



**Comprehensive**<sup>®</sup>  
Connectivity Company

# HDBaseT 4×4 HDMI Matrix over CAT5e/6/7

## CSW-HDBT44K330



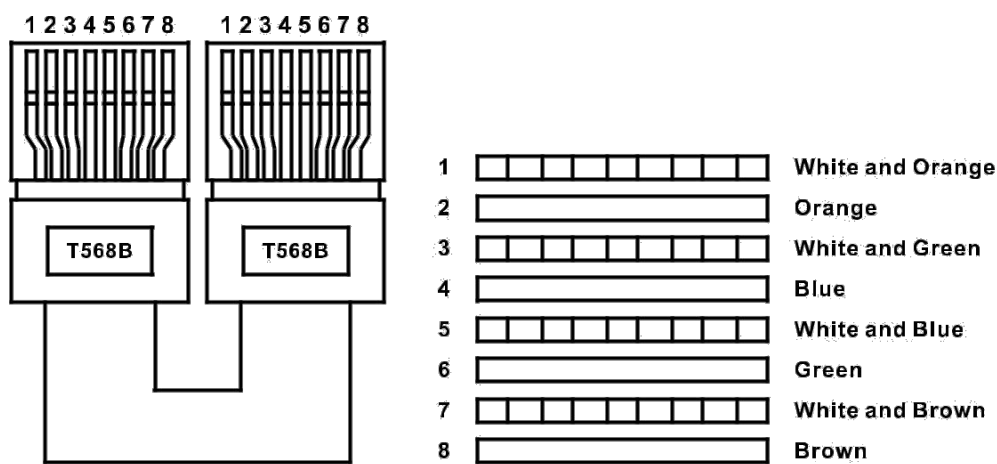
# User manual

VER:2.3

Thank you for purchasing this product. For optimum performance and safety, please read the instruction carefully before connecting, operating or adjusting this product. Please keep the manual for future reference.

## Caution:

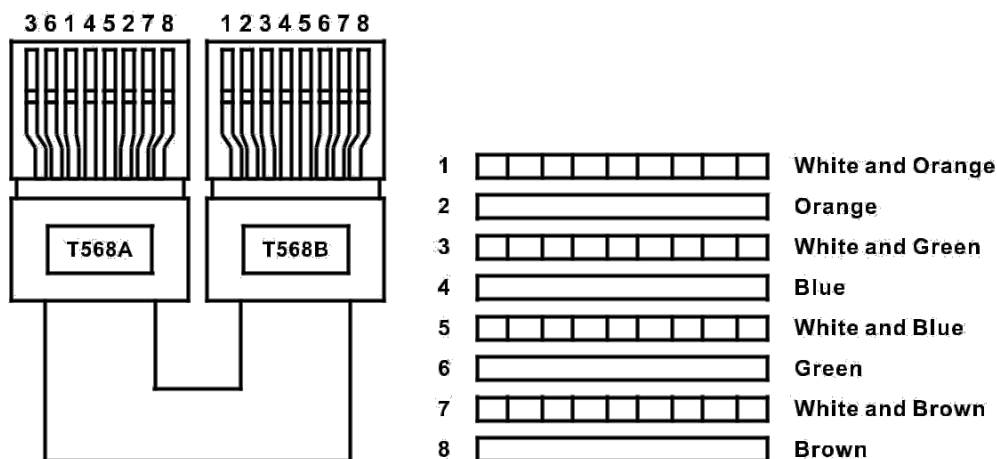
The extender using UTP cable termination follows the standard of IEEE-568B.



### Direct interconnection method

## Advanced:

The extender will in Automatic protection mode when using UTP cable termination follows the standard of IEEE-568A.



### Cross interconnection method

## I. Introduction

The HD BaseT 4x4 HDMI Matrix with simultaneous CAT5e/6/7 and HDMI outputs connects four HDMI sources to eight displays. This matrix features four HDMI outputs and each HDMI output is mirrored to provide a CAT-Cable output which runs simultaneously. It supports the transmission of video (resolutions up to 1080p Full HD and 4Kx2K@30Hz) and supports high resolution digital audio formats such as LPCM 7.1CH, Dolby TrueHD, Dolby Digital Plus and DTS-HD Master Audio. Connect a HD BaseT Receiver to each of the CAT-Cable outputs to extend the HDMI signal up to 328ft/100m (100m Version) or 230ft/70m(70m version)for multi-room connectivity. It works with Blue-Ray players, Set-Top boxes, Home Theater PCs, and game consoles that connect to an HDMI display. Any source is accessible at all times by any display by selecting it via the supplied IR Remote Control, RS-232, TCP/IP or by using the selection buttons on the front panel. This device supports High Definition Audio, and 3D signal compatibility.

## II. Features

- HDMI2.0, HDCP2.2 compliant.
- Support color space conversions among RGB, YCbCr 4:4:4, YCbCr 4:2:2 and xvYCC video formats without deep color.
- Support video format up to 4k2k@30Hz with 24bit RGB/YcbCR 4:4:4/YCBCR 4:2:2,and up to 4k2k@60Hz with 12bit YCBCR 4:2:0.
- Support 3D frame sequential video format up to 1080p@60.
- Support high resolution VESA mode video format up to QSXGA@60Hz
- Support reception of any audio data conforming to the HDMI specification such PCM at up to 192kHz, compressed audio(IEC 61937),DSD,DST,DTS and HBR.

- Support transmission distances up to 328ft/100m (100m Version) or 230ft/70m(70m version) through CAT5e/6/7 cable
- Support POE function. ※ **See the description 1**
- Support Ethernet transmit function. ※ **See the description 2.**
- Support wideband IR(30-60Khz) matrix system, IR transport channel can be forward or backward. And supports GLOBAL IR. ※ **See the description 3.**
- Support RS-232 4 channel bypass. ※ **See the description 4.**
- Support simultaneous HDMI and CAT outputs
- Support RS-232, remote control, on-panel control and TCP/IP Control
- Support smart EDID management.

## III. Package Contents

HD BaseT 4x4 HDMI Matrix	1PC
HD BaseT Receiver	4PCS
AC power cable	1PC
Operation Manual	1PC
Wideband IR Tx cable	5PCS
Wideband IR Rx cable	6PCS
HDMI Matrix IR Remote	1PC
Mounting ears(Matrix)	2PCS
Mounting ears(Receiver)	8PCS
Rs232 cable	1PC

## IV. Specifications

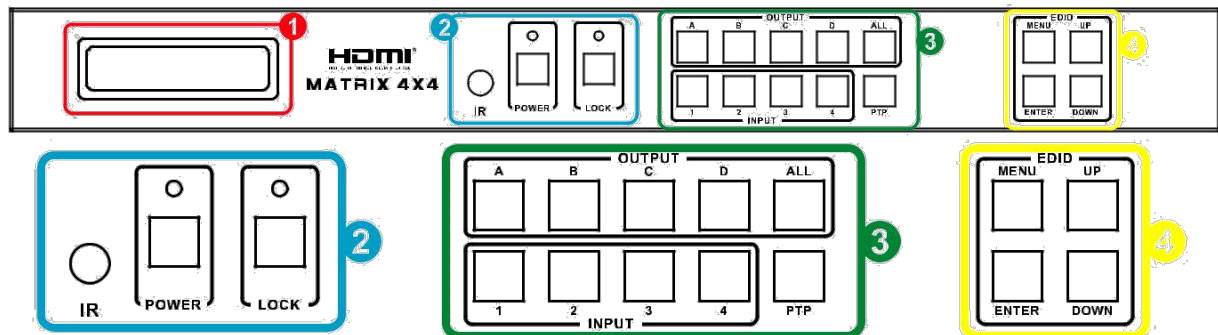
Video Bandwidth	297MHz[10.2Gbps]
Support Video Resolution	480i,576i,480p,576p,720p,1080i, 1080p24/30/50/60.4Kx2K@30;
Input Ports	4×HDMI, 5×IR Receiver, 1×RS-232, 1xRJ-45(Control),4x RS232
Output Ports	4×CAT5e/6/7, 4×IR Blaster, 4×HDMI



HDMI connector	Type A 19 pin female
RJ-45 connector	WE/SS 8P8C
3.5mm connector	(TX and RX) IR Receiver/IR Blaster
ESD Protection	Human-body Model: ± 8kV (Air-gap discharge) ± 4kV (Contact discharge)
Power Supply	AC Power Supply (US/EU standards, CE/FCC/UL certified)
Dimensions	440 mm (W)×200 mm (D)×45 mm (H)
Weight	1820 g
Chassis Material	Metal
Silkscreen Color	Black
Operating Temperature	0 °C~40 °C/32 °F~104 °F
Storage Temperature	-20 °C~60 °C/-4 °F~140 °F
Relative Humidity	20~90 % RH (non-condensing)
Power Consumption	50 W(max)/0.5w(Standby)

## V. PANEL FUNCTIONS

### 1. Front Panel



**1. LCM:** Display the information of each input and output setting and EDID management.

**2. IR:** IR Receiver window (accepts the remote control signal of this device only).

**POWER:** Press this button to power the device on/off. The LED will illuminate green when the power is on, red when it is in 'Standby' mode.

**LOCK:** Press this button to lock all the buttons on the panel, press again to unlock.

**3. OUTPUT/INPUT:** Press the OUTPUT and INPUT button to select the output corresponding input.

For example: Press OUPUT ALL>INPUT 1, The OUTPUT A,B,C,D will be set to INPUT 1.

Press PTP button, The OUTPUT A,B,C,D will corresponding INPUT 1,2,3,4.

**4. EDID:** Smart EDID management, the LCM will display the EDID operation.

Press the MENU button will enter the EDID management window, press UP or DOWN button to select the needed EDID setting, press ENTER button to select the download input source. it can easy download any EDID mode to any input source.

### Note: The EDID mode table

EDID Mode	EDID Description
1	1080p, 2CH AUDIO
2	1080p, DOLBY/DTS 5.1
3	1080p, HD AUDIO
4	1080i, 2CH AUDIO
5	1080i, DOLBY/DTS 5.1
6	1080i, HD AUDIO
7	3D,1080p, 2CH AUDIO
8	3D, 1080p,DOLBY/DTS 5.1
9	3D,1080p, HD AUDIO
10	4K x 2K@30Hz, 2CH AUDIO
11	4K x 2K@30Hz , DOLBY/DTS 5.1
12	4K x 2K@30Hz , HD AUDIO
13	4K x 2K@60Hz, 2CH AUDIO
14	4K x 2K@60Hz , DOLBY/DTS 5.1
15	4K x 2K@60Hz , HD AUDIO
16	Copy from HDMI OUTPUT A
17	Copy from HDMI OUTPUT B
18	Copy from HDMI OUTPUT C
19	Copy from HDMI OUTPUT D
20	Copy from HDBT OUTPUT A
21	Copy from HDBT OUTPUT B
22	Copy from HDBT OUTPUT C
23	Copy from HDBT OUTPUT D

## **EDID. What is it and what is it used for?**

Under normal circumstances, a source device (digital and analog) will require information about a connected device/display to assess what resolutions and features are available. The source can then cater its output to send only resolutions and features that are compatible with the attached device/display. This information is called EDID (Extended Display Information Data)

and a source device can only accept and read one EDID from a connected device/display. Likewise, the source can only output one resolution for use by a connected device/display.

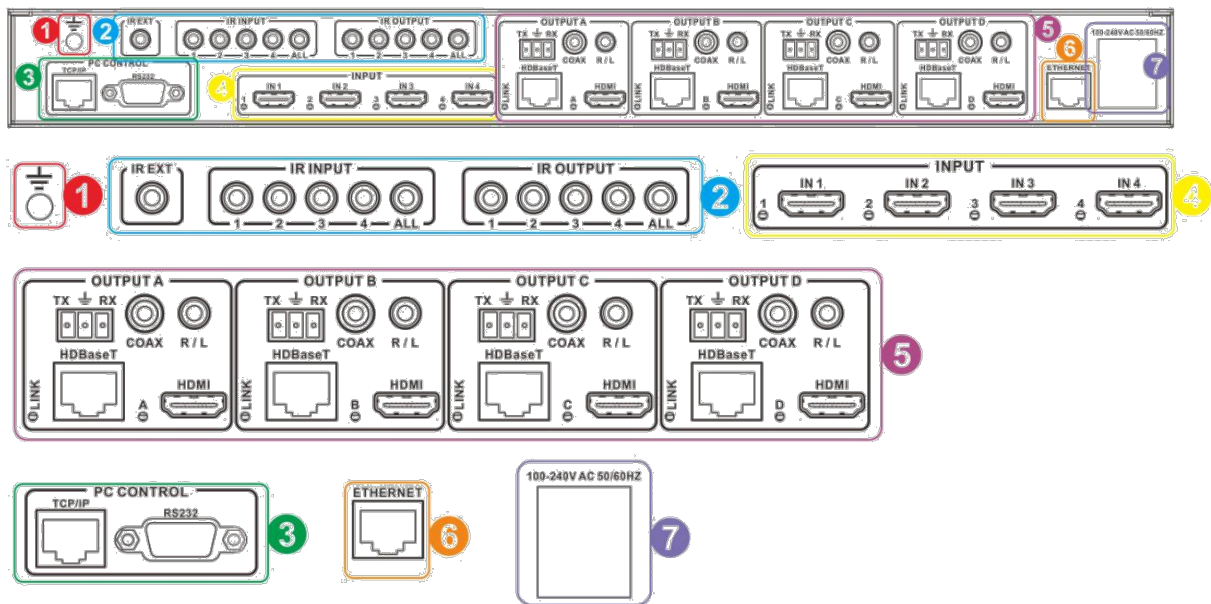
## **Why is EDID so important with the HDMI Matrix?**

The Matrix is a complex piece of technology that replicates and switches between multiple inputs and outputs. Each connected source device will require one EDID to read. EDID management is carefully handled by HDMI Matrix to provide a single EDID for each source to read.

## **What options do I have to manage the EDID in the HDMI Matrix?**

First, it is important to note that each source device can only output one video/audio signal type. This includes resolutions and timings. When multiple devices/displays are used, such as with the HDMI Matrix, it is important to use devices/displays that have similar or compatible resolutions/features. This will ensure that the single video/audio signal produced by the source device is accepted by all of the connected output devices/displays. The user has the option, through the EDID management window, to choose how the unit will manage the EDID from multiple HDMI devices/displays. Therefore the user has some control over the resolutions/features that the source devices will output. The HDMI Matrix has a multiple EDID management modes that will control how the EDID information from multiple devices/displays are combined, ignored, and routed.

## 2. Front Panel



**1. GND:** Connect the Housing to ground.

### 2. IR Matrix

**IR EXT:** if the panel sensor is obstructed or the unit is installed in a closed area out of infrared line of sight, the IR RX receiver included can be inserted into the IR EXT port at the rear to extend the IR sensor range and enable local control of the matrix.

**IR IN/OUT:** Super IR control system interface. For further details, please refer to the Super IR system control introduction.

### 3. PC CONTROL

**TCP/IP:** This port is the link for TCP/IP control, connect to an active Ethernet link with an RJ45 terminated cable.

**RS232:** Connect to a PC or control system with D-Sub 9-pin cable for the transmission of RS-232 commands.

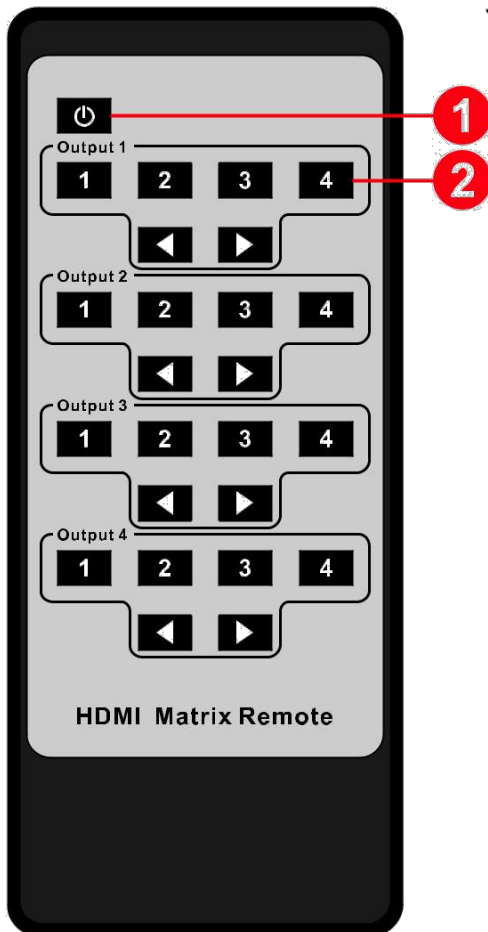
**4. HDMI INPUT:** Connect to the HDMI input source devices such as a DVD player or a Set-top Box with HDMI cable.

**5. OUTPUT:** The HDMI OUTPUT connect to HDMI equipped TVs or monitors and the HDBT OUTPUT connect to the HDBT Receiver. The coaxial and analog audio output connect to the audio amplifier. The TX and RX for RS232 communication with the HDBT Receiver TX and RX.

**6. Ethernet:** This slot provides Internet signal from receiver or to receiver.

**7. AC POWER INPUT:** Connect to AC power with AC power cable.

## VI. Remote Control

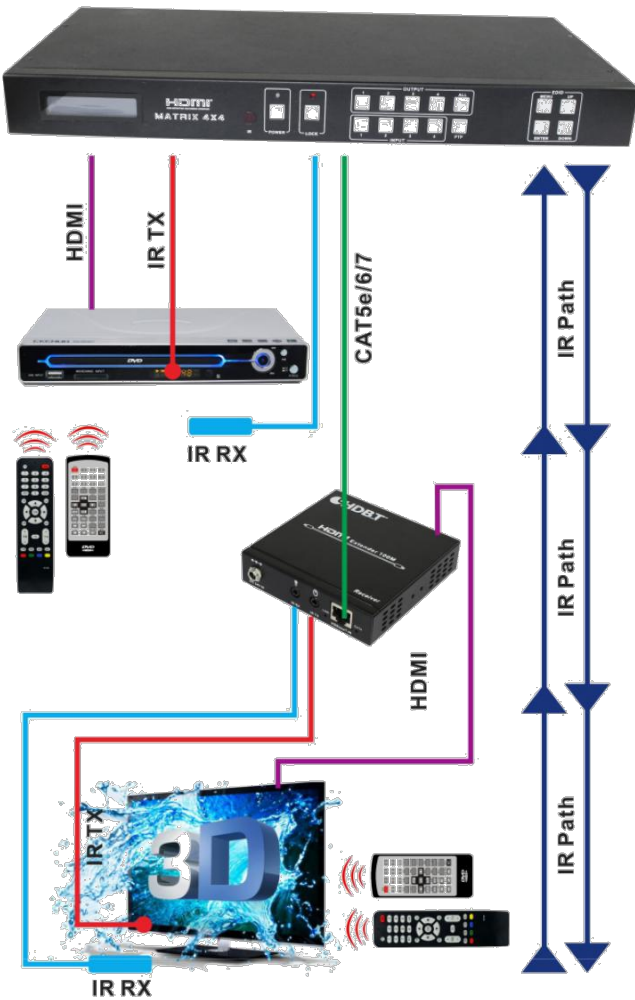


1. Press this button to power on the matrix or set it to standby mode.

2. Press these buttons to select output A,B,C,D for input 1,2,3,4 port.



## VII. IR Control system (IR Call-back of Matrix and Source Devices)



The matrix is not only a switcher and extender of multiple HDMI signals to multiple HDMI receivers located remotely, it also passes IR control signals through the IR call-back system to the matrix and HDMI sources for full, independent control of all connected inputs from output locations.

Two-way IR Call-back between matrix, Sources and Displays from Multiple Locations

A key feature on the matrix is discrete IR control of the matrix, sources and displays from any location – so inputs at the matrix end can be controlled at a display location and displays can be controlled at the matrix location. This is accomplished by placing a series of IR Emitters on devices to control and IR Receivers at all locations you wish to control from to enable the IR signal to travel both ways via the single Cat5e/6/7 cable.



01. At Matrix end: Insert the 3.5mm jacks of the IR TX Emitters included with the unit into the IR TX Emitter ports at the rear of the matrix according to input. The IR signal is added to the HDMI of the input device so, for example, if the user is watching Blue-ray on input 1, the IR signal will be directed through the IR TX1 socket to control the device.

As each IR TX port is allocated to an individual HDMI input port, if the user is unable to establish IR control of the device, care should be taken to check firstly, that the IR emitter and HDMI input ports match (Input 1-TX1, Input2-TX2 etc.) with plugs secured in correct ports, and secondly, that the IR TX emitter sensors are firmly attached directly to the front of inputs and covering infrared sensor windows of the source devices. Some later adjustment may be needed to the location of the sensor to achieve the best performance results - sometimes moving the sensor to different areas on the source can improve IR performance.

NOTE: Infrared receiving areas of devices can be located by shining a flashlight onto the front of the device - the sensor should be able to be seen through the plastic as a small, round object inside. Insert 3.5mm jacks of IR RX receivers into RX ports, making sure the receivers themselves are placed in clear view to receive an infrared signal from the remote handset used to control the display outputs.

02. At display end: Insert the IR RX Receiver jack into the IR RX port of the display receiver balun, with the receivers themselves placed in clear view on or near the displays to receive an infrared signal from the remote handset used to control inputs. Insert the IR TX Emitter jack into the IR TX port of the display receiver balun, ensuring that the emitter sensor is securely attached to infrared sensor window of the display.



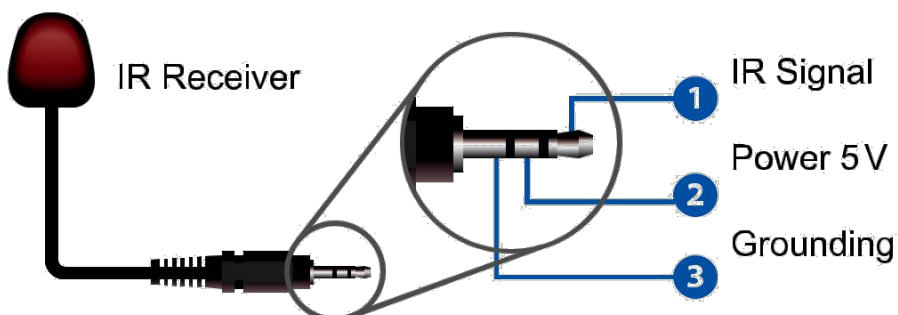
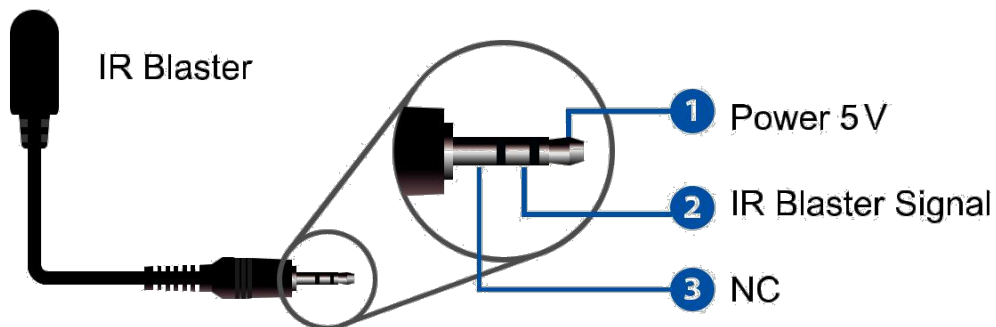
Follow the same connection and positioning for all baluns/displays connected to the matrix. If all IR TX Emitters and IR RX Receivers are positioned and connected correctly with sources, displays and display receivers fully powered and the matrix set to IR call-back enabled and IR TX Switch mode activated, two-way IR will now be possible.

Note: Misplaced or poorly secured IR Emitters and Receivers may result in intermittent IR control signals passed to and from the matrix. Check your placement and adjust if necessary.

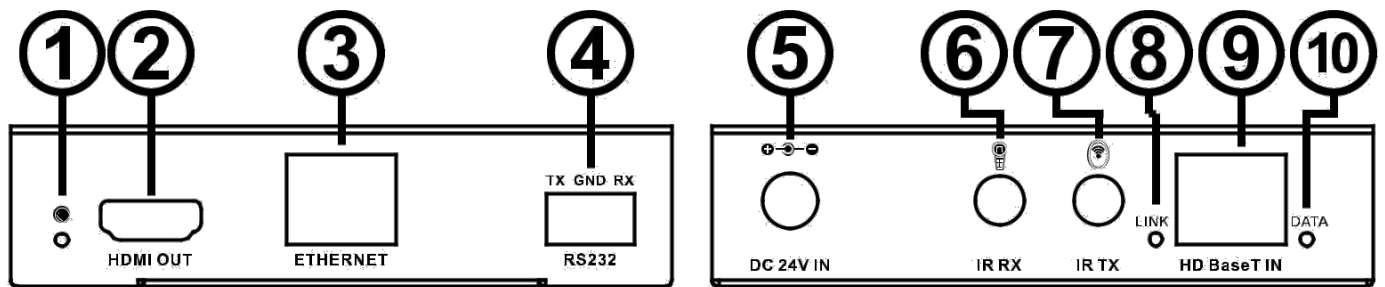
## IR Receiver



## IR Blaster



## VIII. HDBT Receiver



**1. OUTPUT LED:** The output status indicating lamp. This red LED illuminates when the TV plugs in with HDMI cable.

**2. HDMI OUT:** HDMI output port. This slot is where you connect the HDTV or monitor with HDMI cable.

**3. ETHERNET:** This slot provides Internet signal from transmitter or to transmitter.

**4. RS232:** Phoenix jack provides Serial port control signal from transmitter or to transmitter.

**5. DC IN:** Plug the 24V DC power supply into the unit.

**6. IR RX:** Chanel 2 IR Receiver. Connect with Wideband IR Rx.

**7. IR TX:** Chanel 1 IR Transmitter. Connect with Wideband IR Tx.

**8. LINK LED:** The connection status indicating lamp.

※ Illuminate: The Transmitter and Receiver are in good connections

※ Flashing: The Transmitter and Receiver are in poor connections

※ Dark: The Transmitter and Receiver are in no connections

**9. HD BaseT IN:** Standard HD BaseT signal input port. Connect HD BaseT transmitter with a UTP cable following the standard of IEEE-568A or IEEE-568B.

**10. DATA LED:** The data status indicating lamp.

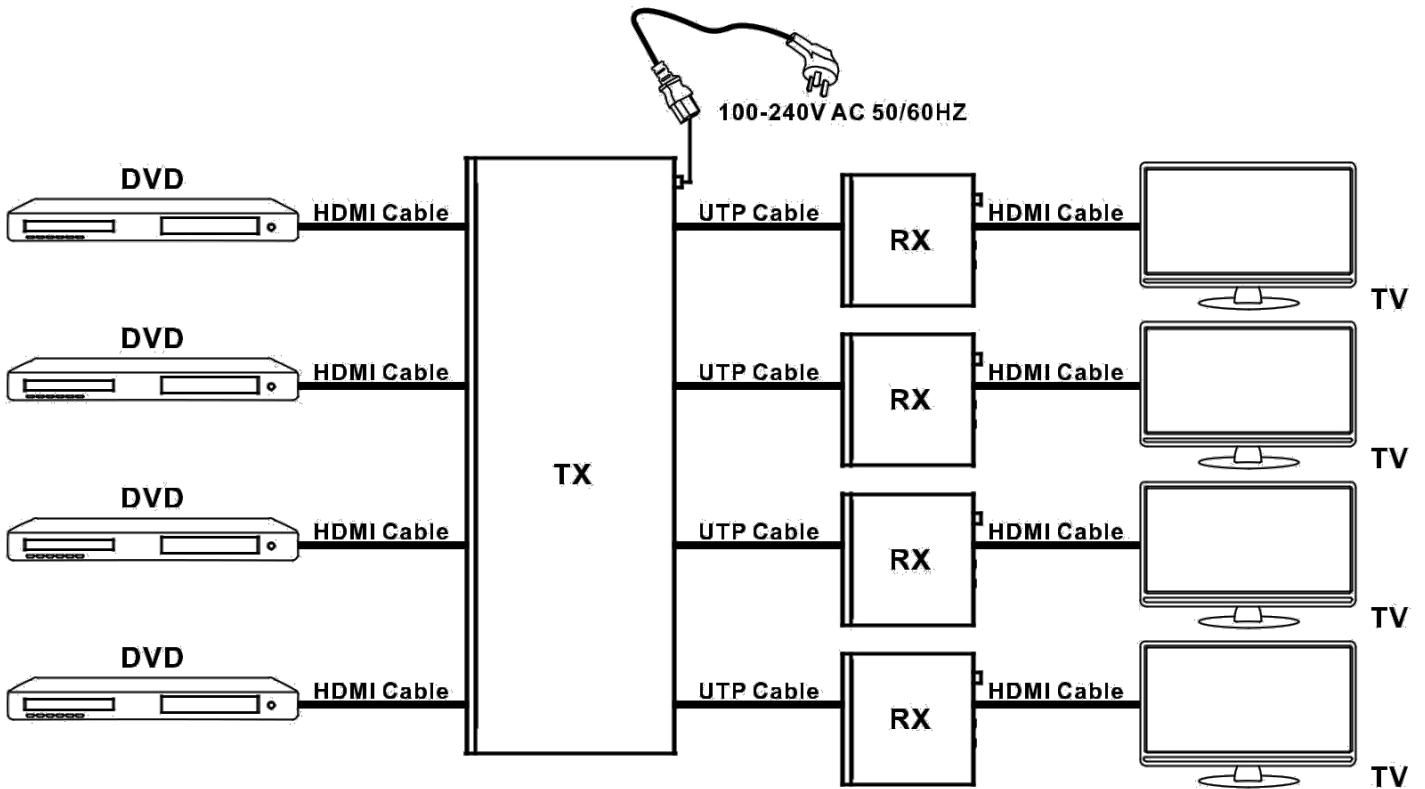
※ Illuminate: The HDMI signal with HDCP.

※ Flashing: The HDMI signal without HDCP.

※ Dark: No HDMI signal.

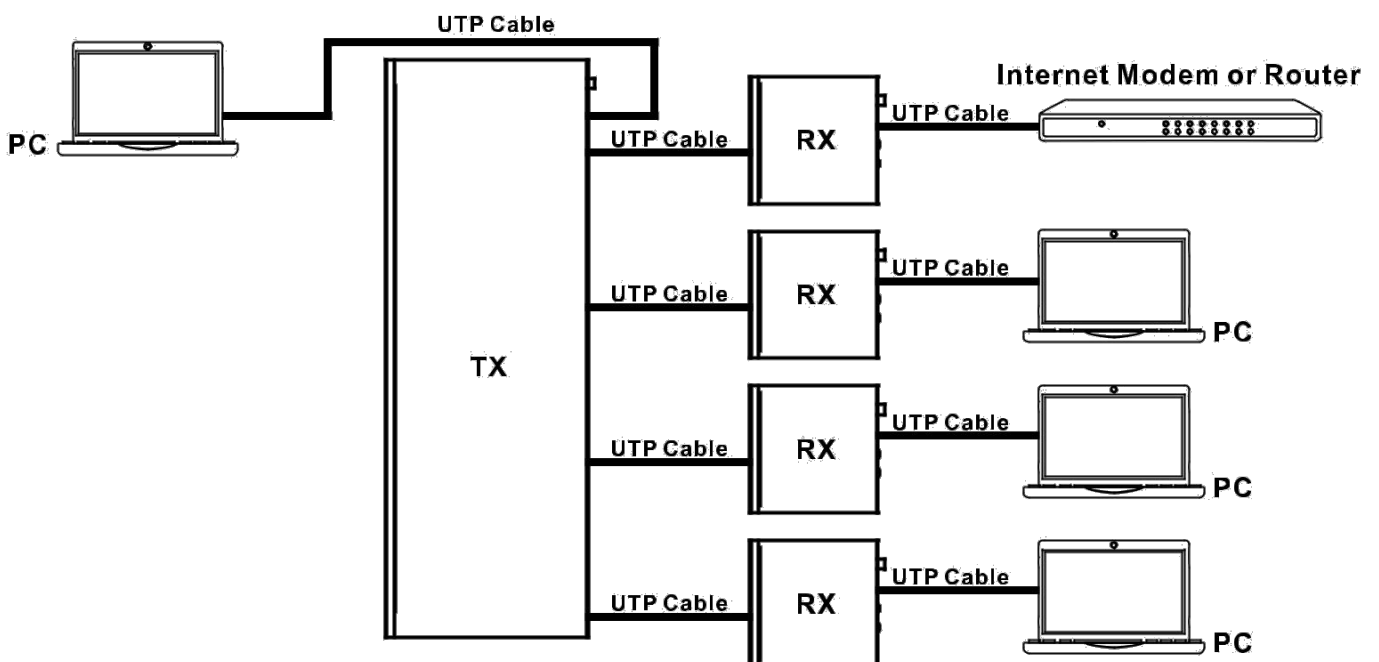
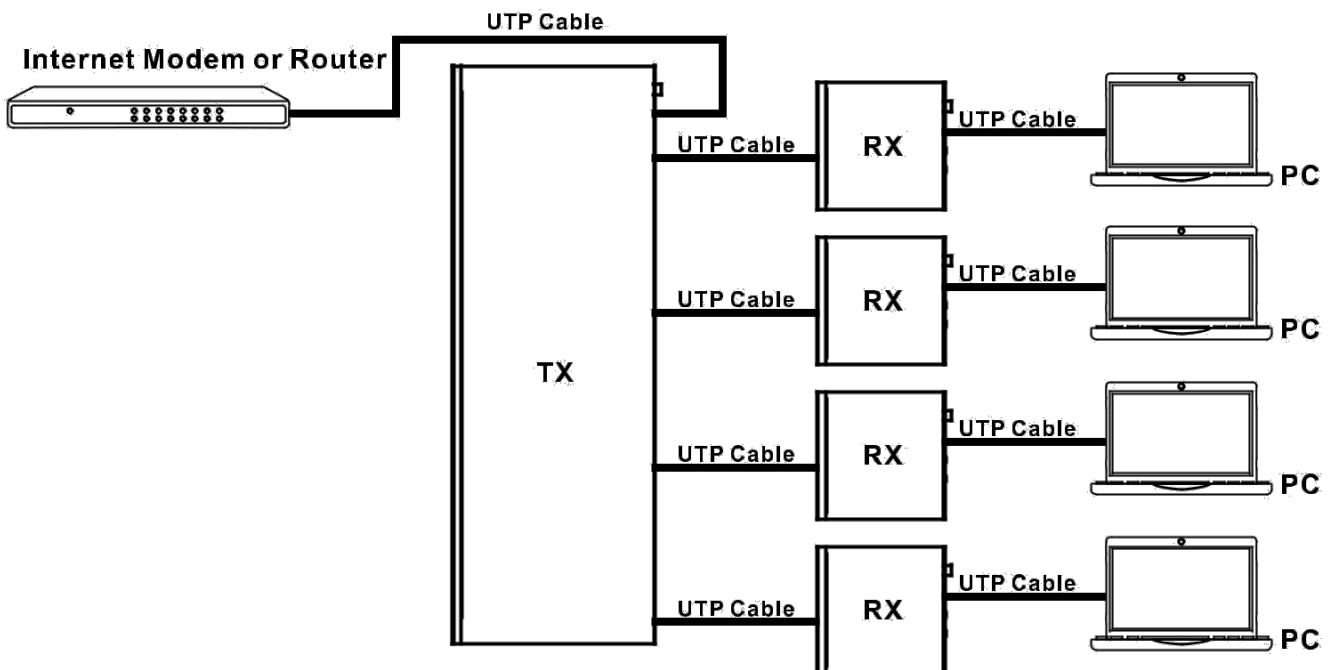
## ※ Description 1 POE(Power Over Ethernet) Application Example

This system can run by only the matrix(TX) is powered, RXs do not need powered.



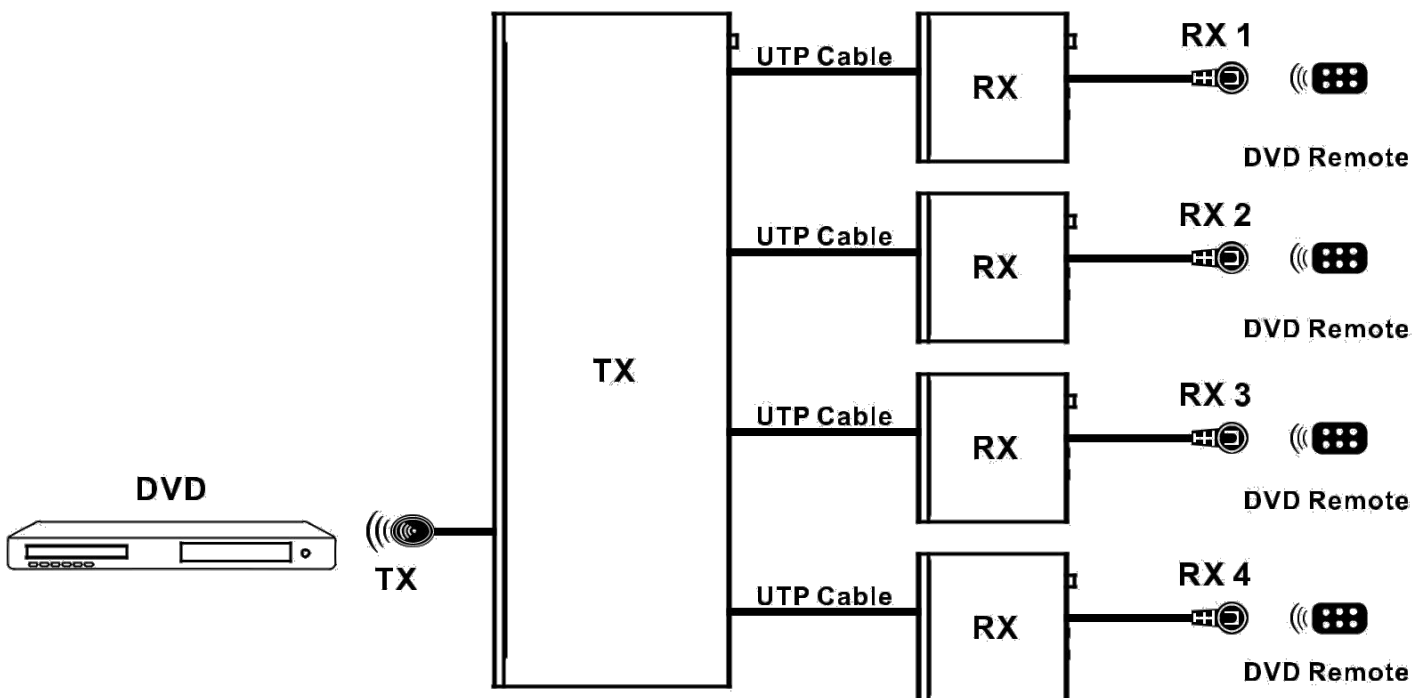
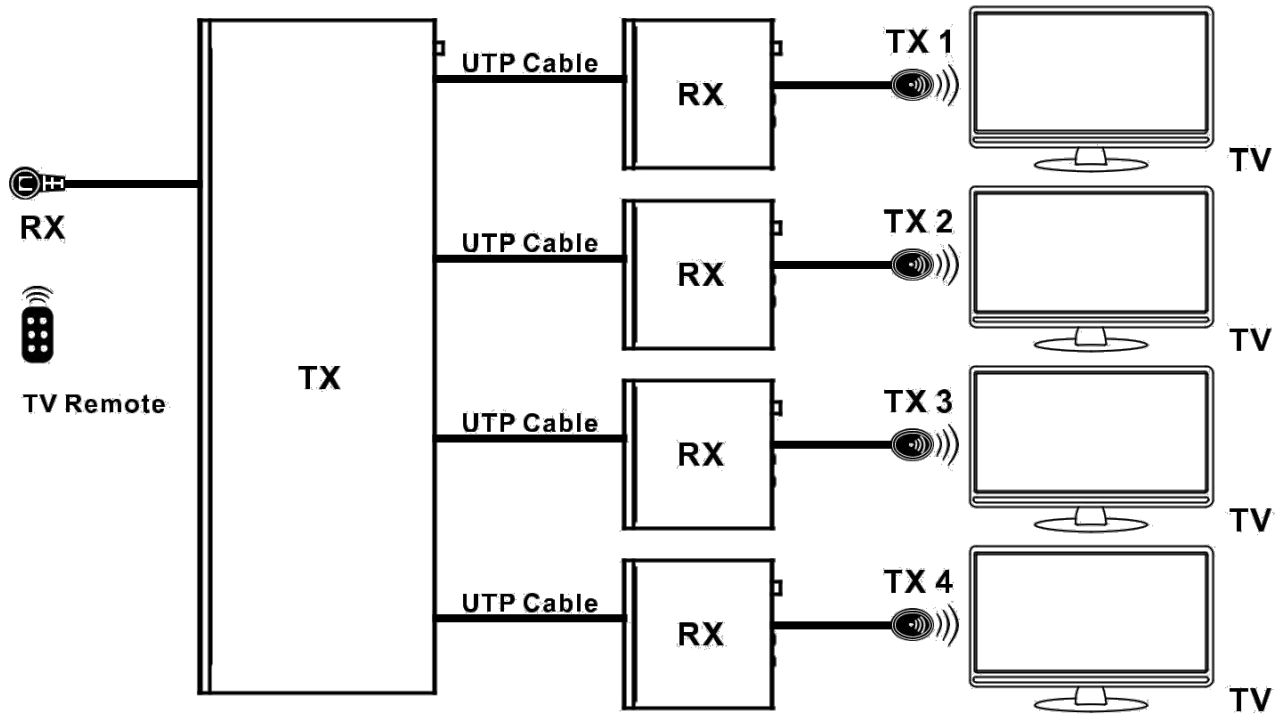
## ※ **Description 2** Bidirectional Ethernet signal Application Example

- The matrix connected Ethernet, all RX can access to the Internet.
- One of the RX connected Ethernet, others and matrix can access to the Internet.



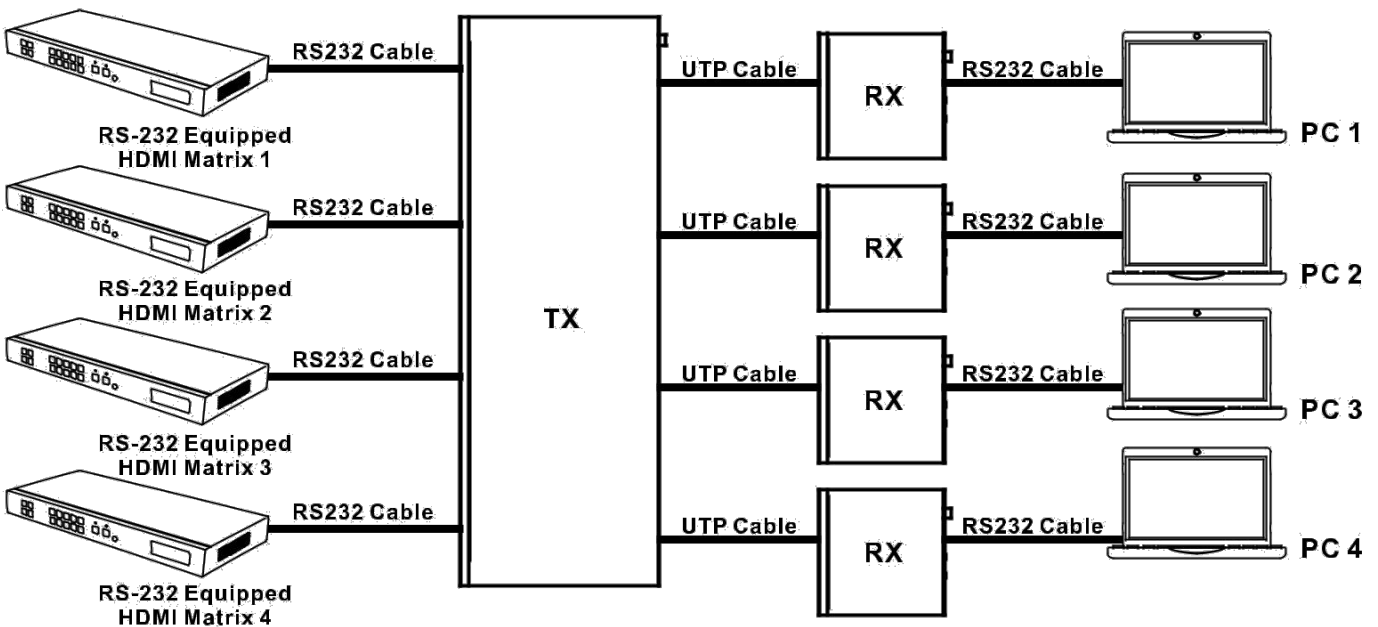
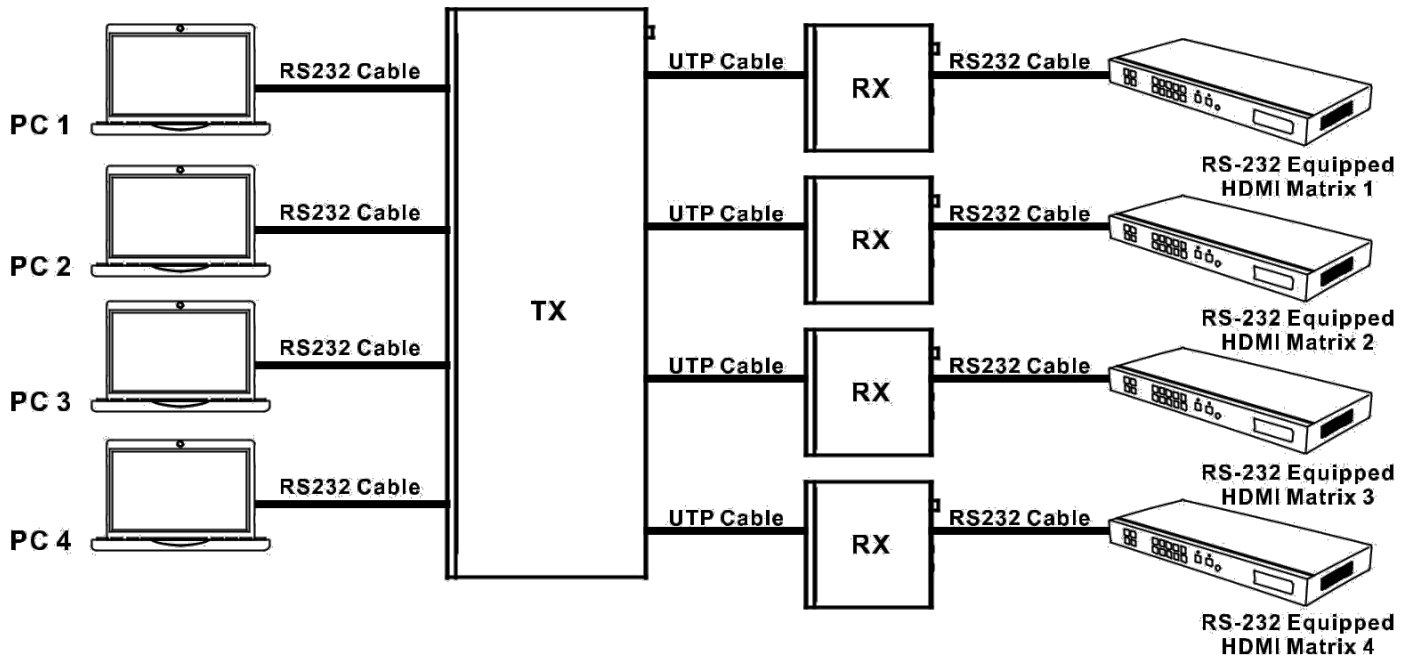
## ※ Description 3 GLOBAL IR control Application Example

- TV remote can control all TV at the same time.
- All DVD remotes can control DVD, but not at the same time.



## ※ Description 4 Bidirectional RS232 control Application Example

➤ This system provides 4 channel RS232.



## IX. PC Controller user guide

### Installation

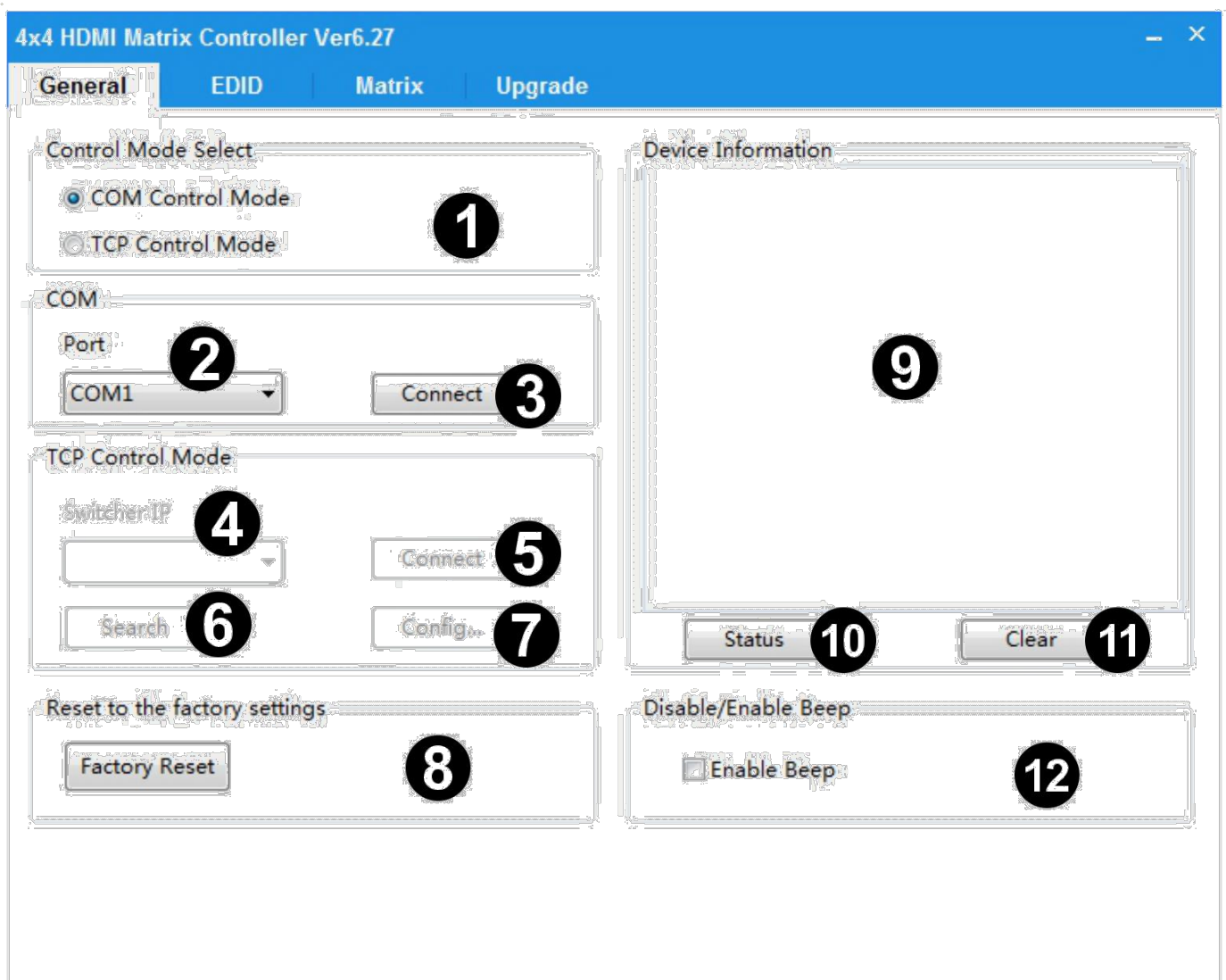
Matrix controller is a green software. Just copy MatrixController.exe to PC which is used to control the Matrix by RS232 COM port or TCP/IP to complete installation.

### Preparation

- Connect PC and Matrix by RS232 cable (headers of both sides of cable should be FEMALE) or TCP/IP(local area network)
- Power-up Matrix
- Double click MatirxController.exe icon to run it

### How to control Matrix

#### “General” page





1. Select RS232 COM or TCP mode
  2. Select RS232 COM port
  3. Click to connect or disconnect PC and Matrix
  4. Select Matrix IP
  5. Connect to Matrix IP
  6. Search Matrix IP
  7. Configure Matrix IP and MAC
  8. Click to reset to the factory settings
  9. Device information display area
  10. Click to refresh device status: include device information displayed in 9 areas and Input/Output Settings on “Matrix” page
  11. Click to clear device information
  12. Enable or disable Beep
- Configure TCP

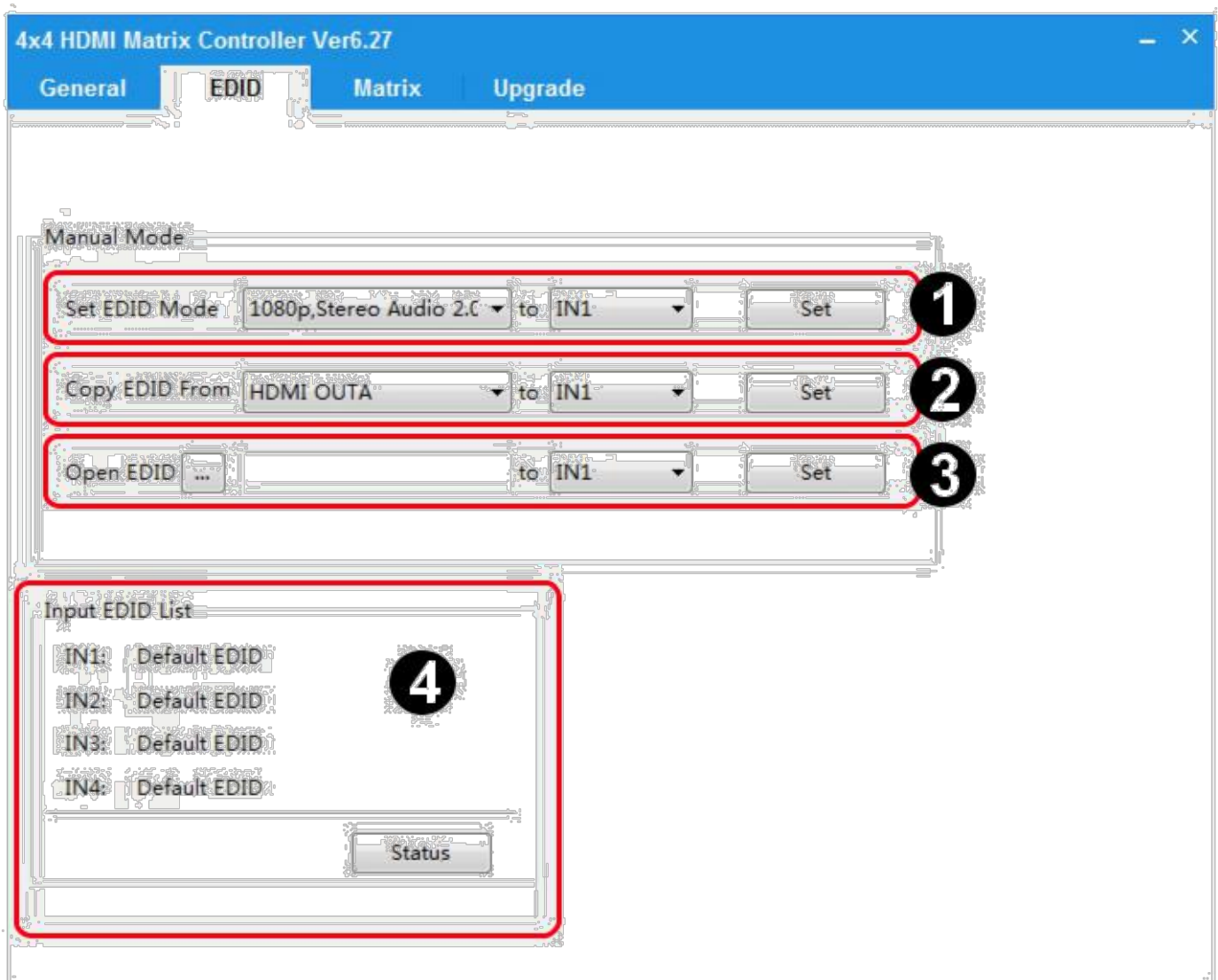
After action of 7 , edit form will pop-up as below:

The screenshot shows a dialog box titled "TCP Config" with a close button (X) in the top right corner. The main content area is titled "Device Information" and contains the following elements:

- Two radio buttons: "Auto IP" (selected) and "Static IP". A large black circle with the number "1" is placed over the "Auto IP" button.
- An "IP Address" section with four input boxes. A large black circle with the number "2" is placed over the rightmost input box.
- A "MAC" section with six input boxes. A large black circle with the number "3" is placed over the rightmost input box.
- Two buttons at the bottom: "OK" and "Cancel".

1. Select auto or static IP
2. Rewrite the Matrix IP
3. Rewrite the Matrix MAC

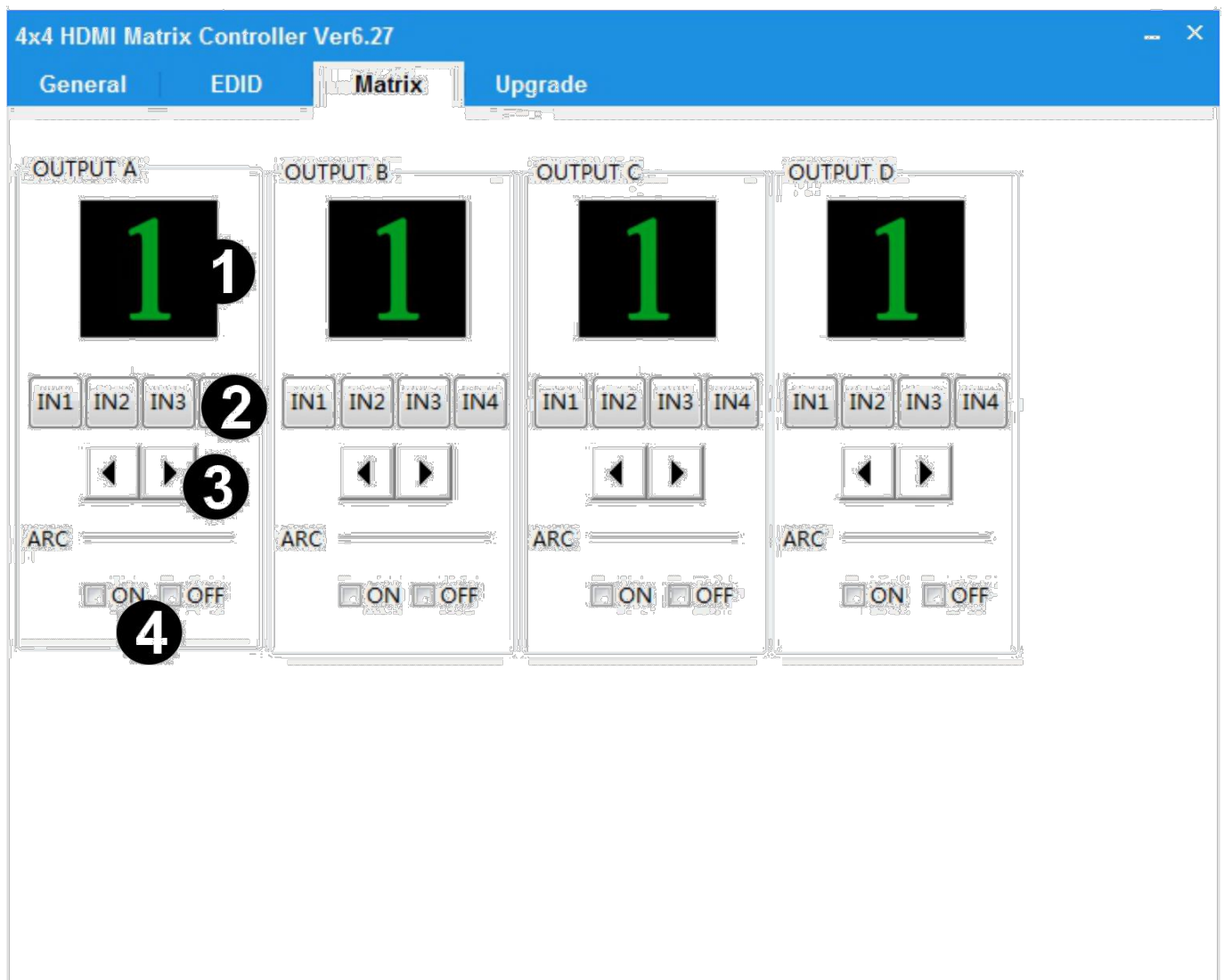
## “EDID control” page



The controller has 3 methods to set the EDID mode. Manual mode, Copy mode and open EDID file mode.

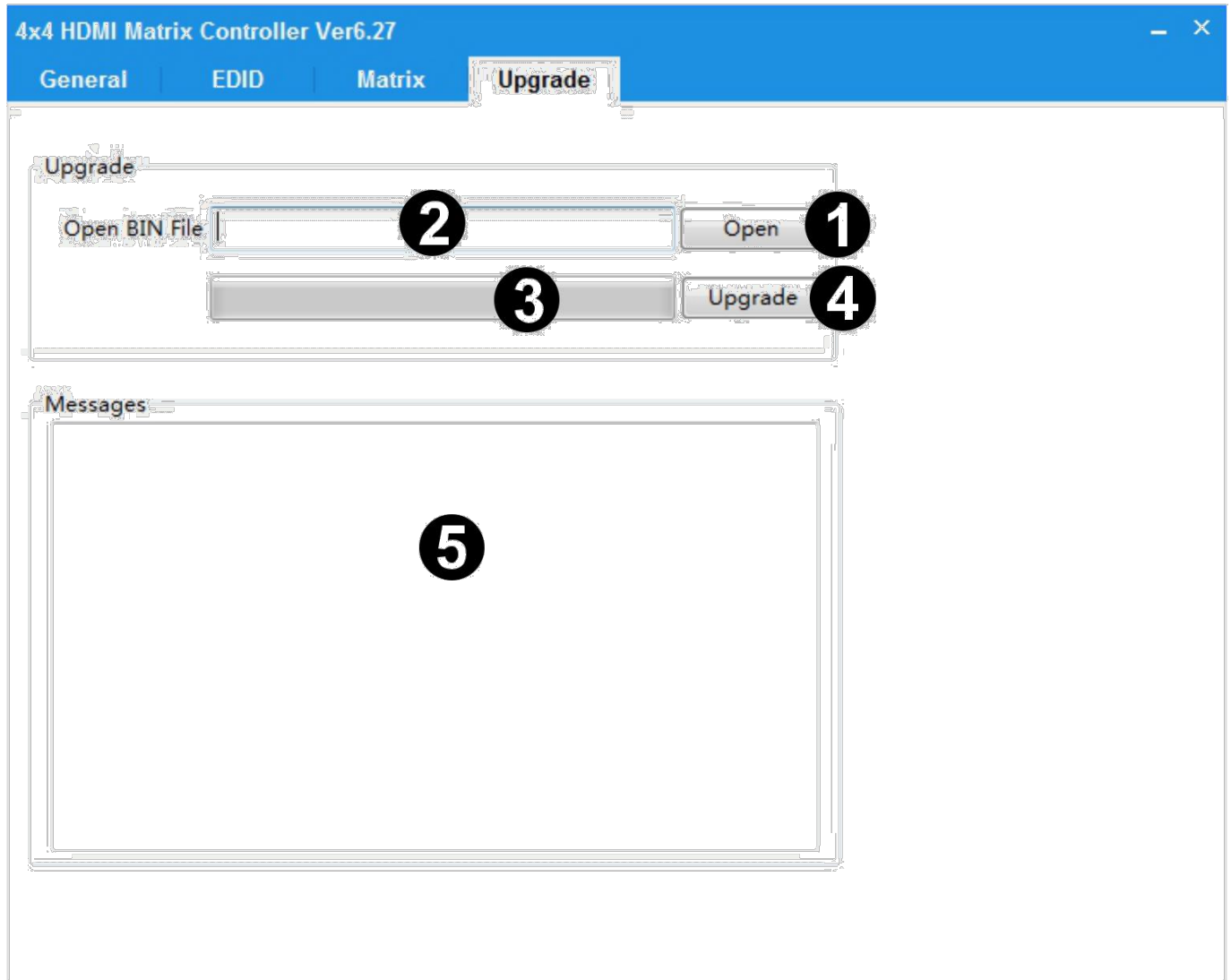
1. Select the needed EDID to input port and click set button the EDID will write to the selected HDMI input ports.
2. Copy the selected HDMI output or HDBT output EDID and click set button to write to the selected HDMI input ports.
3. Open the user define EDID file and click set button to write to the selected HDMI input ports.
4. Click the status button to refresh input EDID status.

## “Matrix” page



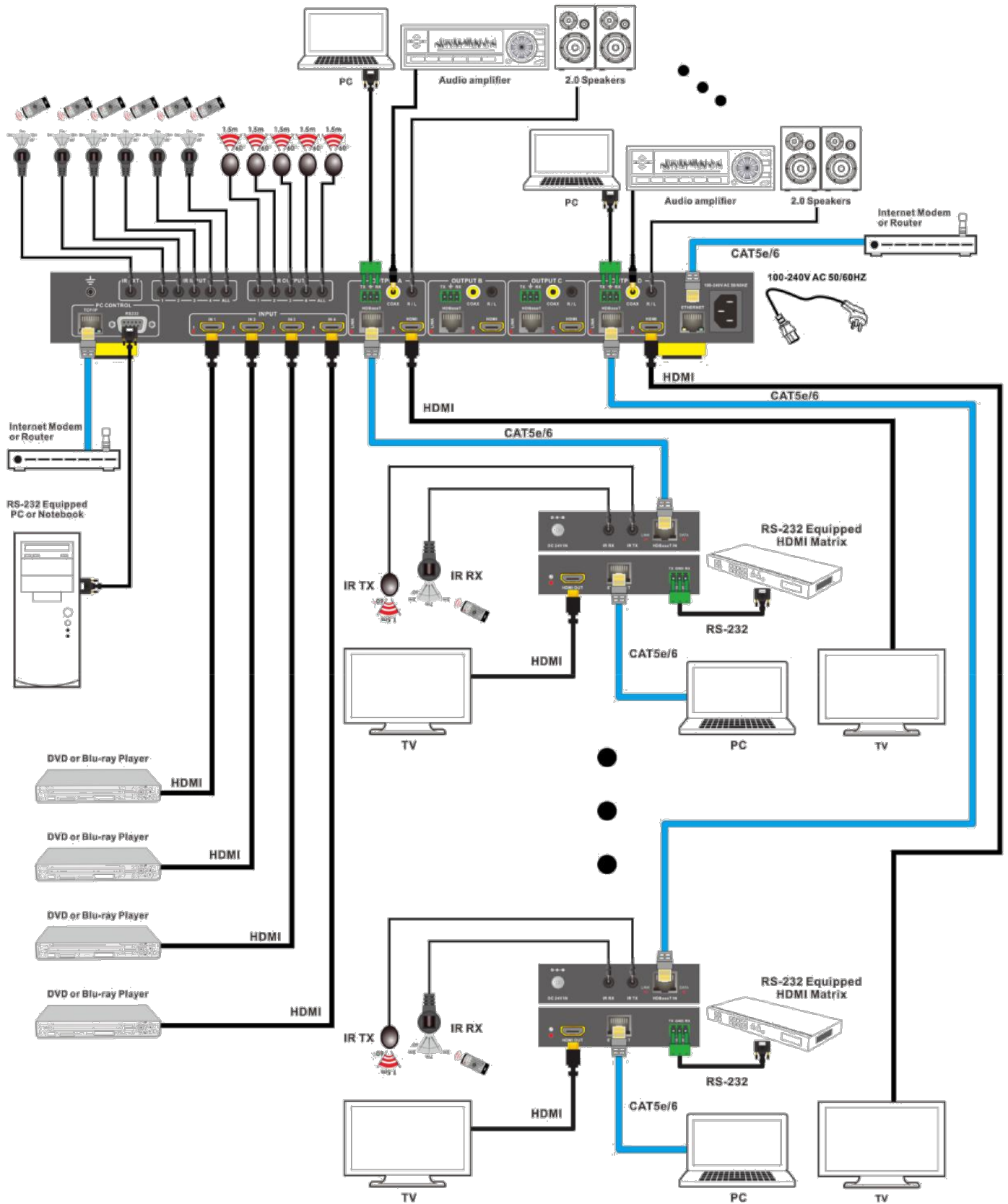
1. LED which display Input number for respective Output
2. Click to select Input port for respective Output port
3. Click to select previous or next Input port for respective Output port
4. Select ON/OFF to enable/disable ARC function.

## “FW upgrade” page



1. Click to open FW file (file extension is “.fw”)
2. Display the FW file path
3. Display the progress of the software upgrade
4. Click to upgrade the Matrix software
5. Display the message of the software upgrade

## X. Operate and Connect



**1.**