# User Manual

VIVOLINK™
PROFESSIONAL AV SOLUTIONS

# VLHDMIEXT422

## Ultra-thin HDBaseT Extender




**Version:**
**VLHDMIEXT422_V1.2**

## Preface

Read this user manual carefully before using this product. Pictures shown in this manual is for reference only, different model and specifications are subject to real product.

This manual is only for operation instruction only, not for any maintenance usage. The functions described in this version are updated till July 11, 2017. Any changes of functions and parameters since then will be informed separately. 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 B 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 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.

# Contents

# 1. Introduction

## 1.1 Introduction to VLHDMIEXT422

The VLHDMIEXT422 is an ultra-thin HDBaseT Extender set consist of VLHDMIEXT422T Transmitter and VLHDMIEXT422R Receiver.

It distributes HDMI signal via CAT5e/CAT6a cable at 100m/PoH, and enables IR and RS232 pass-through to control remote displays. It also supports 4 Ethernet interface for network.

It provides a perfect long range transmission solution.

## 1.2 Feature

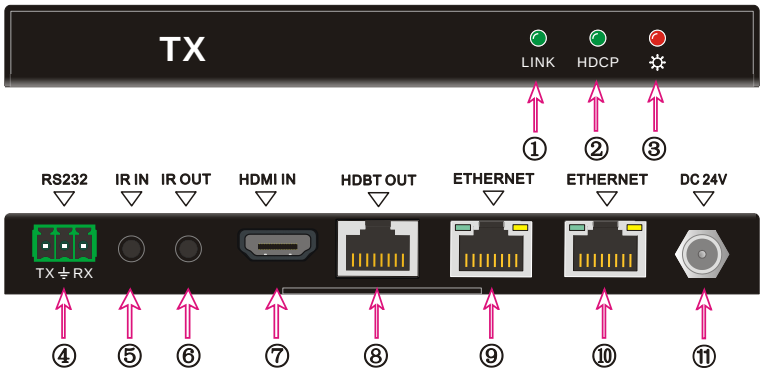
- Ultra-thin design.
- The highest resolution is 4Kx2k@60Hz
- HDCP2.2 compliant.
- Maximum transmission distance is up to 70m for 4Kx2K
- Maximum transmission distance is up to 100m for 1080p
- Maximum extension distance is up to 100m for Ethernet.
- Support bi-directional PoH
- High bandwidth：10.2Gbps
- Support IR/RS232 pass-through.
- LED indicators show work status.

## 1.3 Package Content

| | |
|---|---|
| Transmitter | ● 1 x VLHDMIEXT422T Transmitter<br>● 2 x Mounting Ears with 2 Screws<br>● 4 x Plastic Cushions<br>● 1 x RS232 Cable<br>● 1 x Power Adapter (DC 24V 1.25A) |
| Receiver | ● 1 x VLHDMIEXT422R Receiver<br>● 2 x Mounting Ears with 2 Screws<br>● 4 x Plastic Cushions<br>● 1 x RS232 Cable |
| | ● 1 x User Manual |

# 2. Panel Description

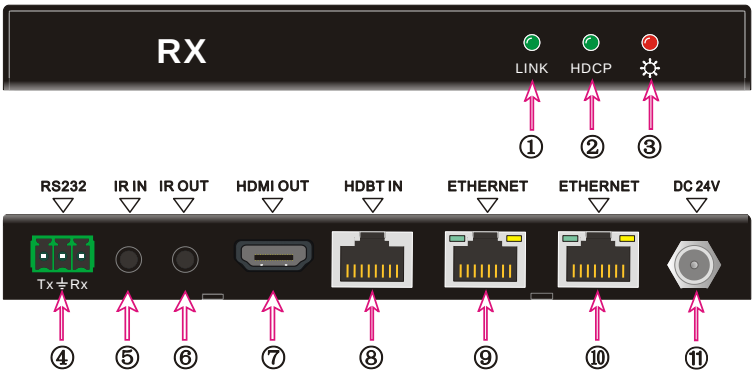
## 2.1 VLHDMIEXT422T Transmitter




| No. | Name | Description |
|---|---|---|
| ① | LINK | HDBT Link status indicator:<br>● OFF: No Link<br>● GREEN:Link Successful<br>● Blinking GREEN: Link abnormal |
| ② | HDCP | HDCP compliant indicator<br>● OFF: No HDMI traffic (no picture)<br>● GREEN: Traffic with HDCP.<br>● Blinking GREEN: Traffic without HDCP |
| ③ | Power | OFF: No power; RED: DC power present. |
| ④ | RS232 | RS232 connector. |
| ⑤ | IR IN | Connect with 5V IR receiver (with carrier) to collect infrared signal, work with far-end IR OUT port |
| ⑥ | IR OUT | Connect with 5V IR Emitter to send infrared signal, work with far-end IR IN port |
| ⑦ | HDMI IN | Connect with HDMI source |
| ⑧ | HDBT OUT | Connect to the HDBT IN socket on the receiver via CAT5e/ CAT6a cable, support bi-directional PoH. |
| ⑨ | ETHERNET | 100M Ethernet interface, when need to work in a LAN, one of these 4 ports (both the Ethernet ports of transmitter and receiver) should be used for internet access, and the others can be connected with computers. If they are well connected, the yellow LED indicators on the corresponding ports will keep |
| ⑩ | ETHERNET | |

| | | |
|---|---|---|
| | | blink and the green ones will keep on when working. |
| ⑪ | DC 24V | Connect with DC24V 1.25A power adaptor. (Not necessary if receiver connects with power). |

## 2.2 VLHDMIEXT422R Receiver



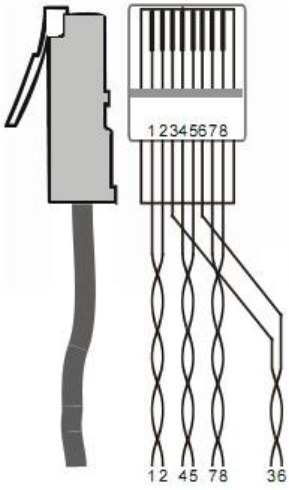

| No. | Name | Description |
|---|---|---|
| ① | LINK | HDBT Link status indicator:<br>• OFF: No Link<br>• GREEN:Link Successful<br>• Blinking GREEN: Link abnormal |
| ② | HDCP | HDCP compliant indicator<br>• OFF: No HDMI traffic (no picture)<br>• GREEN: Traffic with HDCP.<br>• Blinking GREEN: Traffic without HDCP |
| ③ | Power | OFF: No power; RED: DC power present. |
| ④ | RS232 | RS232 connector. |
| ⑤ | IR IN | Connect with 5V IR receiver (with carrier) to collect infrared signal, work with far-end IR OUT port |
| ⑥ | IR OUT | Connect with 5V IR Emitter to send infrared signal, work with far-end IR IN port |
| ⑦ | HDMI OUT | Connect with HDMI display |
| ⑧ | HDBT IN | Connect to the HDBT OUT socket on the transmitter via CAT5e/ CAT6a cable. |

| | | |
|---|---|---|
| ⑨ | ETHERNET | Ethernet ports, when need to work in a LAN, one of these 4 ports (both the Ethernet ports of transmitter and receiver) should be used for internet access, and the others can be connected with computers. If they are well connected, the yellow LED indicators on the corresponding ports will keep blink and the green ones will keep on when working. |
| ⑩ | ETHERNET | |
| ⑪ | DC 24V | Connect with DC24V 1.25A power adaptor (Not necessary if transmitter connects with power). |

## 2.3 Twisted Pair Cable Description

The twisted pair used in this extender MUST be a straight-through cable.

| 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 |



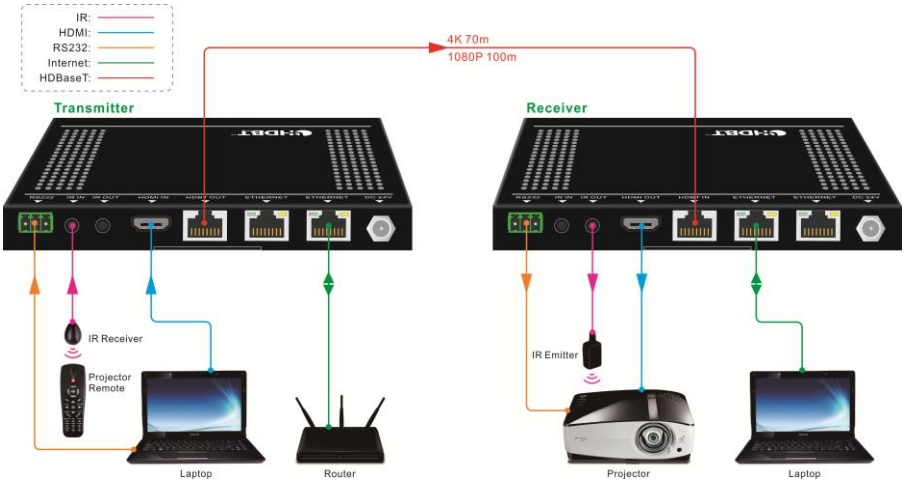

**Notice**: Cable connectors MUST be metal one, the shielded layer of cable MUST be connected to the connector's metal shell, to make a better transmission.

# 3. System Connection

## 3.1 Usage Precautions

- System should be installed in a clean environment and has a prop temperature and humidity.
- All of the power switches, plugs, sockets and power cords should be insulated and safety.
- All devices should be connected before power on.
- Use shielded straight-thru CAT5e/CAT6a cable with TIA/EIA T568B terminations for good transmission effect.

## 3.2 System Diagram




## 3.3 Connection Procedure

**Step1.** Connect HDMI source (such as DVD player) to HDMI IN port of the transmitter with HDMI cable.

**Step2.** Connect HDBT OUT port of transmitter and HDBT IN port of receiver with single CAT5e/CAT6a cable.

**Step3.** Connect HDMI displayer (such as HDTV) to HDMI OUT port of receiver with HDMI cable.

**Step4.** Both transmitter and receiver have IR IN and OUT. When one model use for IR signal receiver, the IR signal must be sent out by the other model.

For example: When “IR IN” of receiver connects with an IR receiver, the IR

Emitter must be connected to “IR OUT” of transmitter.

**Step5.** To set as a LAN, one of the four ETHERNET ports of transmitter and receiver should be used for Internet access, and the others can be connected with computers.

**Step6.** Connect the RS232 port of the computer and the RS232 port of transmitter or receiver (any one is able to work as the RS232 signal can be transmitted bi-directionally) by using a RS232 cable.

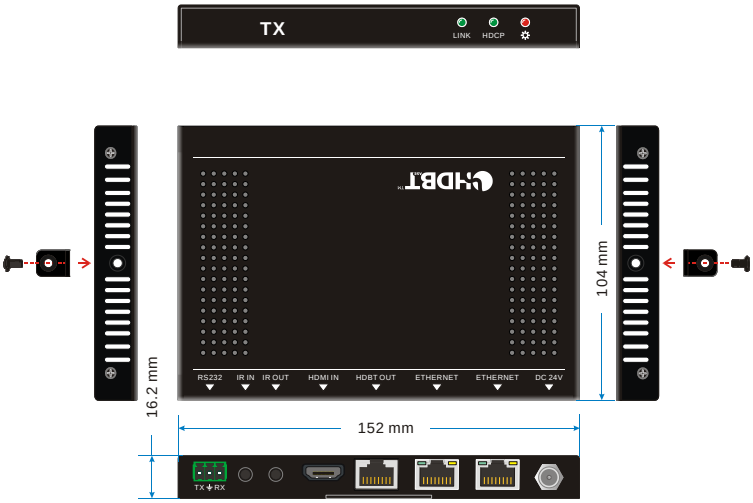
**Step7.** Connect with DC24V power adaptor(s) separately or only connect power adaptor to transmitter or receiver.

# 4. Specification

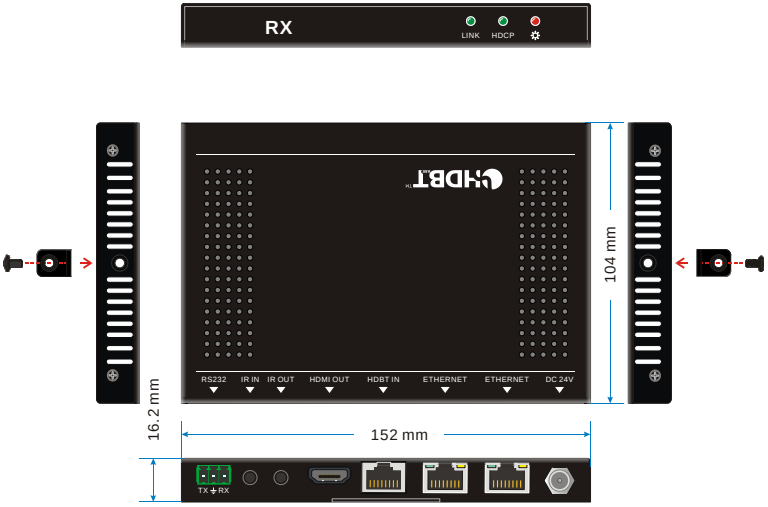
| | |
|---|---|
| **VLHDMIEXT422T Transmitter** | |
| Input | (1) HDMI; (1) IR; (1) RS232 |
| Input Connector | (1) Female HDMI; (1) 3.5mm mini jack;<br>(1) 3p captive screw connector |
| Output | (1) HDBaseT (1) IR; (1) RS232 |
| Output Connector | (1) RJ-45; (1) 3.5mm mini jack; (1) 3p captive screw connector |
| Ethernet | (2) Black RJ45, with a dual color indicator(Green & Yellow) |
| Ethernet Transmission Speed | Adaptive 10M/100M (max), full duplex or half duplex. |
| **VLHDMIEXT422R Receiver** | |
| Input | (1) IR; (1) HDBaseT; (1) RS232 |
| Input Connector | (1) 3.5mm mini jack; (1) RJ-45;<br>(1) 3p captive screw connector |
| Output | (1) HDMI; (1) IR; (1) RS232 |
| Output Connector | (1) Female HDMI; (1) 3.5mm mini jack;<br>(1) 3p captive screw connector |
| Ethernet | (2) Black RJ45, with a dual color indicator(Green & Yellow) |
| Ethernet Transmission Speed | Adaptive 10M/100M (max), full duplex or half duplex. |
| **General** | |
| Transmission Mode | HDBaseT |
| Resolution | Up to 4K×2K@60Hz |
| Transmission Distance | 1080P ≤ 100m; 4K×2K ≤ 70m |
| Bandwidth | 10.2Gbps |
| HDMI Standard | HDMI1.4 & HDCP2.2 |
| Impedance | 75Ω |
| Temperature | 0~ 50℃ |
| Humidity | 0% ~ 90% |
| Power Consumption | 10W |
| Power Supply | Input: 100VAC~240VAC, 50/60Hz; Output: 24VDC 1.25A |
| Dimension (W*H*D) | 152mmx16.2mmx104mm |
| Net Weight | Transmitter:235g; Receiver: 241g |

***Note:*** *All nominal levels are at ±10%.*

# 5. Panel Drawing




5-1 VLHDMIEXT422T Transmitter




5-2 VLHDMIEXT422R Receiver

# 6. Troubleshooting & Maintenance

| Problems | Causes | Solutions |
|---|---|---|
| Output image with white noise. | Incorrect setting on the display | Check the display's setting |
| | A cable of bad quality | Try another high quality connection cable |
| No output image when switching | No signal at the input / output end | Check with oscilloscope or multimeter if there is any signal at the input / output end. |
| | Fail or loose connection | Make sure the connection is good |
| | The extender is broken | Send it to authorized dealer for repairing. |
| Cannot control the device by control device (e.g. a PC) through RS232 port | Wrong RS232 communication parameters | Make sure the RS232 communication parameters are correct. |
| | The device has already been broken | Send it to authorized dealer for repairing. |
| Cannot recognize device connected to the ETHERNET port | The connected device has the same IP address with the extender | Change the IP address of the extender or the connected device. |
| Static becomes stronger when connecting the video connectors | Bad grounding | Check the grounding and make sure it is connected well. |
| Cannot control the device by RS232 / IR | The device has already been broken | Send it to authorized dealer for repairing. |

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

# 7. After-sales Service

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

1) **Product Limited Warranty:** This product will be free from defects in materials and workmanship for **three years**.
   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:**
   - 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.
   - 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.