# KanexPro™

# 4K HDBaseT Splitter 1x4 With PoE



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**Version: 4K HDBaseT Splitter 1x4 with PoE_2014V1.0**

# SAFETY PRECAUTIONS

To insure the best 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.

**NOTICE:**

1. Pictures shown in this manual are for reference only; different model and specifications are subject to real product.

2. The item PoE/ PoC is short for Power over Ethernet or Cable.

3. The receiver works with HDBaseT Splitter can only be HDMI Twisted Pair PoC Receiver.

4. The item "far-end" means the device (e.g. display device, 3rd party RS232 device etc.) connected with HDMI Twisted Pair PoC Receiver.

# KanexPro™

**SP-HDBT1X4**

# Contents

# 1. Introduction

## 1.1 Introduction to HDBaseT Splitter

The KanexPro one HDMI input with four output over HDBaseT is a half-rack width distribution amplifier, which reliably broadcasts one HDMI source signal to four Ultra HD 4K displays over single CAT6. It can also be daisy – chained to support up to 12-displays without losing any signal integrity using HDBaseT technology.

The SP-HDBT1X4 is HDCP compliant supporting 1080p/60 and Ultra HD 4K resolutions. To make better integration, this DA provides integrator- friendly features such as POE (Power over Ethernet), EDID management, local HDMI output and RS-232 control for 3rd party control systems.

The SP-HDBT1X4 is ideally used for ultra HD signal transmission or broadcasting digital signage and large scale control centers where HD & 4K signals can be cascaded up to 12 displays on a 230 feet (70m) run over shielded CAT6.

## 1.2 Features

- Broadcast one Input to four 4K UHD displays
- Extend up to 70 meters over single CAT6
- HDBaseT outputs supports PoE - No power supply needed on the receivers
- Built-in DIP switch for EDID management
- Bandwidth up to 10.2 Gbps
- Supports computer video up to 1920x1200, including HDTV 1080p/60 & 4K@30Hz
- Local HDMI output for monitor support
- Daisy-chainable to up to 12 displays
- Includes locking HDMI connectors
- Control via RS-232 & IR loop-in
- Firmware upgradeable via built-in USB
- Rack mountable metal enclosure with rack ears
- Backed by KanexPro's 3-Year full parts & labor warranty

## 1.3 Package List

➢ 1 x HDBaseT Splitter
➢ 2 x Mounting ears (separate from HDBaseT Splitter)
➢ 8 x Screws
➢ 1 x 3.5mm Male-male Audio cable (used for IR signal cascade)

- ➤ 1 x RS232 cable (3-pin captive connector to DB9)
- ➤ 1 x RS232 cable (connect 2 3-pin captive connectors for cascading)
- ➤ 4 x Plastic cushions
- ➤ 1 x Power Cord
- ➤ 1 x Power Adapter (DC 24V)
- ➤ 1 x User Manual

**Notes**：Please confirm if the product and the accessories are all included, if not, please contact with the dealers.

## 2. Panel Description

### 2.1 Front Panel



| No. | Name | Description |
|-----|------|-------------|
| ① | Power indicator | Illuminate red once powered on |
| ② | FIRMWARE | USB port, used for firmware update. |
| ③ | INPUT | Iluminate green when there is input signal, remain off when there is no input signal |
| ④ | OUTPUTS | HDMI: <br> ➤ illuminate green when the HDMI source signal is with HDCP <br> ➤ blink green when the HDMI source signal is without HDCP <br> ➤ turn off when there is no input HDMI signal |

| | | LINK: indicate linking status of the four HDBT outputs, corresponding to the four HDBT sockets separately |
|---|---|---|
| | | ➢ illuminate green when the corresponding HDBaseT output is connected to HDBASE70POER successfully |
| | | ➢ turn off when there is no HDBASE70POER connected to the correspongding socket. |
| | | HDCP: HDCP compliance indicator, correspondence with the receivers connected to the four HDBT ports |
| | | ➢ illuminate green when the corresponding receiver is with HDCP |
| | | ➢ blink green when the corresponding receiver is without HDCP |
| | | ➢ remain off when there is no receiver connected to the corresponding port |

**Note:** Pictures shown in this manual are for reference only; different model and specifications are subject to real product.

## 2.2 Rear Panel
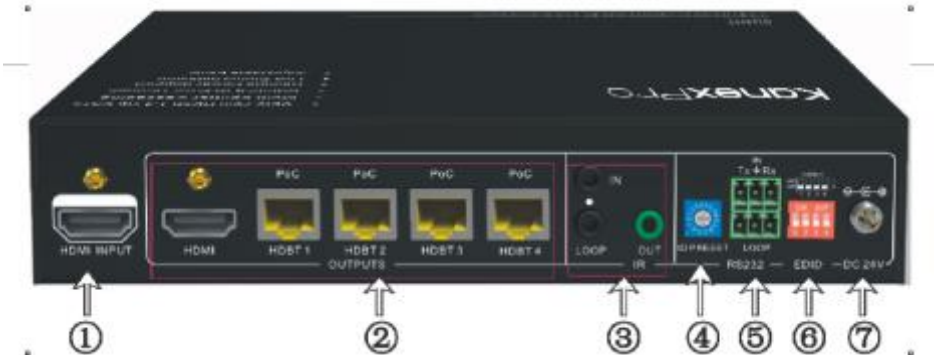


| No. | Name | Description |
|---|---|---|
| ① | HDMI INPUT | Connect with HDMI source device such as DVD/ Blu-ray |
| ② | OUTPUTS | ➢ HDMI: Connect to a HDMI display or cascade HDMI AV signal to other displayers by connecting to the HDMI INPUT port of the other HDBaseT Splitter |
| | | ➢ HDBT: HDBT output ports with PoC, 4 in total, connect with |

| | | |
|---|---|---|
| | | IR receivers to transmit HDMI signal |
| ③ | IR | ➢ IN: Connect with IR Receiver to receive IR signal from IR Emitter. <br><br> ➢ LOOP: Cascade IR control signal to another HDBT Splitter by connecting to its IR IN socket <br><br> ➢ OUT: Connect with IR emitter to emit the IR signal received from the receiver side. |
| ④ | ID PRESET | Assign ID for HDBaseT Splitter to identify every unit, the value may vary from 00~09. <br> After assigning ID, restart HDBaseT Splitter for stable performance. |
| ⑤ | RS232 | ➢ IN: connect with control device through 3-pin captive cable <br><br> ➢ LOOP: cascade RS232 control signal to another splitter by connecting to its RS232 IN port <br><br> Note: Please set the communication protocol parameters correctly, and send RS232 commands referring to instructions in *3.6 RS232 Control.* |
| ⑥ | EDID DIP Switchers | 4-pin EDID DIP switchers, "1" stands for "On", "0" stands for "Off". Dial the switches to change EDID data refering to *4.3 EDID Management*. |
| ⑦ | DC 24V | Plug a 24V DC power adapter into this socket and tighten the screw. |

**Note:** Pictures shown in this manual are for reference only; different model and specifications are subject to real product.

# 3. System Connection

## 3.1 Usage Precautions

1) System should be installed in a clean environment and has a prop temperature and humidity.
2) All of the power switches, plugs, sockets and power cords should be insulated and safe.
3) All devices should be connected before power on.

## 3.2 System Diagram
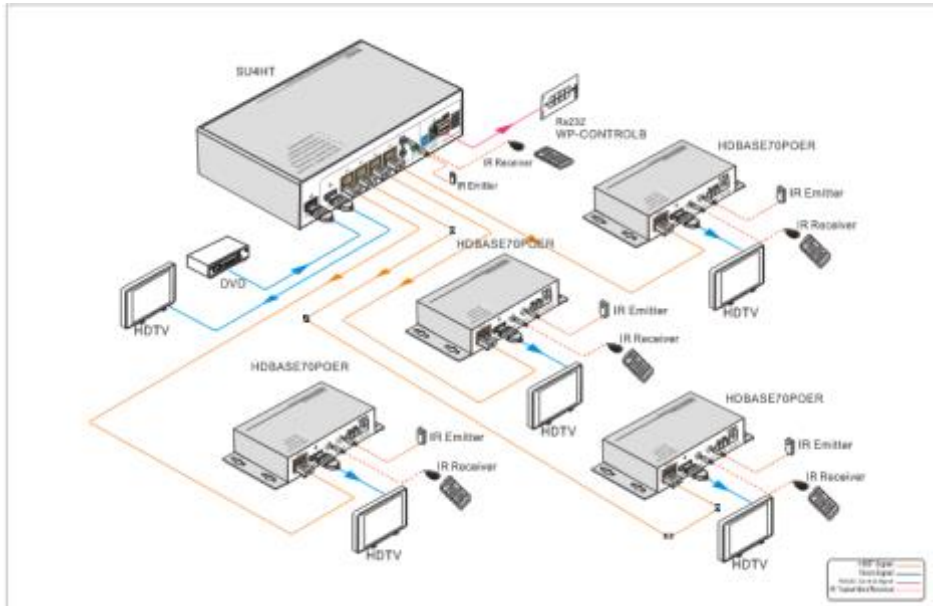


## 3.3 Connection Procedure

**Step1.** Connect a HDMI source device (e.g. Blue-ray DVD) to the **HDMI INPUT** socket of HDBaseT Splitter with HDMI cable.

**Step2.** Connect a HDMI display to **HDMI OUTPUT** socket of HDBaseT Splitter with HDMI cable.

**Step3.** Connect HDMI Twisted Pair PoC Receiver(s) to HDBaseT output port(s) of HDBaseT Splitter with twisted pair.

**Step4.** Connect control device (e.g. PC) to the **RS232 IN** port of HDBaseT Splitter or HDMI Twisted Pair PoC Receiver (bi-directional RS232 control, either end is available).

If you want to cascade RS232 signal among several HDBaseT Splitters through RS232 LOOP, connect the **RS232 LOOP** socket of one of them and the **RS232 IN** socket of the next until all HDBaseT Splitters have been connected.

**Step5.** Connect an IR Receiver to the **IR IN** port, and an IR Emitter to the **IR OUT** port. The IR signal can be transmitted bi-directionally between HDBaseT Splitter and HDMI Twisted Pair PoC Receiver(s).

If you want to cascade IR signal among several HDBaseT Splitters, connect the

**IR LOOP** socket of one of them and the **IR IN** socket of the next until all HDBaseT Splitters have been connected.

**Step6.** Connect a DC 24V power adapter to the power port of HDBaseT Splitter; HDBaseT Splitter can supply power to the HDMI Twisted Pair PoE Receiver with PoE solution.

## 3.4 Cascade Connection

### 3.4.1 Cascade AV Signal

HDMI source signal can be cascaded to several displayers via HDMI OUT/ IN.

Connect the **HDMI OUT** socket of the first HDBaseT Splitter to **HDMI IN** socket of the next until all HDBaseT Splitter have been connected.

HDMI signals delivered within the first HDBaseT Splitter can be outputted to other connected HDBaseT Splitter too.

### 3.4.2 Cascade Control Signal

HDBaseT Splitter supports control cascading via IR LOOP/ RS232 LOOP to enable signal loop output. Users can choose one or multiple cascade methods according to their specified needs.

Here is the cascade connection diagram:
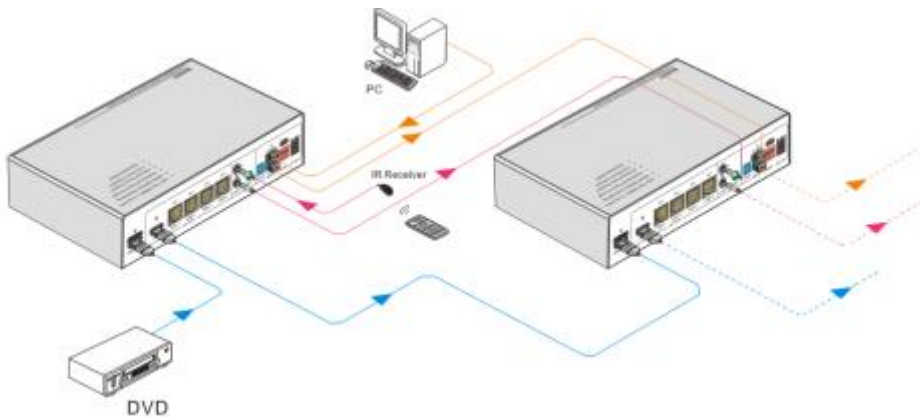
➢ **Cascade through IR Loop**

Connect the **IR LOOP** socket of the first HDBaseT Splitter and the **IR IN** socket of the next until all HDBaseT Splitter have been connected.

Sending IR signals to the IR Receiver connected to the first HDBaseT Splitter will control all cascaded HDBaseT Splitter.

➢ **Cascade through RS232 Loop**

Connect the **RS232 LOOP** socket of the first HDBaseT Splitter and the **RS232 IN** socket of the next until all HDBaseT Splitter have been connected.

Sending RS232 commands will control all cascaded HDBaseT Splitter synchronously.

**Note:** To identify HDBaseT Splitter in cascading, please set a unique ID for each unit when the cascade connection is done.

## 3.5 Twisted Pair Cable Connection

The twisted pair used in Twisted Pair PoC Receiver MUST is a straight-through cable. The connectors can be T568A or T568B, but both sides must be the same.

| TIA/EIA T568A | | | TIA/EIA T568B | |
|---|---|---|---|---|
| Pin | Cable color | | Pin | Cable color |
| 1 | green white | | 1 | orange white |
| 2 | green | | 2 | orange |
| 3 | orange white | | 3 | green white |
| 4 | blue | | 4 | blue |
| 5 | blue white | | 5 | blue white |
| 6 | orange | | 6 | green |
| 7 | brown white | | 7 | brown white |
| 8 | brown | | 8 | brown |
| | | | | |
| 1st Ground | 4--5 | | 1st Ground | 4--5 |
| 2nd Ground | 3--6 | | 2nd Ground | 1--2 |
| 3rd Group | 1--2 | | 3rd Group | 3--6 |
| 4th Group | 7--8 | | 4th Group | 7--8 |
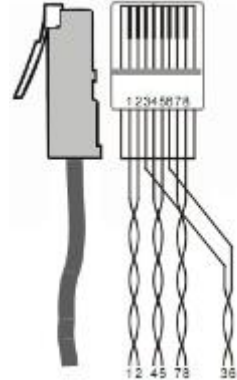
# 4. Control Modes

HDBaseT Splitter has a good application in various occasions, such as computer realm, monitoring, conference room, big screen displaying, television education, command & control center and smart home etc.

HDBaseT Splitter can be controlled via IR, RS232 commands and EDID management.

## 4.1 IR Control

HDBaseT Splitter provides with an IR IN port. Connect an IR receiver to the IR IN port, users can control HDBaseT Splitter/ far-end device from local or control local devices from remote via corresponding IR remote.

### 4.1.1 Control far-end device from local

Control HDBaseT Splitter or far-end display device from local through corresponding IR remote.
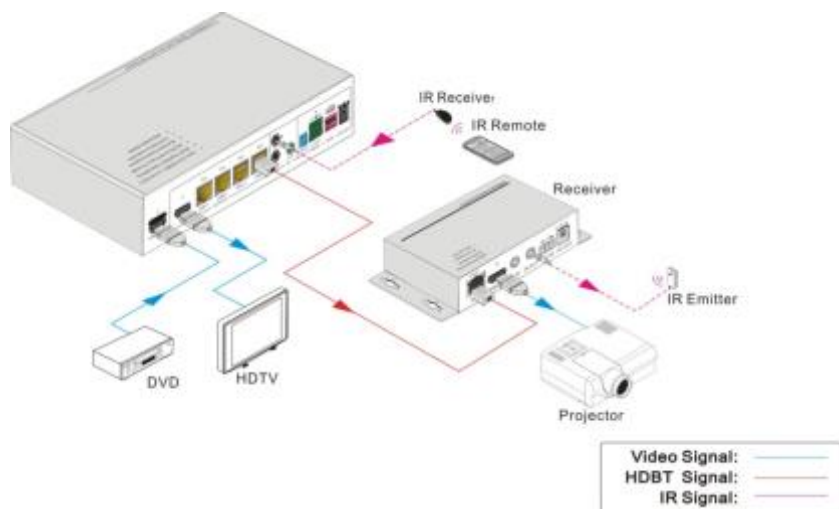
**Figure 4- 1 Control far-end device from local**

### 4.1.2 Control local device from remote

Control HDBaseT Splitter or local device from local via corresponding IR remote.
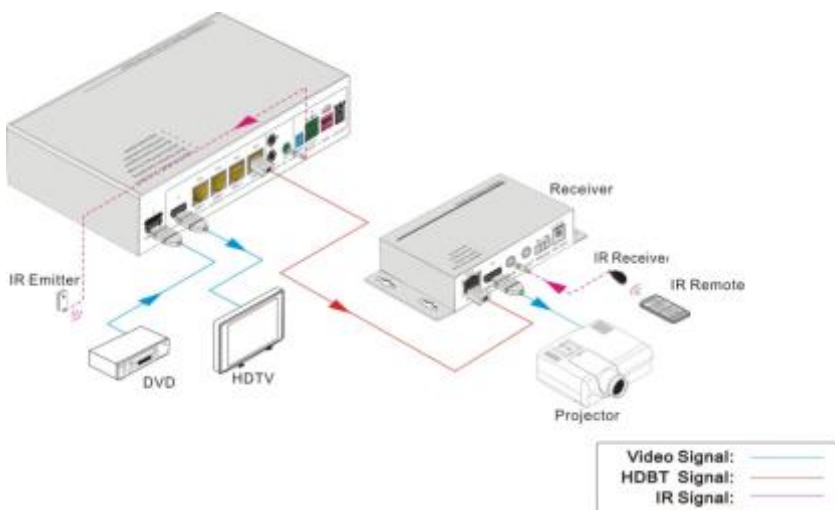
**Figure 4- 2 Control local device from remote**

## 4.2 RS232 Control

As RS232 can be transmitted bi-directionally between HDBaseT Splitter and Twisted Pair PoC Receiver, so it is able to control a third party RS232 device from local or control HDBaseT Splitter from remote. When to control a third party RS232 device, the baud rate of this device should be 9600.

### 4.2.1 Installation/uninstallation of RS232 Control Software

● **Installation** Copy the control software file to the computer connected with HDBaseT Splitter.

● **Uninstallation** Delete all the control software files in corresponding file path.

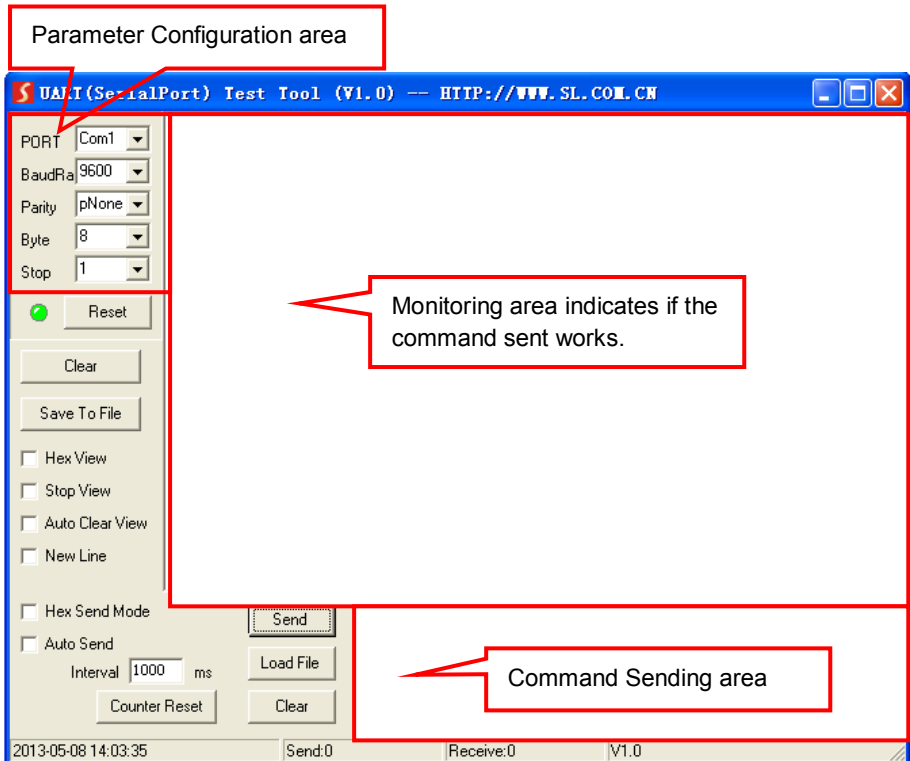### 4.2.2 Basic Settings

Firstly, connect HDBaseT Splitter with an input device and an output device. Then, connect it with a computer, which is installed with RS232 control software. Double-click the software icon to run this software.

Here we take the software **CommWatch.exe** as example. The icon is showed as below:



CommWatch.exe

The interface of the control software is showed as below:

Parameter Configuration area

Monitoring area indicates if the command sent works.

Command Sending area

Please set the parameters of COM number, bound rate, data bit, stop bit and the parity bit correctly, and then you are able to send command in Command Sending Area.

**Command format:** ID +Port number +RS232 command.

Of which port number stands for the HDBT port that the device to be controlled is connected to, the value varies from 1~4.

For example, if the ID of the HDBaseT Splitter is 01, and the device to be controlled is connected to HDBT port 2, then send the command "1B1." as "0121B1.".

**Note:** To control HDBaseT Splitter via RS232 port, the communication protocol parameters should be configured in the right manner: Baud rate: 9600; Data bit: 8; Stop bit: 1; Parity bit: none.

### 4.2.3 Control far-end device from local

Connect the RS232 ports of HDBaseT Splitter and Twisted Pair PoC Receiver (See Figure 4-3), and then it is capable to control HDBaseT Splitter and far-end device from local by sending RS232 commands.



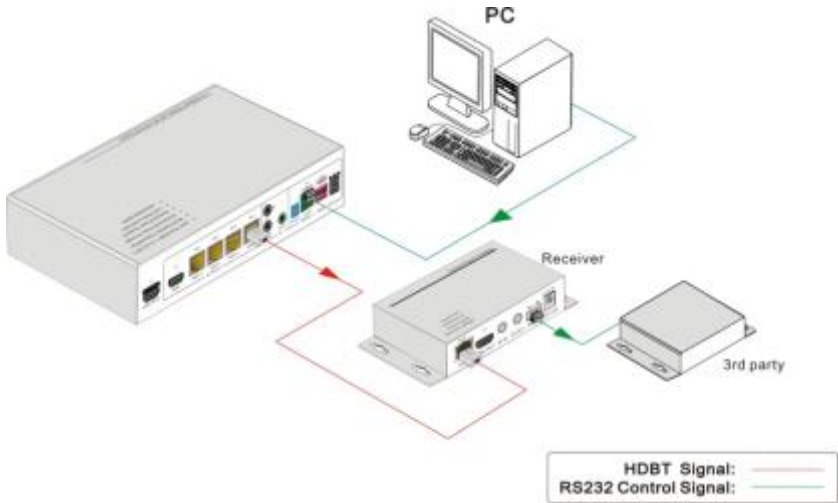HDBT Signal: ———
RS232 Control Signal: ———

#### Figure 4- 3 Control far-end device from local

### 4.2.4 Control local device from remote

Connect the RS232 ports of HDBaseT Splitter and Twisted Pair PoC Receiver (See Figure 4-4), and then it is capable to control HDBaseT Splitter or local displayer from remote by sending RS232 commands.
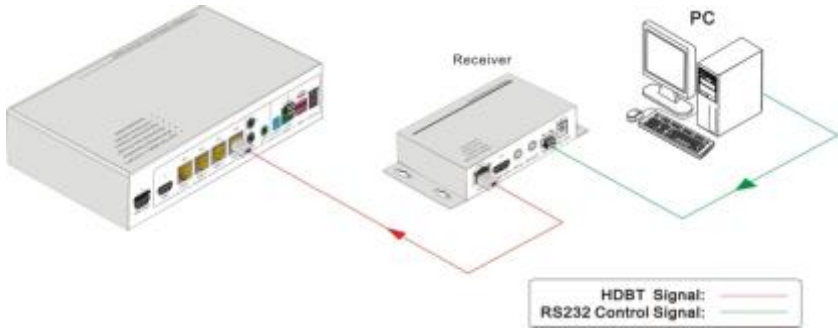
**Figure 4- 4 Control local device from remote**

## 4.3 EDID Management

HDBaseT Splitter provides with a 4-pin EDID DIP switcher, "1" stands for "On", "0" stands for "Off". Dial the switches to change EDID data refering to the following explainations:

| Switcher Status | EDID information |
|---|---|
| 0000 (default) | pass through, auto process |
| 0001 | 1080P 2D |
| 0010 | 1080P 3D |
| 0011 | 720P 2D |
| 0100 | 720P 3D |
| 0101 | DVI 1920x1080 |

| Switcher Status | EDID information |
|---|---|
| 0000 (default) | pass through, auto process |
| 0001 | 1080P 2D |
| 0010 | 1080P 3D |
| 0011 | 720P 2D |
| 0100 | 720P 3D |
| 0101 | DVI 1920x1080 |

**Note:** EDID data is subject to change in further firmware versions. Please refer to the details of further updated firmware.

## 5. Specification

| Items | Description |
|---|---|
| **Video Input/output** | VESA and SMPTE 480p to 2160p(4K) With 3D<br>Bit depth: 16, 20, 24 |
| **Audio Input/output** | All HDMI audio formats including Dolby D (TrueHD)/ DTS (HD-Master Audio)/ PCM<br>Channel count: from 2-8 (2.0 to 7.1)<br>Sample rates: 32 kHz, 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz and 192 kHz |
| **Power Supply** | DC 24V |
| **HDBaseT** | 60m (196feet) with HDMI video, RS232 & IR control, PoC supports HDMI Twisted Pair PoC Receiver / TPHD403PR / TPHD403PLR |
| **Control** | RS232 & IR Full function pass though;<br>RS232 port ID selectable for cascading; |
| **Dimensions** | 220 x 148 x 44mm (half rack wide) |
| **Raw Materials** | Aluminum chassis |
| **Installation** | Standard Rack size, provide removable ears for mounting under table, or on wall |

# 6. Panel Drawing
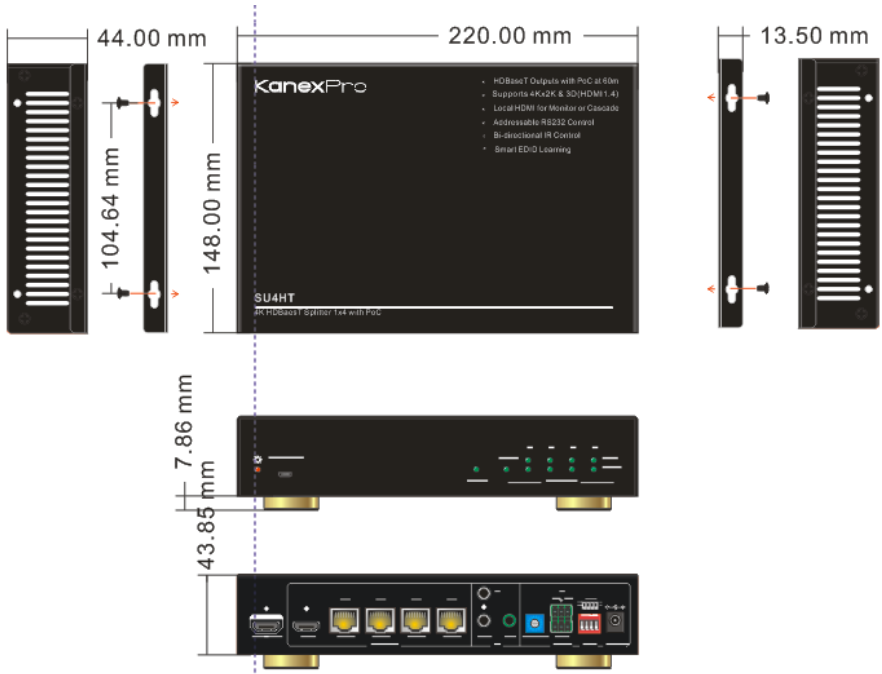
# 7. Troubleshooting & Maintenance

| Problems | Causes | Solutions |
|---|---|---|
| Color losing or no video signal output in HDMI display | The connecting cables may not be connected correctly or it may be broken. | Check whether the cables are connected correctly and in working condition. |
| No HDMI signal output in HDBaseT Splitter while local HDMI input is in normal working state | | |
| Cannot control HDBaseT Splitter by control device (e.g. a PC) through RS232 port | Wrong RS232 communication parameters | Make sure the RS232 communication parameters are correct. |
| | HDBaseT Splitter is broken | Send it to authorized dealer for repairing. |
| Static becomes stronger when connecting the video connectors | Bad grounding | Check the grounding and make sure it is connected well. |

If your problem persists after following the above troubleshooting steps, seek further help from authorized dealer or our technical support.

# 8. After-sales Service

If there appear some problems when running the device, please check and deal with the problems referring to this user manual. Any transport costs are borne by the users during the warranty.

1) **Product Limited Warranty:** It is warranted that the product will be free from defects in materials and workmanship for **one year,** which starts from the first day you buy this product (The purchase invoice shall prevail).
   Proof of purchase in the form of a bill of sale or receipted invoice, which is evidence that the unit is within the Warranty period, must be presented to obtain warranty service.

2) **What the warranty does not cover (servicing available for a fee):**
   - 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.
     - Any other causes which does not relate to a product defect
   - Delivery, installation or labor charges for installation or setup of the product

3) **Technical Support:** Email to our after-sales department or make a call, please inform us the following information about your cases.
   - Product version and name.
   - Detailed failure situations.
   - The formation of the cases.

**Remarks**: For any questions or problems, please try to get help from your local distributor.

# 9. Warranty

KanexPro® warrants that (a) its products (the "Product") will perform greatly in agreement with the accompanying written materials for a period of 36 months from the date of receipt (3 years) and (b) that the product will be free from defects in materials and workmanship under normal use and service for a period of 3 years.

## B. CUSTOMER REMEDIES

KanexPro's entire liability and Customer's exclusive remedy shall be, at KanexPro option, either return of the price paid for the product, or repair or replacement of the Product that does not meet this Limited Warranty and which is returned to KanexPro with a copy of customers' receipt. This Limited Warranty is void if failure of the Product has resulted from accident, abuse, or misapplication. Any replacement Product will be warranted for the remainder of the original warranty period of 3 years, whichever is longer.

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TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, KANEX DISCLAIMS ALL OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH REGARD TO THE PRODUCT AND ANY RELATED WRITTEN MATERIALS. THIS LIMITED WARRANTY GIVES CUSTOMERS SPECIFIC LEGAL RIGHTS. CUSTOMERS MAY HAVE OTHER RIGHTS DEPENDING ON THE JURISDICTION.

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TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, IN NO EVENT SHALL KANEX BE LIABLE FOR ANY DAMAGES WHATSOEVER (INCLUDING WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR INDIRECT DAMAGES FOR PERSONAL INJURY, LOSS OF BUSINESS PROFITS, BUSINESS INTERRRUPTION, LOSS OF BUSINESS INFORMATION, OR ANY OTHER PECUNIARY LOSS) ARISING OUT OF THE USE OF OR INABILITY TO USE THIS PRODUCT, EVEN IF KANEX HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

# KanexPro

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