

KanexPro®

WP-HDBTKVM3

Double Gang. 2x1 HDMI® & USB 2.0 Wall Plate Switcher over HDBaseT™ & PoH



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Version: WP-HDBTKVM3_2019V1.0

Preface

Read this user manual carefully before using the product. Pictures shown in this manual are for reference only. Different models and specifications are subject to real product.

This manual is only for operation instruction, please contact the local distributor for maintenance assistance. The functions described in this version were updated till July, 2018. In the constant effort to improve the product, we reserve the right to make functions or parameters changes without notice or obligation. Please refer to the dealers for the latest details.

FCC Statement

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. It 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 in a commercial installation.

Operation of this equipment in a residential area is likely to cause interference, in which case the user at their own expense will be required to take whatever measures may be necessary to correct the interference.

Any changes or modifications not expressly approved by the manufacture would void the user's authority to operate the equipment.



SAFETY PRECAUTIONS

To ensure the best performance from the product, please read all instructions carefully before using the device. Save this manual for further reference.

- Unpack the equipment carefully and save the original box and packing material for possible future shipment.
- Follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- Do not dismantle the housing or modify the module. It may result in electrical shock or burn.
- Using supplies or parts not meeting the products' specifications may cause damage, deterioration or malfunction.
- Refer all servicing to qualified service personnel.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Do not put any heavy items on the extension cable in case of extrusion.
- Do not remove the housing of the device as opening or removing housing may expose you to dangerous voltage or other hazards.
- Install the device in a place with fine ventilation to avoid damage caused by overheat.
- Keep the module away from liquids.
- Spillage into the housing may result in fire, electrical shock, or equipment damage. If an object or liquid falls or spills on to the housing, unplug the module immediately.
- Do not twist or pull by force ends of the optical cable. It can cause malfunction.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.
- Unplug the power cord when left unused for a long period of time.
- Information on disposal for scrapped devices: do not burn or mix with general household waste, please treat them as normal electrical wastes.

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1. Product Introduction

The KanexPro EXT-HDBTKVM3 is a US Decora style double-gang, 2x1 HDMI wall plate transmitter and receiver set designed to switch two HDMI inputs with one USB 2.0 input to a remote display or a projector up to 131ft.(40m) at 4K/60 and 330ft.(100m) at 1080p/60 video and audio over single cat5e/6/7 cable. The outputs are via HDBaseT port.

Easy to Control and Switch Inputs

The wall plate transmitter can be easily controlled by selecting the “Source /Auto” button on the front panel. By holding the button for 3 seconds, it will go under auto switching mode and will auto-detect HDMI inputs when connected. It also supports CEC, which can turn the DISPLAY ON/OFF right from the button on front panel for the far-end display device, and it can be programmed by IR learning or RS232 command to ensure the compatibility with various display devices.

Receiver Inclusive with two USB 2.0 ports and KVM support

The EXT-HDBTKVM3 includes the end point for connecting it over ethernet to the receiver, which then connects to the 4K display. The receiver has multi-port USB 2.0 which can be used as a KVM or for VTC applications.

PoH – A Safe and Regulated Power for Sustainability

The output from the wall plate is via HDBaseT port. The receiver powers the wall plate remotely. Power over HDBaseT (PoH) offers voltage protection when sent over ethernet without burning the other side of devices or receivers. Our wall plate kit comes with only one power supply, which means that, it can be powered from the receiver side saving installers time and added cost to installing a power outlet.

Applications:

USB for Conferencing in AV & Digital Signage

Perfect for conference rooms, boardrooms and digital signage applications where the extender offers two USB 2.0 ports allowing touch-panel screens, cameras, USB Mic and SOFTCODEC systems to be used for video conferencing or KVM functionality.

1.1 Features

- US Decora Style Dual – Gang 2 X HDMI wall plate & USB 2.0
- Extend USB 2.0, 4K UHD video and audio up to 100 meters over HDBaseT
- Automatically detects active input when source is connected
- Driverless USB 2.0 for webcam video emulation and AEC speakerphone audio
- USB 2.0 also supports touch-screen functionality and keyboard-video-mouse (KVM)
- Distribute 4Kx2K@30Hz & 60Hz signals up to 4:2:0
- Supports standard 1080p & WUXGA resolutions
- HDCP 2.2 compliant
- Supports bi-directional RS232 pass-through w/ HDBaseT connection
- CEC to turn on/off display by the DISPLAY ON/OFF button
- Bi-directional power via PoH from Tx to Rx or vice versa
- Firmware upgrade via Micro-USB port

1.2 Package List

Wall plate transmitter	<ul style="list-style-type: none">● 1x Wall plate Transmitter● 4x Mounting Screws● 1x 2-pin Terminal Block● 1x 3-pin Terminal Block
Receiver	<ul style="list-style-type: none">● 1x 100m Receiver● 2x Mounting Ears● 4x Mounting Screws● 4x Plastic Cushions● 1x RS232 Cable (3-pin to DB9)● 1x Power Adaptor (24V DC 1.25A)
	<ul style="list-style-type: none">● 1 x User Manual

Note: Please contact your distributor or KanexPro immediately at support@kanexpro.com if any damage or defect in the components is found.

2. Specification

2.1 Transmitter

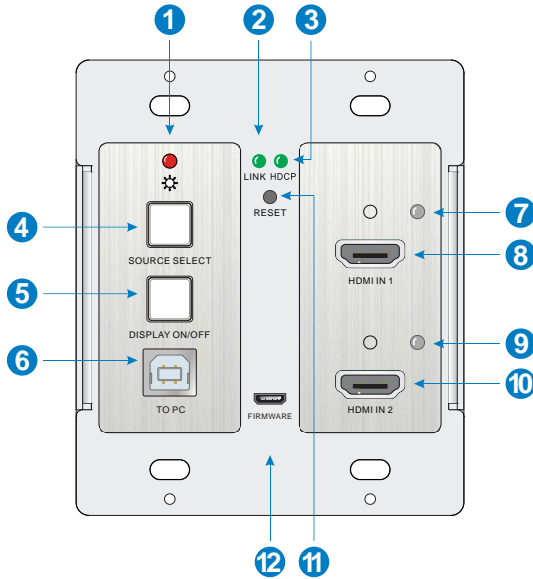
Input	
Input	(2) HDMI
Input Connector	(2) Type-A female HDMI
Output	
Output	(1) HDBT, (1) TO PC, (1) DC OUT
Output Connector	(1) RJ45, (1) Type-B USB, (1) 2-pin terminal block
Control	
Control Port	(1) FIRMWARE, (1) RS232
Control Connector	(1) Micro-USB, (1) 3-pin terminal block
General	
Bandwidth	10.2Gbps
HDMI Version	1.4
HDCP Version	2.2
Video Resolution	Up to 4K×2K@60Hz 4:2:0
Transmission Mode	HDBaseT
Transmission Distance	1080P/4K@60Hz ≤ 328ft/100m
Power Supply	Powered from the receiver by CATx cable.
Operation Temperature	-10°C ~ +55°C
Storage Temperature	-25°C ~ +70°C
Relative Humidity	10%-90%
Dimensions (W*H*D)	3.5" x 4.0" x 1.7"
Net Weight	0.55 lbs. (250g)

2.2 Receiver

Input	
Input	(1) HDBT, (3) USB
Input Connector	(1) RJ45, (3) Type-A USB
Output	
Output	(1) HDMI
Output Connector	(1) Type-A female HDMI
Control	
Control port	(1) FIRMWARE, (1) RS232
Control Connector	(1) Micro-USB, (1) 3-pin terminal block
General	
Bandwidth	10.2Gbps
HDMI Version	1.4
HDCP Version	2.2
Video Resolution	Up to 4K×2K@60Hz 4:2:0
Transmission Mode	HDBaseT
Transmission Distance	1080P/4K@60Hz ≤ 328ft/100m
AC Adapter Input Power	100V~240V AC, 50/60Hz
Input Power	24V DC 1.25A
Power Consumption	23W (Max, work with the transmitter)
Operation Temperature	-10°C ~ +55°C
Storage Temperature	-25°C ~ +70°C
Relative Humidity	10%-90%
Dimension (W*H*D)	136mm x 25.5mm x 95mm
Net Weight	365g

3. Panel Description

3.1 Transmitter Front Panel

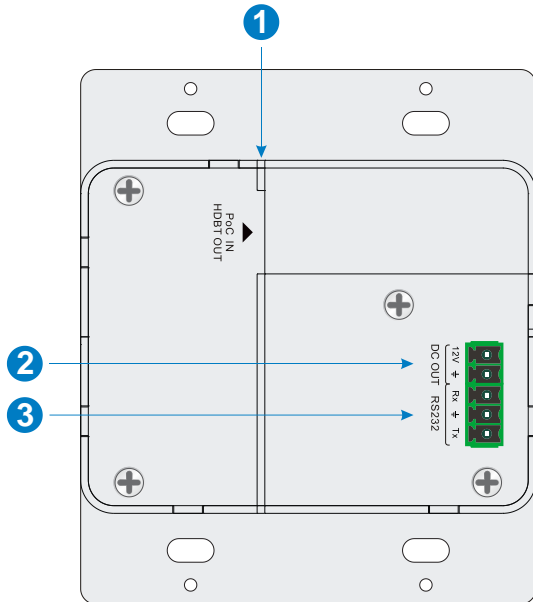


- ① **POWER LED:** The LED illuminates red when power is applied.
- ② **LINK LED:** The LED illuminates green when the transmitter is successfully connected to the receiver are by a CATx cable.
- ③ **HDCP LED:**
 - The LED illuminates green when the HDMI signal is transmitted with HDCP.
 - The LED blinks green when the HDMI signal is transmitted without HDCP.
 - The LED turns off when there is no HDMI signal input.
- ④ **SOURCE SELECT:** Press the button to select the next input source, or press and hold it at least 3 seconds to enable auto-switching mode. For more details, please refer to the [5.1 Signal Switching](#) on the page 10.
- ⑤ **DISPLAY ON/OFF:** Press the button to turn on/off the display. For more details, please refer to the [5.2 Display Control](#) on the page 10.
- ⑥ **TO PC:** Type-B USB port to connect a PC or other device needs to be controlled.
- ⑦ **HDMI IN 1 LED:** The LED illuminates orange when the **HDMI IN 1** port is connected to a source device, and it will turn green once the device is selected as

input source.

- ⑧ **HDMI IN 1:** Type-A HDMI port to connect a HDMI source.
- ⑨ **HDMI IN 2 LED:** The LED illuminates orange when the **HDMI IN 2** port is connected to a source device, and it will turn green once the device is selected as input source.
- ⑩ **HDMI IN 2:** Type-A HDMI port to connect a HDMI source.
- ⑪ **RESET:** Press the recessed button to reboot this unit.
- ⑫ **FIRMWARE:** Micro-USB port for firmware upgrade.

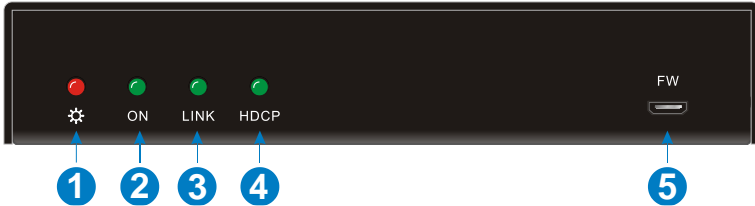
3.2 Transmitter Rear Panel



- ① **HDBT OUT (PoC IN):** RJ45 HDBaseT output port to connect to the **HDBT IN** port of the receiver by a CATx cable. It supports 24V PoC to enable the transmitter can be powered from receiver.
- ② **DC OUT:** 2-pin terminal block to connect a compatible device which needs to be powered.

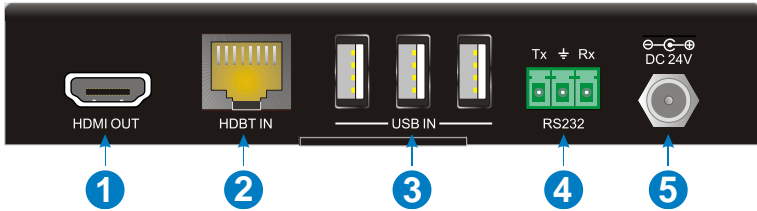
- ③ **RS232:** 3-pin terminal block to connect a control device (such as PC) to send RS232 command to control this unit, or to connect a third party device which needs to be controlled by RS232 pass-through. For more details, please refer to the **6. RS232 Control** on the page 11.

3.3 Receiver Front Panel



- ① **POWER LED:** The LED illuminates red when power is applied.
- ② **ON LED:** The LED blinks green when the receiver is in the working status.
- ③ **LINK:** The LED illuminates green when the receiver is successfully connected to the transmitter are by a CATx cable.
- ④ **HDCP LED:**
- The LED illuminates green when the HDMI signal is transmitted with HDCP.
 - The LED blinks green when the HDMI signal is transmitted without HDCP.
 - The LED turns off when there is no HDMI signal input.
- ⑤ **FW:** Micro-USB port for firmware upgrade.

3.4 Receiver Rear Panel



- ① **HDMI OUT:** Type-A HDMI port to connect a display.
- ② **HDBT IN:** RJ45 HDBaseT input port to connect to the **HDBT OUT** port on the transmitter by a CATx cable.
- ③ **USB IN:** Three type-A USB ports to connect HID devices (e.g. mouse, keypad and so on) to control the device which is connected to the **TO PC** port of the transmitter.
- ④ **RS232:** 3-pin terminal block to connect a control device (such as PC), or to connect a third party device which needs to be controlled by RS232 pass-through. For more details, please refer to the **6. RS232 Control** on the page 11.
- ⑤ **DC 24V:** Power port to connect the 24V DC power adaptor.

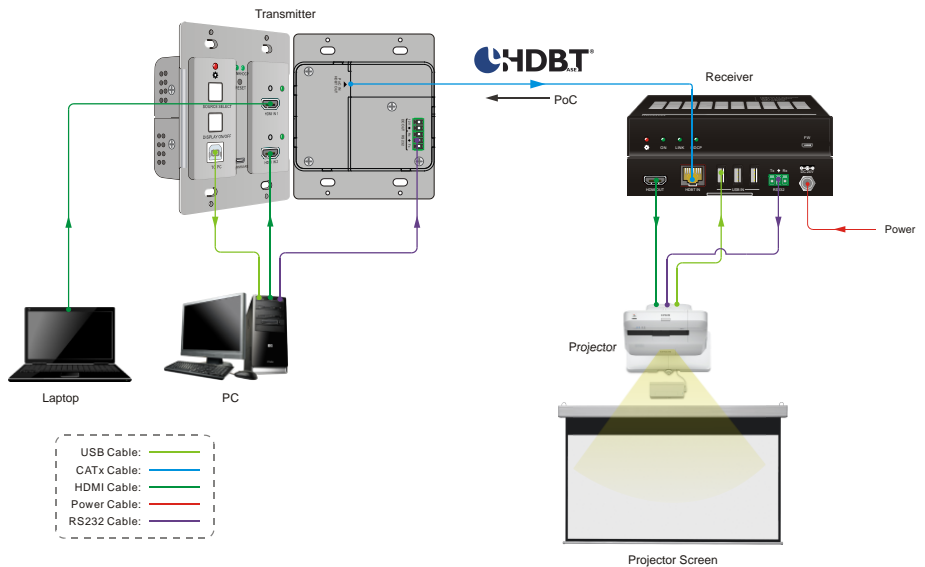
4. System Connection

4.1 Usage Precaution

- Make sure all components and accessories included before installation.
- System should be installed in a clean environment with proper temperature and humidity.
- All of the power switches, plugs, sockets, and power cords should be insulated and safe.
- All devices should be connected before power on.

4.2 System Diagram

The following diagram illustrates typical input and output connection that can be utilized with the extender:



5. Button Control

5.1 Signal Switching

- 1) Press the **SOURCE SELECT** button to switch to next source device, and then the corresponding input LED will turn green.
- 2) Press and hold the **SOURCE SELECT** button at least 3 seconds to enable auto-switching mode, and it abides by the following principles:

- **New input:**

Once a new input signal detected, the transmitter will automatically switch to this new signal.

- **Signal removing**

Once removing the current display signal, the transmitter will automatically switch to another active HDMI input.

- **Rebooting device**

The transmitter can save the last configuration before losing power. If the last switching mode is auto-switching, the transmitter will automatically enter auto-switching mode once rebooted, then detect all inputs and memorize their connection status for future rebooting using. If the last selected input source is still available, the transmitter will switch to this input. Otherwise, it will switch to the first available active input source starting at **HDMI IN 1**.

- **Exit auto-switching mode**

The input source would remain the same when press and hold the **SOURCE SELECT** button again to exit the auto mode.

5.2 Display Control

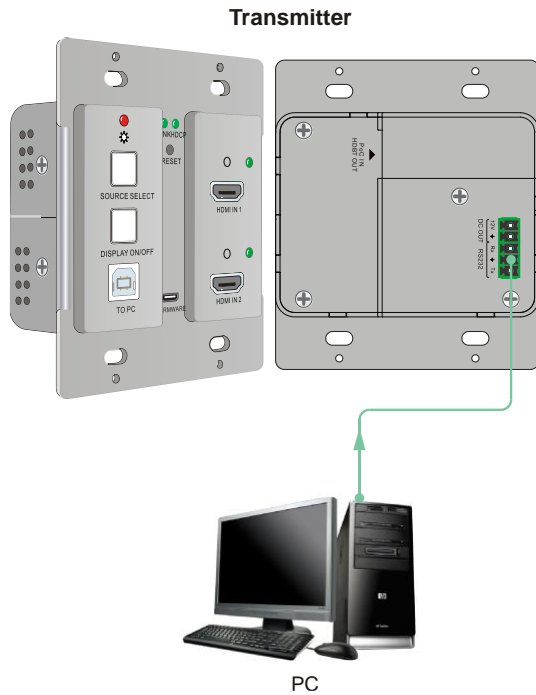
- 1) Press the **DISPLAY ON/OFF** button to turn on/off the display.
- 2) The **DISPLAY ON/OFF** can be customized by sending RS232 commands for compatibility with various displays. For more details, please refer to the **6.3.4 Button Control User-defined** on the page 16.

6. RS232 Control

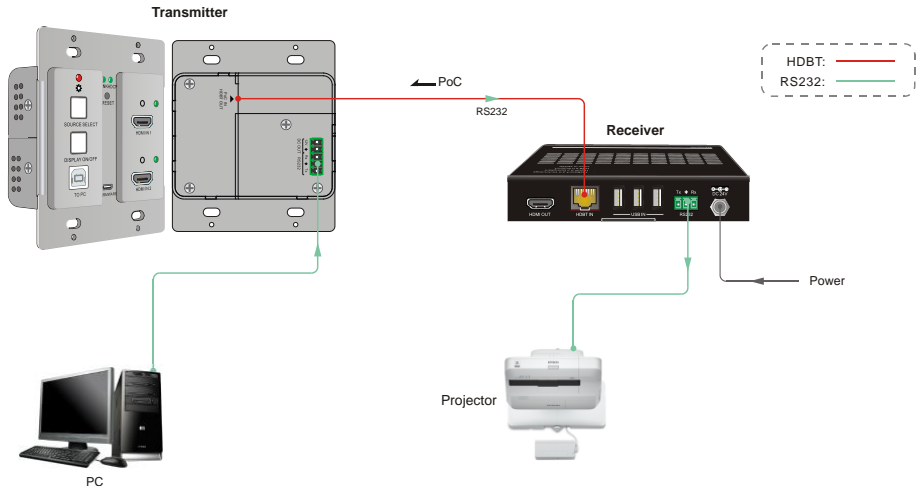
6.1 RS232 Connection

According to the RS232 control mode, there are three types of RS232 connection for different applications.

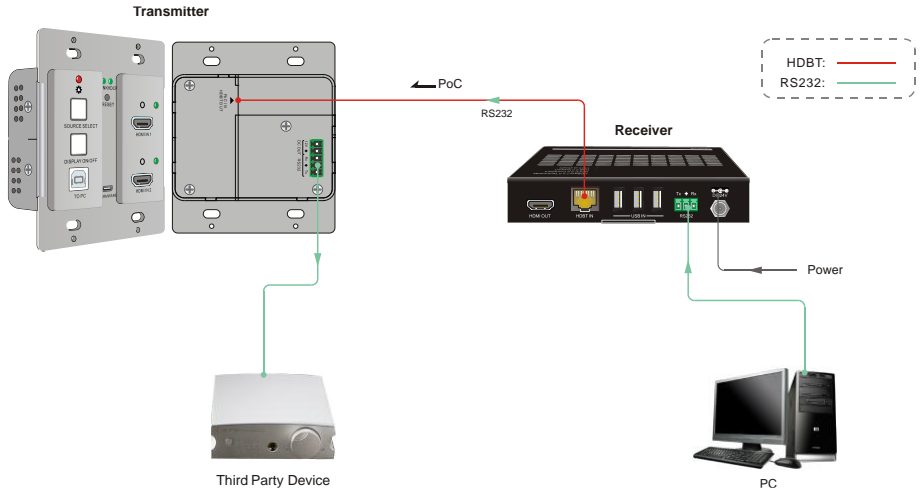
- ① When only controlling the local transmitter, please connect a control device (e.g. PC) to the RS232 port of the transmitter, the connection diagram shown as below:



- ② When control the far-end third party device from local control device (e.g. PC), please connect the PC to the RS232 port of the transmitter, and then please connect the third party device (e.g. projector) to the RS232 port of receiver. The connection diagram shown as below:



- ③ When control the local third party device from far-end control device (e.g. PC), please connect the PC to the RS232 port of the receiver, and then please connect the third party device to the RS232 port of transmitter. The connection diagram shown as below:



6.2 RS232 Control Software

After set all needed input and output devices according to the RS232 connection diagram, please install the RS232 control software into the control PC to send RS232 command.

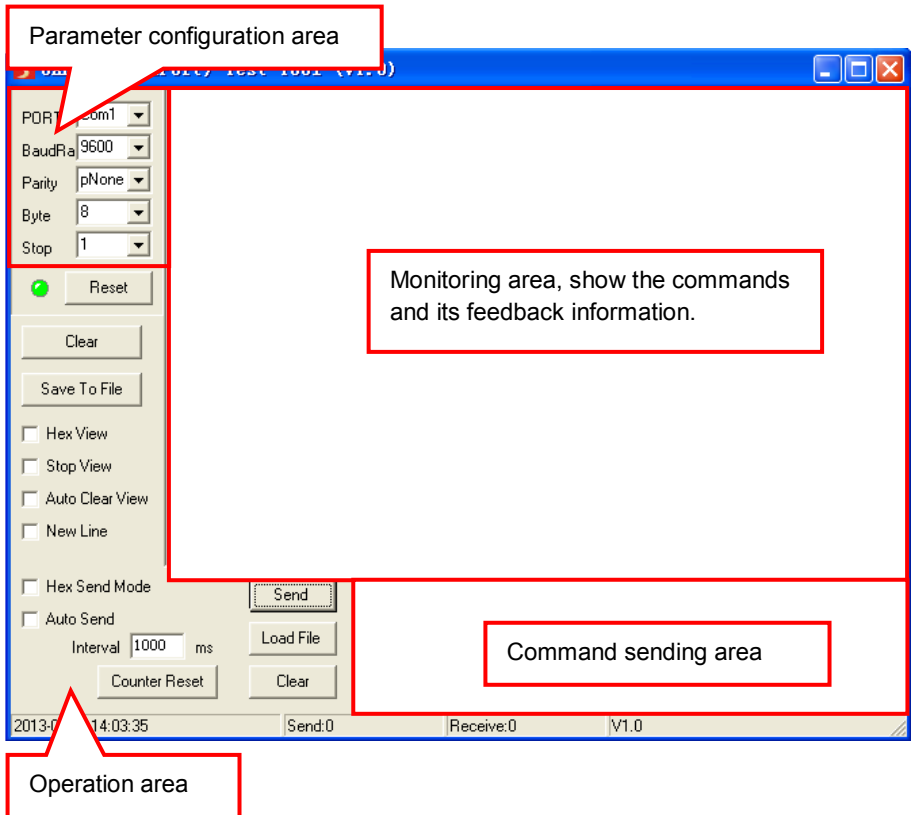
- **Installation:** Copy the control software file to the control PC.
- **Uninstallation:** Delete all the control software files in corresponding file path.

Here take the software **CommWatch.exe** as an example.

First, please double-click the following icon:



Then, the interface of the control software is showed as below:



Please set the parameters of COM number, bound rate, data bit, stop bit and the parity bit correctly, then the RS232 commands can be sent in the Command Sending Area.

Baud rate: 2400, 4800, 9600, 19200, 38400, 57600 or 115200.

Data bit: 8.

Stop bit: 1.

Parity bit: none.

6.3 RS232 Command

Beside the button control on the front panel, the transmitter can be controlled by sending the below commands.

Baud rate: 9600.

Data bit: 8.

Stop bit: 1.

Parity bit: none.

6.3.1 Signal Switching

Command	Function	Feedback Example
50701%	Switch to HDMI IN 1 input.	SWITCH TO HDMI1
50702%	Switch to HDMI IN 2 input.	SWITCH TO HDMI2
50710%	Enable auto-switching mode.	AUTO SWITCHING
50711%	Disable auto-switching mode.	MANUAL SWITCHING
50712%	Get the signal switching mode.	AUTO SWITCHING
		MANUAL SWITCHING

6.3.2 CEC Commands

Note: The display must support CEC in order for these to work.

Command	Function	Feedback Example
50730%	Volume up the display	CEC VOLUME INCREASE
50731%	Volume down the display	CEC VOLUME DECREASE
50732%	Mute the display	CEC VOLUME MUTE
50733%	Display ON	CEC DISPLAY ON
50734%	Display OFF	CEC DISPLAY OFF

6.3.3 HDCP Command

Command	Function	Feedback Example
50709%	Get the HDCP mode	HDCP: ON
		HDCP: OFF
50713%	Get the HDCP status	HDCP1.4
		HDCP2.2
		NO HDCP

6.3.4 Button Control User-defined

When the display is incompatible with the extender, the **DISPLAY ON/OFF** button can be defined to send control characters by following command format.

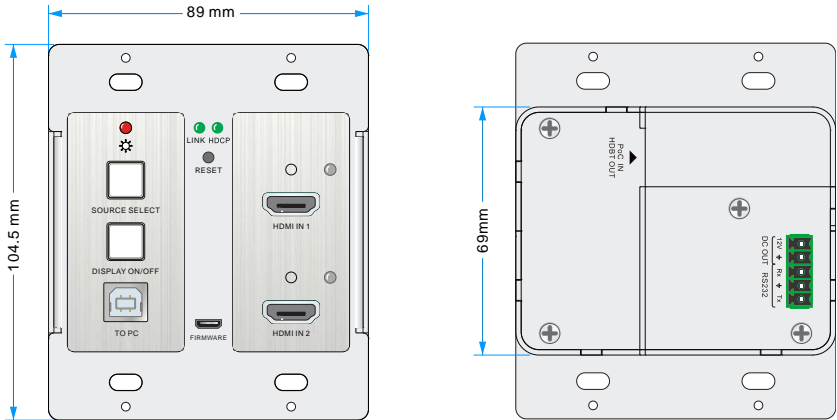
Command Format	Function	Command Example
/+kb: xxxx	k=0, Set the DISPLAY ON k=1, Set the DISPLAY OFF xxxx: ASCII characters b=0, Baud rate is 2400 b=1, Baud rate is 4800 b=2, Baud rate is 9600 b=3, Baud rate is 19200 b=4, Baud rate is 38400 b=5, Baud rate is 57600 b=6, Baud rate is 115200	/+02:abc123
		Set the DISPLAY ON to send the ASCII characters abc123 .
/-kb:xx xx xx xx	k=0, Set the DISPLAY ON k=1, Set the DISPLAY OFF xx xx xx xx: HEX characters b=0, Baud rate is 2400 b=1, Baud rate is 4800 b=2, Baud rate is 9600 b=3, Baud rate is 19200 b=4, Baud rate is 38400 b=5, Baud rate is 57600 b=6, Baud rate is 115200	/-12:30 31 32 33
		Set the DISPLAY OFF to send the HEX characters 30 31 32 33 .

6.3.5 Factory Default

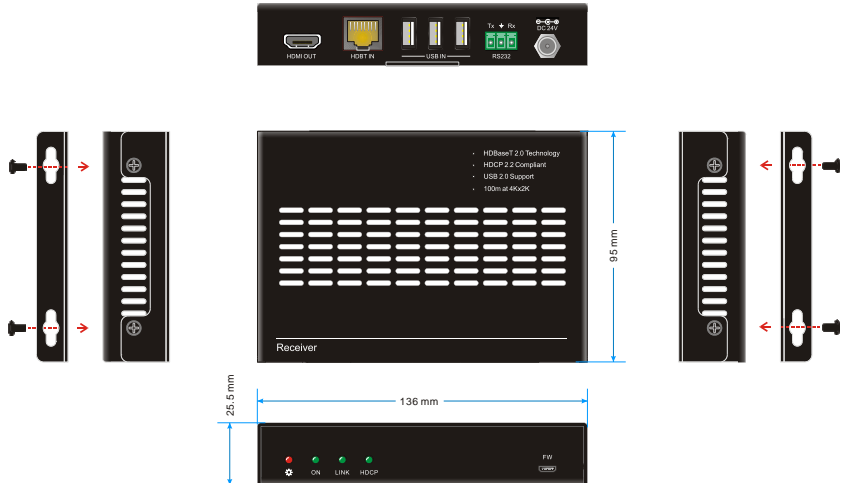
Command	Function	Feedback Example
50617%	Restore factory default	FACTORY RESET
50699%	Get firmware version	VERSION Vx.x.x

7. Panel Drawing

7.1 Transmitter



7.2 Receiver



8. Troubleshooting & Maintenance

Problems	Potential Causes	Solutions
Color losing or no video signal output on the HDMI display.	The cables may be not connected correctly or maybe is broken.	Check the cables are properly connected and in working condition.
No HDMI signal output in the device while local HDMI input is in normal working status.		
Output image with white noise.		
POWER indicator doesn't work or no respond to any operation.	Loose or failed power cord connection.	Double check the power cord connection.

Note: If your problem still remains after following the above troubleshooting steps, please contact our support team at support@kanexpro.com Or call your local dealer or distributor for further assistance.

9. Customer Service

The return of a product to our Customer Service implies the full agreement of the terms and conditions hereinafter. These terms and conditions may be changed without prior notice.

1) Warranty

The limited warranty period of the product is fixed three years.

2) Scope

These terms and conditions of Customer Service apply to the customer service provided for the products or any other items sold by authorized distributor only.

3) Warranty Exclusion

- Warranty expiration.
- Factory applied serial number has been altered or removed from the product.
- Damage, deterioration or malfunction caused by:
 - ✓ Normal wear and tear.
 - ✓ Use of supplies or parts not meeting our specifications.
 - ✓ No certificate or invoice as the proof of warranty.
 - ✓ The product model showed on the warranty card does not match with the model of the product for repairing or had been altered.
 - ✓ Damage caused by force majeure.
 - ✓ Servicing not authorized by distributor.
 - ✓ Any other causes which does not relate to a product defect.
- Shipping fees, installation or labor charges for installation or setup of the product.

4) Documentation:

Customer Service will accept defective product(s) in the scope of warranty coverage at the sole condition that the defect has been clearly defined, and upon reception of the documents or copy of invoice, indicating the date of purchase, the type of product, the serial number, and the name of distributor.

Remarks: Please contact your local distributor for further assistance or solutions.