This LED will flash BLUE while the unit is powering on and will illuminate solid BLUE once it is ready to be used.
- 2 LINK LED:**
 - a. If the Transmitter has no network connection the LINK LED will not illuminate.
 - b. While the Transmitter is attempting to establish a connection with a Receiver the LINK LED will flash ORANGE.
 - c. When the Transmitter has established a stable connection with a Receiver the LINK LED will illuminate in solid ORANGE.
- 3 RS232 IN:** Connect directly to your PC/laptop to send commands to RS-232 devices connected to the Receiver. The baud rate is configurable, but the default baud rate is 115200. When the Transmitter is in multicast mode every connected Receiver unit can send RS-232 commands to the Transmitter and commands sent from the Transmitter side will be sent to all associated Receivers.
- 4 ISP SEL:** Switch this dip to entering ISP mode. (SOP to be updated)

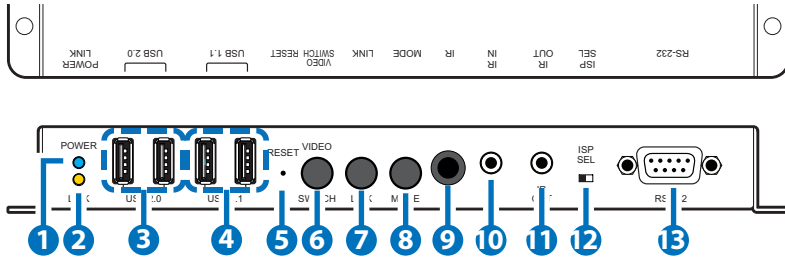
- 5 **IR OUT:** Connect to the provided IR Blaster to transmit IR signals to devices within direct line-of-sight of the IR Blaster.
- 6 **IR IN:** Connect to the provided IR Extender to extend the IR control range of remotely located devices. Ensure that the remote being used is within direct line-of-sight of the IR Extender.
- 7 **IR:** Accepts IR signals for control of this unit only.
- 8 **LINK:** The link status will be disabled and enable after press button.
Quick Function Keys:
 1. Reset to default (auto IP & multicast) mode: Press and hold this button when powering the unit on until both the POWER and LINK lights are blinking. Once both lights are blinking you can power the unit off and back on and it will be in the default auto IP and multicast modes. The IP address will be assigned automatically within the 169.254.xxx.xxx address range.
 2. Loopback function disabled: presses the link button for three seconds, the loopback function will be disabled.
- 9 **MODE:** Selects to video mode for streaming data. Please continue to press this button for 3 seconds to setting Anti-Dither mode 1 bit, 2 bit, or off for ATI Graphic card. Anti-Dithering Mode is design to provide dithering output. Dithering output is used to make coloring looks better than it's original color depth. This presents great difficulty for Video Compression to maintain low bandwidth even if the source display seems static. If the source content does not generate dithering output, please turn off this function or it will create a blocking effect. The video mode improves live video smoothly. Normally, this extender set has capability to automatically final tune the live video. It is require to access to video mode for further setting once video come with slightly latency.
- 10 **ISP:** Press this button to entering ISP mode.(SOP to be updated)
- 11 **RESET:** Press this recessed button to reset the unit.
- 12 **VGA LOOPBACK:** Connect to an analog VGA monitor to locally view the connected VGA or HDMI (non-HDCP, 1080p or lower) source.

6.2 Transmitter's Rear Panel



- 1 **DC 5V:** Plug the 5V DC power adapter into the unit and connect it to an AC wall outlet for power.
- 2 **USB:** Connect with PC for loading Receiver's USB for data transmits to Transmitter over IP.
- 3 **LAN(PoE):** Connect via a Gigabit Ethernet switch to compatible Receiver(s) to transmit data, and to a PC/laptop to control the unit via WebGUI.
- 4 **VGA IN:** Connect to VGA source equipment such as a PC or laptop.
- 5 **HDMI IN:** Connect to HDMI source equipment such as a media player, game console or set-top box
- 6 **LINE IN:** Connect from audio source equipment with 3.5mm phone jack cable for audio signal sending to Receiver side.
- 7 **LINE OUT:** Connect to active speaker or Line in microphone of input sound from Receiver end.

6.3 Receiver's Front Panel



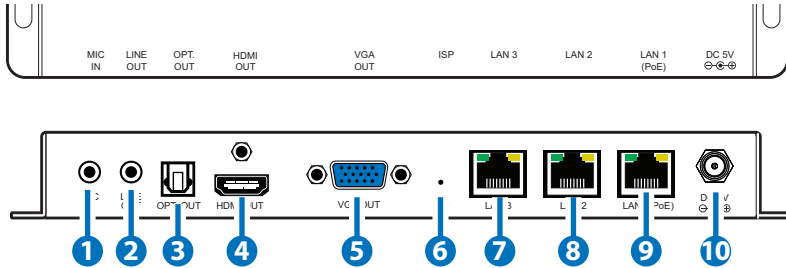
- 1 POWER LED:** This LED will flash BLUE while the unit is powering on and will illuminate solid BLUE once it is ready to be used.
- 2 LINK LED:**
 - a. If the Receiver has no network connection the LINK LED will not illuminate.
 - b. While the Receiver is attempting to establish a connection with a Transmitter the LINK LED will flash ORANGE.
 - c. When the Receiver has established a stable connection with a Transmitter the LINK LED will illuminate in solid ORANGE.
- 3 USB 2.0:** USB2.0 slot allows USB devices such as thumb drive, hard disk and ...etc. for data sending or control over USB connected devices.*
- 4 USB 1.1:** USB1.1 slot allows USB devices such as keyboard, mouse and ...etc. for controlling over USB connected devices.*
- 5 RESET:** Press this recessed button to reset the unit.
- 6 VIDEO SWITCH:** Press this button could switching video output.
- 7 LINK:** The video link with the Receiver can be enabled or disabled with this button. When the link is disabled and the Receiver is connected to a monitor it will display the system's current IP and firmware information.

Quick Function Key:

1. Reset to default (auto IP & multicast) mode: Press and hold this button when powering the unit on until both the POWER and LINK lights are blinking. Once both lights are blinking you can power the unit off and back on and it will be in the default auto IP and multicast modes. The IP address will be assigned automatically within the 169.254.xxx.xxx address range

- 8 MODE:** Selects to video mode for streaming data. Please continue to press this button for 3 seconds to setting Anti-Dither mode 1 bit, 2 bit, or off for ATI Graphic card. Anti-Dithering Mode is design to provide dithering output. Dithering output is used to make coloring looks better than it's original color depth. This presents great difficulty for video compression to maintain low bandwidth even if the source display seems static. If the source content does not generate dithering output, please turn off this function or it will create a blocking effect. Normally, the Transmitter & Receiver has capability to automatically fine tune the live video. It is require to access to video mode for further setting once video come with slightly latency.
 - 9 IR:** This IR window is for receiving the remote control signal and sending it to Transmitter side for IR signal blast out.
 - 10 IR IN:** Connect to the provided IR Extender to extend the IR control range of remotely located devices. Ensure that the remote being used is within direct line-of-sight of the IR Extender.
 - 11 IR OUT:** Connect to the provided IR Blaster to transmit IR signals to devices within direct line-of-sight of the IR Blaster.
 - 12 ISP SEL:** Switch this dip to entering ISP mode. (SOP to be updated)
 - 13 RS-232:** Connect directly to an RS-232 controllable device to receive commands from the device connected to the Transmitter. The baud rate is configurable, but the default baud rate is 115200. When the Transmitter is in multicast mode every connected Receiver unit can send RS-232 commands to the Transmitter and commands sent from the Transmitter side will be sent to all connected Receivers.
- * USB isochronous is not supported such as USB camera and external hard disk with USB interface.

6.4 Receiver's Rear Panel



- 1** **ETHERNET:** Connect from audio source equipment with 3.5mm phone jack cable for audio signal sending to Transmitter side. This Audio MIC IN will disable which is not able to transmit the microphone audio source to Transmitter when implement multi-case application.
- 2** **LINE OUT:** Connect to active speaker and Line in MIC input sound from Transmitter end.
- 3** **OPT OUT:** Optical output allows to output audio from HDMI.
- 4** **HDMI OUT:** Connect to HDMI TVs, monitors or amplifiers for digital video and audio output.
- 5** **VGA OUT:** Connect to a VGA monitor or display for analog video output. (VGA or Non-HDCP HDMI sources only)
- 6** **ISP:** Press this button to entering ISP mode. (SOP to be updated)
- 7** **LAN 3:** Connect via a Gigabit Ethernet switch to a compatible Transmitter to receive data, and to a PC/laptop to control the unit via WebGUI.
- 8** **LAN 2:** Connect via a Gigabit Ethernet switch to a compatible Transmitter to receive data, and to a PC/laptop to control the unit via WebGUI.
- 9** **LAN 1(PoE):** Connect via a Gigabit Ethernet switch to a compatible Transmitter to receive data, and to a PC/laptop to control the unit via WebGUI.
- 10** **DC 5V:** Plug the 5V DC power adapter into the unit and connect it to an AC wall outlet for power.

6.5 WebGUI (to be updated)

Connect both Transmitter and Receiver with active networks through CAT5e/6/7 and make sure both networks are under the same zone.

On the Receiver side connect the display from HDMI output port and the screen will display both Transmitter/Remote IP and Receiver/Local IP.

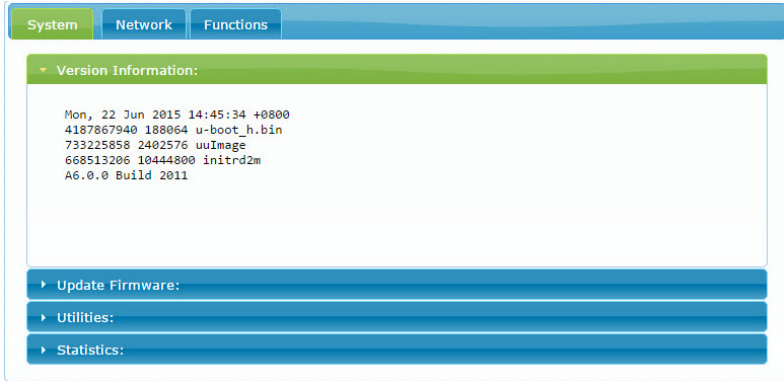


Use this IP address to enter into WebGUI with web page to do the settings, control and information.

The WebGUI is mainly divided into 3 sections includes System, Network and Functions.

Under System there are 4 items, Version Information, Update Firmware, Utilities and Statistics.

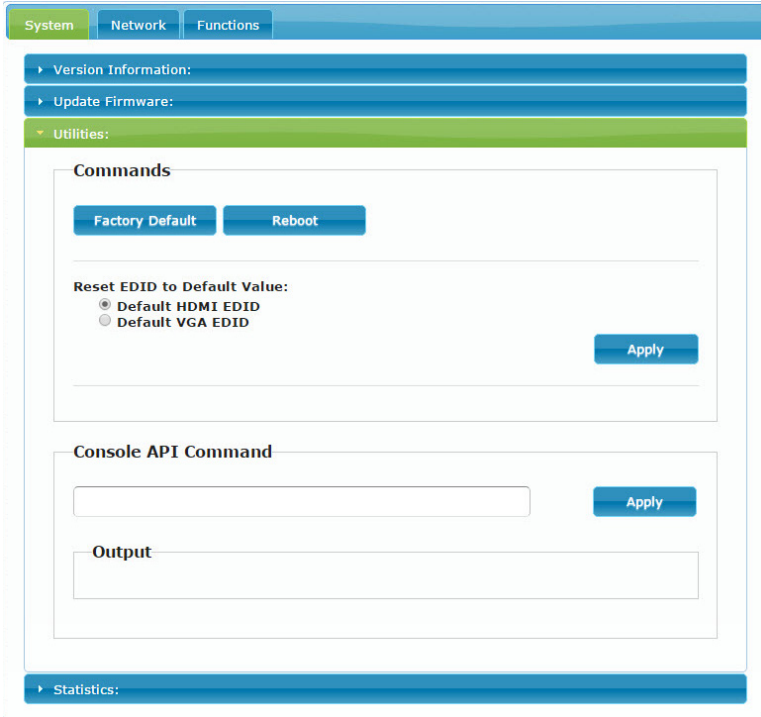
Version Information simply shows the device's firmware version and its WebGUI's firmware version.



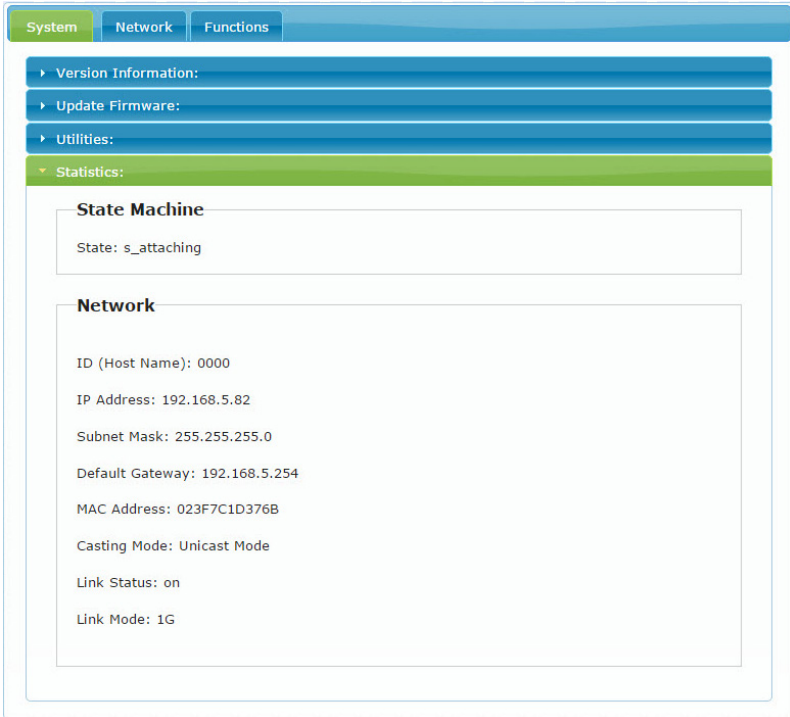
Update Firmware providing user to upload updated firmware in field.



Utilities allow users to set the device setting back to factory default and or reboot the device. On the Transmitter side only it allows user to set the EDID value according to HDMI and VGA.



Statistics shows all the detail information regards of the device itself and the connected device including network information, link status and link mode.



Network allow user to choose IP mode, IP address and device's mode.

It is required to reboot once resetting the system, casting mode must adjust the hardware LINK PAIR SEL together in order to function properly.

The screenshot shows a web interface with three tabs: System, Network, and Functions. The 'Network' tab is active. Under 'IP Setup', there are three radio buttons for IP Mode: Auto IP, DHCP (selected), and Static. Below these are input fields for IP Address (192.168.5.82), Subnet Mask (255.255.255.0), and Default Gateway (192.168.5.254). An 'Apply' button is at the bottom right of this section. The 'Casting Mode' section below has two radio buttons: Multicast and Unicast (selected). An 'Apply' button is also present at the bottom right of this section.

Lastly, Function allows user to choose functions over IP/Transmitter or Receiver. By selecting Video over IP allows Receiver output display video instead of graphic image (When video mute or disconnected with video, it will return to OSD from WebGUI), USB over IP allows the selected device to get hold of the USB control right and Serial over IP is to set RS-232's baud rate setting.

System Network **Functions**

Video over IP

Enable Video over IP

Apply

USB over IP

Enable USB over IP

Apply

Serial over IP

Enable Serial over IP

Baudrate: 115200 ▼

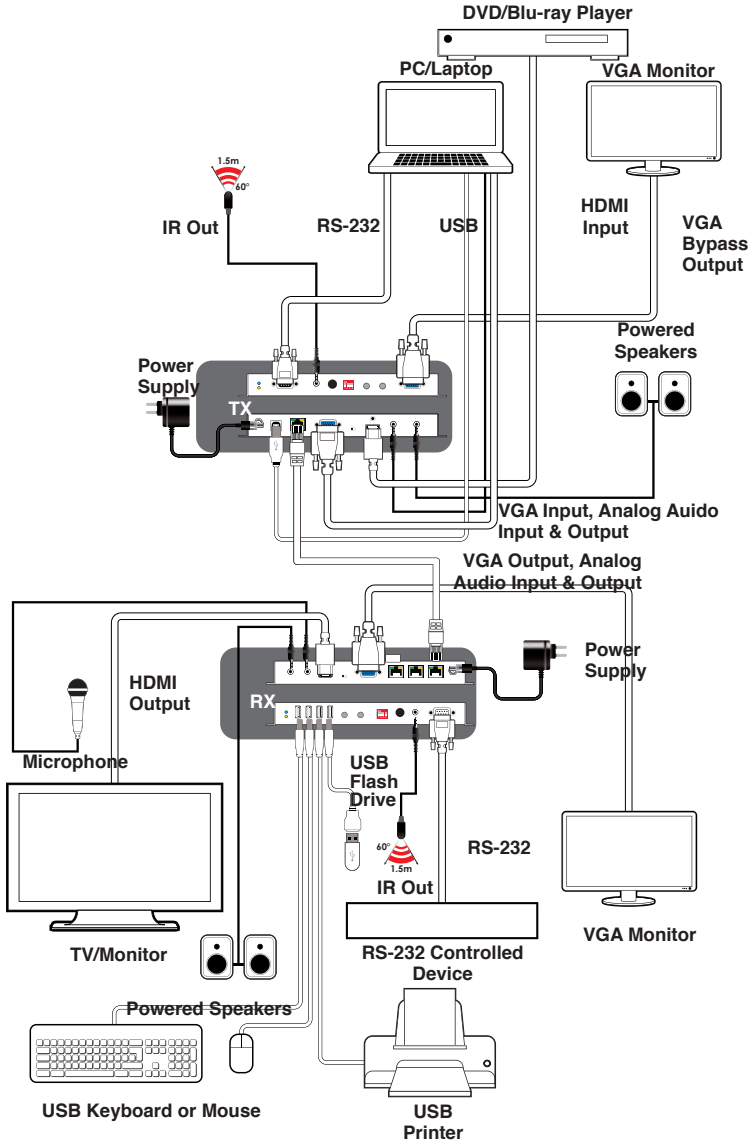
Data bits: 8 ▼

Parity: None ▼

Stop bits: 1 ▼

Apply

7. CONNECTION DIAGRAM



8. SUPPORT TIMING & AUDIO TABLE

*HDMI Input: Up to 4096x2160p 60Hz YUV420

*HDMI Output: HDMI input of 4096x2160 @60 YUV4:2:0 will automatically converts to output of 4096x2160@30(RGB)

*VESA VGA up to 1920x1200 60Hz Pixel clock < 150MHz

INPUT RESOLUTION	VGA	HDMI
640x480p@60	√	√
720x480p@59/60		√
720x576p@50	√	√
800x600p@60	√	√
1024x768p@60	√	√
1280x720p@50/59/60	√	√
1280x768p@60		√
1280x960p@60	√	√
1280x1024p@60	√	√
1440x480p@60		√
1440x576p@50		√
1366x768p@60	√	√
1600x1200p@60RB	√	√
1920x1080p@24/25		√
1920x1080p@50/59/60	√	√
1920x1200p@60RB	√	√
1920x1080i@50/59/60		√
3840x2160p@24/25/30		√
3840x2160p@50/60_YUV420		√
4096x2160p@24/25/30		√
OUTPUT RESOLUTION	VGA	HDMI

640x480p@60	✓	✓
720x480p@59/60		✓
720x576p@50	✓	✓
800x600p@60	✓	✓
1024x768p@60	✓	✓
1280x720p@50/59/60	✓	✓
1280x768p@60		✓
1280x960p@60	✓	✓
1280x1024p@60	✓	✓
1440x480p@60		✓
1440x576p@50		✓
1366x768p@60	✓	✓
1600x1200p@60RB	✓	✓
1920x1080p@24/25		✓
1920x1080p@50/59/60	✓	✓
1920x1200p@60RB	✓	✓
1920x1080i@50/59/60		✓
3840x2160p@24/25/30		✓
3840x2160p@25/30		✓
4096x2160p@24/25/30		✓

Audio Table

Unicast:

Audio input connection	Audio output
TX HDMI In	RX HDMI Out & RX Line Out
TX Line In	RX Line Out
TX HDMI In & TX Line In	RX Line Out
RX MIC In	None
RX MIC In & TX Line In (TX Line In is used for analog audio switch)	TX Line Out

Multicast:

Audio input connection	Audio output
TX HDMI In	RX HDMI Out & RX Line Out
TX Line In	RX Line Out
TX HDMI In & TX Line In	RX Line Out
RX MIC In	None
RX MIC In & TX Line In (TX Line In is used for analog audio switch)	None

Audio Format Support List

Dolby
Dolby Digital 5.1 ch
Dolby Digital Plus
Dolby TrueHD
DTS
DTS 5.1 ch
DTS-HD High Resolution Audio
DTS-HD Master Audio

Linear PCM
Linear PCM 2 ch 44.1 kHz
Linear PCM 2 ch 88.2 kHz
Linear PCM 2 ch 176.4 kHz
Linear PCM 2 ch 32 kHz
Linear PCM 2 ch 48 kHz
Linear PCM 2 ch 96 kHz
Linear PCM 2 ch 192 kHz
Linear PCM 5.1 ch 44.1 kHz
Linear PCM 5.1 ch 88.2 kHz
Linear PCM 5.1 ch 176.4 kHz
Linear PCM 5.1 ch 32 kHz
Linear PCM 5.1 ch 48 kHz
Linear PCM 5.1 ch 96 kHz
Linear PCM 5.1 ch 192 kHz
Linear PCM 7.1 ch 44.1 kHz
Linear PCM 7.1 ch 88.2 kHz
Linear PCM 7.1 ch 176.4 kHz
Linear PCM 7.1 ch 32 kHz
Linear PCM 7.1 ch 48 kHz
Linear PCM 7.1 ch 96 kHz
Linear PCM 7.1 ch 192 kHz

9. SPECIFICATIONS

Transmitter	
Input Ports	1 x HDMI 1 x VGA 1 x Audio line in 1 x USB in (USB2.0)
	1 x IR IN
Output Port	1 x CAT5e/6/7 1 x Audio Line out
Other	1 x RS232 (For bypass only) 1 x LAN 1 x IR OUT
IR Frequency	30 ~ 50KHz
Support Resolutions for HDMI input	480i ~ 1080p@24/50/60Hz and 4K2K@60Hz YUV 4:2:0 or 4K2K@30Hz YUV 4:4:4
Support Resolutions for VGA input	1920 x 1200p@60Hz (RB)
Baud Rate	300~115200 bps (default at 115200 bps)
Power Supply	5VDC/2.6A (US/EU standards, CE/FCC/ UL certified)
Chassis Material	Metal
Color	Black
Weight	770g
Dimensions	213(L)x 108(D)x 42(H)mm jack excluded
	213(L)x 118(D)x 42(H)mm jack included
Receiver	
Output Ports	1 x HDMI
	1 x VGA
	1 x Line out
	1 x IR OUT
	2 x USB 1.1 (for keyboard and mouse)

	2 x USB 2.0 (for thumb drive and USB2.0 supported device, the USB camera or external hard disk with USB interface is not supported)
Input Port	1 x CAT5e/6/7 1 x Mic In
Other	1 x RS232 (Bypass only) 3 x LAN 1 x IR IN
IR Frequency	30 ~ 50 kHz
Support Resolutions for HDMI output Support Resolutions for VAG output	480i ~ 1080p@24/50/60Hz and 4K2K@30Hz YUV 4:4:4 1920x1200P@60Hz (RB)
Baud Rate	300~115200 bps (default at 115200bps)
Power Supply	5VDC/ 4A (US/EU standards, CE/FCC/ UL certified)
Chassis Material	Metal
Color	Black
Weight	678g
Dimensions	213.5(L)x 108(D)x 25(H)mm jack ex- cluded 213.5(L)x 118(D)x 25(H)mm jack in- cluded



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