User Manual

HDBT44-N

HDBaseT 4x4 Matrix Switcher

Version: HDBT44-N_2015V1.5

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

This is a manual for HDBaseT 4x4 Matrix Switcher-N. It can also be applied to HDBaseT 4x4 Matrix Switcher with little adjustment. “N” stands for the TCP/IP port. This manual is only for operation instruction only, not for any maintenance usage. The functions described in this version are updated till January 2015. Any changes of functions and parameters since then will be informed separately. Please refer to the dealers for the latest details.

All product function is valid till 2015-01-30.

Contents

1. Introduction

1.1 Introduction to the HDBaseT 4x4 Matrix Switcher-N

HDBaseT 4x4 Matrix Switcher-N includes 4 HDMI inputs, 4 HDBaseT outputs, 2 local HDMI outputs, 4 de-embedded stereo audio & 4 de-embedded digital audio outputs.

It enables cross-point switching from any input to any output, and supports high resolution 1080P, 1080p 3D. HDBaseT output ports can work with HDMI PoC Twisted Pair Receiver, to transmit HDMI, IR, RS232 and PoC over a Cat5e/Cat6 cable. And its transmission distance can up to 60 meters.

1.2 Features

- Support 1080P@60Hz & 1080p 3D.
- HDCP Compliant and DVI compatible, supporting HDMI 1.4a & DVI1.0.
- Powerful EDID&HDCP management.
- HDBaseT outputs, to transmit HDMI, IR&RS232 to 60 meters long distance over a Cat5E/6 cable.
- Support PoC, provides power for all the receivers connected to HDBaseT outputs.
- Support multiple control ways, including front panel buttons, RS232, IR and optional TCP/IP control (works with TCPUDP).
- IR OUT signal switching follow with video signal, can also be separated from video switching.
- Support remote control from receiver by IR& RS232.
- Support centralized IR control to control all the remote display devices.
- Support PCM, Dolby, and DTS5.1 surround.
- LCD indicator shows connection status, switching status, HDCP status, and output resolution.

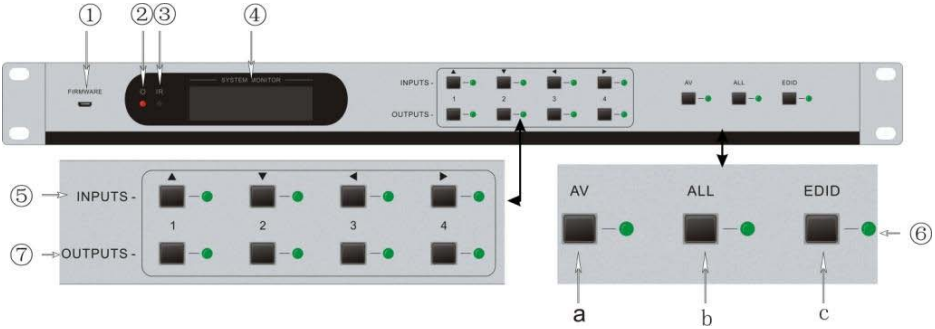
1.3 Package List

- 1 x HDBaseT 4x4 Matrix Switcher-N
- 2 x Mounting ears
- 10 x Screws (white color)
- 1 x RS232 cable
- 4 x IR converting cable
- 8 x Pluggable Terminal Blocks
- 4 x Plastic cushions
- 1 x IR remote
- 1 x Power adapter (DC 48V)
- 1 x Power cord
- 1 x User manual

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

2. Product Appearance

2.1 Front Panel



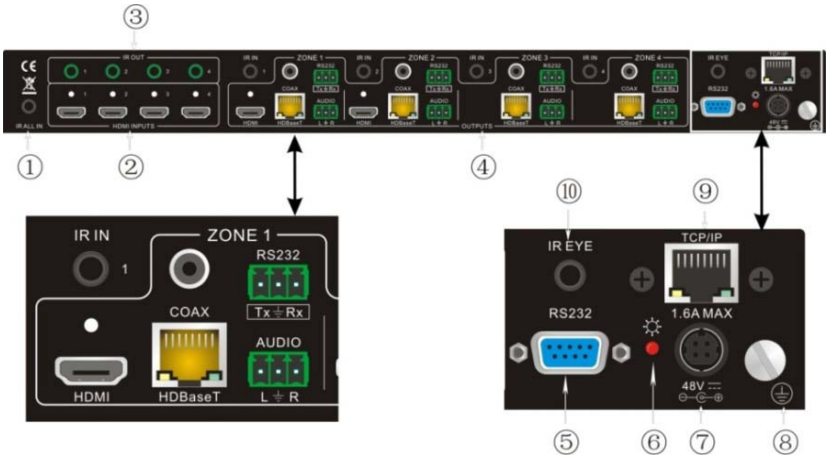
No.	Name	Description
①	Firmware	Micro USB port for firmware update.
②	Power Indicator	Illuminate red when power on.
③	IR Receiver	In-built IR sensor, receive control signal from IR remote.
④	LCD Screen	Shows real-time system status.
⑤	INPUTS/ Menu buttons	Normal mode: Input buttons, ranging from "1" to "4". Inquiry mode: Press “AV” and hold for more than 3 seconds to enter this mode. Dial ◄ ► to change different menus, ▲▼ to change different channels.
⑥	Function buttons	➢ **AV** synchronal button: To transfer AV and IR signal (from IR OUT port) synchronously by the switcher. **Note:** The 4 IR OUT ports correspond with the 4 HDMI INPUT ports separately. **Example:** To transfer both AV and IR signals from Input 1 to Output 3. **Operation:** Press buttons in this order “Input 1”, “AV”, “Output 3”.
		➢ **ALL** outputs button: To transfer one input to all outputs. **Example:** To transfer both AV and IR signals from Input 1 to all output channels. **Operation:** Press buttons in this order “Input 1”, “ALL”.
		➢ **EDID** management button: manually capture and learn the EDID data from output device. **Example:** Input 2 captures and learns the EDID data from Output 4. **Operation:** Press buttons in this order “EDID”, “Input 2”, “Output 4”.

⑦	OUTPUTS	Output buttons, ranging from "1" to "4", correspond to the 4 HDBaseT outputs ports.

With the front control panel, the switcher could be controlled directly and rapidly by pressing the buttons in this order: “Input Channel” + “AV” + “Output Channel”

- “Input Channel”: Fill with the number of input channel to be controlled.
- “Output Channel”: Fill with the number of output channels to be controlled.

2.2 Rear Panel

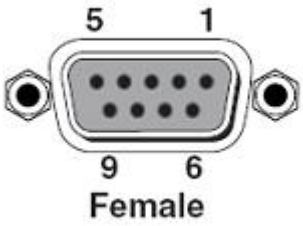


No.	Name	Description
①	IR ALL IN	IR control signal input port, connect with IR receiver, pass through to all the HDBaseT ports to control remote devices.
②	HDMI INPUTS	HDMI input ports, 4 in total, type A female HDMI connector, connect with HDMI input source devices.
③	IR OUT	Connect with IR transmitter, to emit the IR signal sent from the HDBaseT ports of the far-end Receiver. These IR OUTs make up an IR matrix with the IR INs on the HDBaseT receivers, and all IR signals can be switched synchronously with the AV signal, or separately switched.
④	OUTPUTS	**IR IN**: Connect with IR receiver, fixed IR input for the output, cannot be switched separately. It makes up an IR bi-directional transmission with the IR OUT on the corresponding HDBaseT receiver. **HDMI**: HDMI output port, connect with HDMI displayers, deliver same input signals with HDBaseT ports, split HDMI output for local monitoring. **COAX**: HDMI de-embedded digital audio output. **HDBaseT**: Works with HDBaseT receivers, such as the HDMI

		twisted pair receiver & HDMI PoC twisted pair receiver. It can extend AV, IR and RS232 signal to 60m distance. Meanwhile, it can provide power for the receivers which support PoC. **RS232**: Serial port to communicate with the RS232 port on corresponding HDBaseT receiver. When controlled by HDBaseT receiver, the communication protocol must be the same with the HDBaseT 4x4 Matrix Switcher-N. **AUDIO**: HDMI de-embedded stereo audio output
⑤	RS232	Serial port for unit control, 9-pin female connector, connects with control device such as a PC.
⑥	Power Indicator	Illuminate red when powered on.
⑦	48V DC	Connect with 48V DC power adaptor.
⑧	GROUND	Connect to grounding, make the unit ground well.
⑨	TCP/IP	TCP/IP port for unit control, optional function.
⑩	IR EYE	Connect with extended IR receiver, use the IR remote to control the HDBaseT 4x4 Matrix Switcher-N.

2.3 Connection with RS232 Communication Port

Except the front control panel, the HDBaseT 4x4 Matrix Switcher-N can be controlled by far-end control system through the RS232 communication port. This RS232 communication port is a female 9-pin D connector. The definition of its pins is listed in the table below.



No.	Pin	Function
1	N/u	Unused
2	Tx	Transmit
3	Rx	Receive
4	N/u	Unused
5	Gnd	Ground
6	N/u	Unused
7	N/u	Unused
8	N/u	Unused
9	N/u	Unused

2.4 Twisted Pair Cable Connection

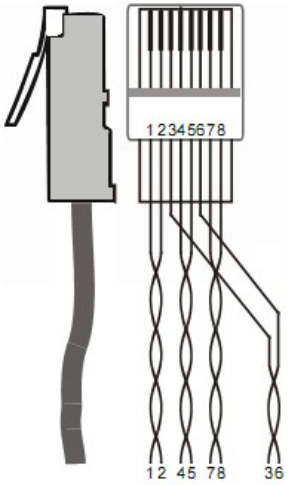
The cables for HDBaseT ports must be straight-through ones, using T568A or T568B standard. The connectors can be T568A or T568B, but both sides must be the same.

TIA/EIA T568A	
Pin	Cable color
1	green white
2	green
3	orange white
4	blue
5	blue white
6	orange
7	brown white
8	brown

1st Ground	4--5
2nd Ground	3--6
3rd Group	1--2
4th Group	7--8

TIA/EIA T568B	
Pin	Cable color
1	orange white
2	orange
3	green white
4	blue
5	blue white
6	green
7	brown white
8	brown

1st Ground	4--5
2nd Ground	1--2
3rd Group	3--6
4th Group	7--8



3. System Connection

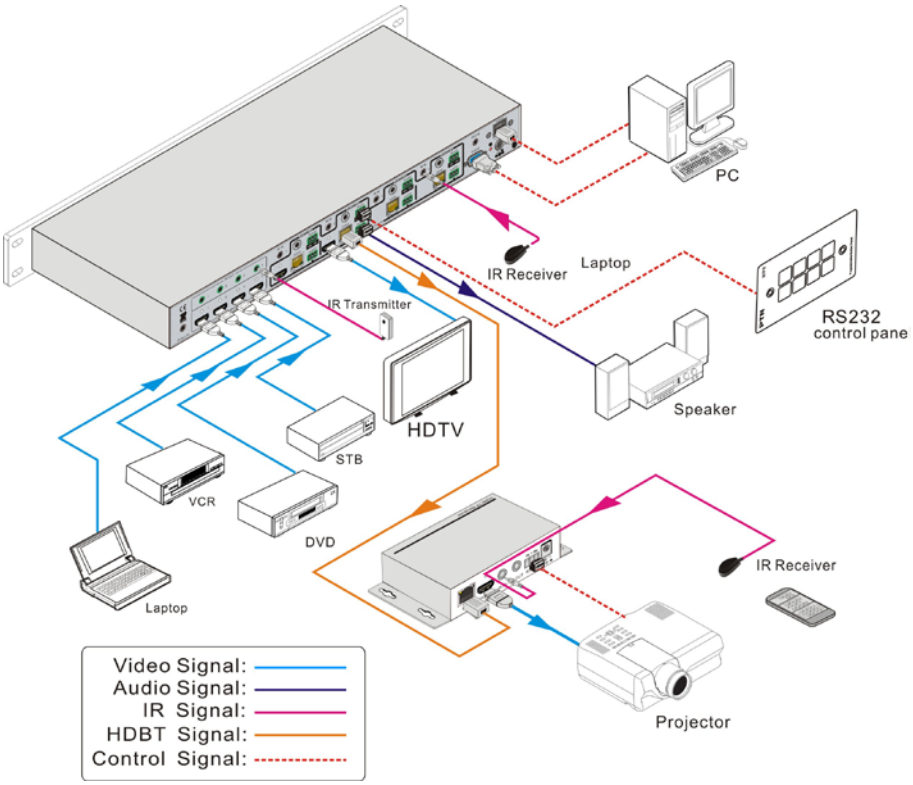
3.1 Usage Precautions

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

1) Connect HDMI source devices (e.g. DVD) to HDMI input ports of the HDBaseT 4x4 Matrix Switcher-N with HDMI cables.

2) Connect HDMI displayers (e.g. HDTV) to HDMI output ports of the HDBaseT 4x4 Matrix Switcher-N with HDMI cables.

3) Connect speakers/ earphones to AUDIO output ports (3-pin captive screw connectors).

4) Connect the HDBaseT ports of HDBaseT receiver and the HDBaseT 4x4 Matrix Switcher-N with twisted pair.

5) Connect the RS232 port (9 pin female D) of the HDBaseT 4x4 Matrix Switcher-N with control device (e.g. PC).

6) Connect the RS232 port of the device to be controlled to the RS232 port of the HDBaseT Receiver or HDBaseT 4x4 Matrix Switcher-N. The control signal can be transmitted bi-directionally.

7) HDBaseT 4x4 Matrix Switcher-N can be controlled by its built-in IR receiver or the external IR receiver connected to the IR EYE port. IR signals can be transmitted bi-directionally between HDBaseT 4x4 Matrix Switcher-N's IR OUT/ IR IN and HDBaseT Reciever's IR IN / IR OUT.

In this mode, we can control HDBaseT 4x4 Matrix Switcher-N remotely with HDBaseT 4x4 Matrix Switcher-N's IR Remote.

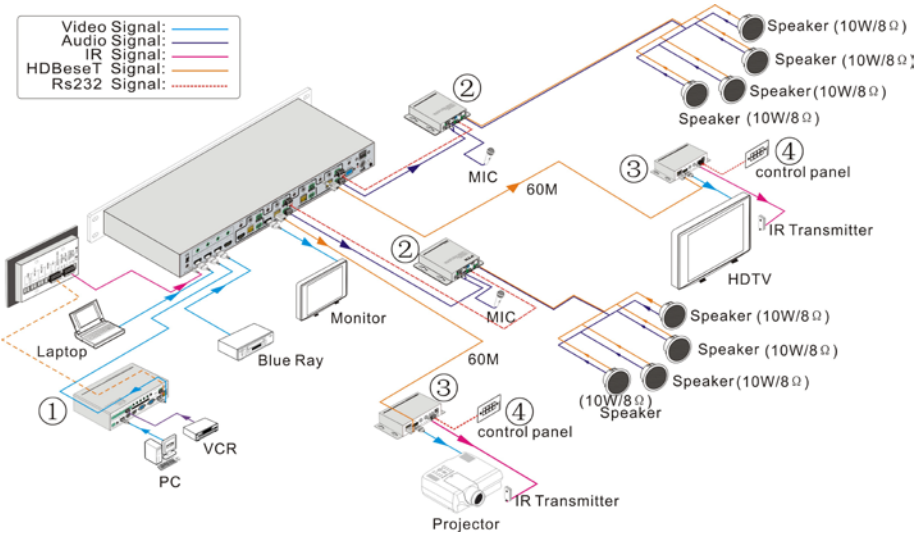
Note: The **IR IN** port has built-in infrared carrier receiver.

8) Connect a DC48V power adaptor to the power port of HDBaseT 4x4 Matrix Switcher-N.

3.4 System Applications

As its good performance in control and transmission, the HDBaseT 4x4 Matrix Switcher-N can be widely used in computer realm, monitoring, large screen displaying, conference system, television education and bank securities institutions etc.

4. Application Solution



Product Assortment Description:

① **Mini scaler switcher**

- Compliant with HDCP
- Supports CEC, with commands to enable/disable this function
- Supports video source auto-switching function
- Bi-directional IR & RS232 control
- Output resolutions selectable to assure preferred output, and supports various output resolutions, such as 1920x1200, 1920x1080, 1600x1200, 1360x768,

1280x800, 1280x720, 1024x768

- VGA video supports C-video, YPbPr and VGA
- Supports online software upgrading
- 48V phantom power to support condenser microphone
- MIC port supports balance/unbalance signal, suppress the external noise effectively
- 3-level MIC input, supports condenser microphone, dynamic microphone and wireless microphone
- Controllable via button, IR & RS232
- Powerful OSD function

② **40W power amplifier**

- Mono audio output at 40Watt.
- Switchable between 70V and 100V.
- Ducking function.
- 16 ID codes for controlling between different 40W power amplifiers.
- 3-level MIC input, supports condenser microphone, dynamic microphone and wireless microphone.
- MIC port can support balance/unbalance signal, suppress the external noise effectively.
- Two stereo audio inputs and one digital audio input, switchable by button, IR remote & RS232.
- Volume/Bass/Treble controllable by buttons, IR remote & RS232.
- Fast switching speed for good performance.
- Convection cooler, fan is not needed.

③ **HDMI/IR/RS232 PoC twisted pair extender**

- Support Full HD: Delivers high resolution image (1080p@60Hz@48 b/pixels/3D/4Kx2K).
- Max transmission distance is up to 70 meters over single CAT5e/CAT6 cable.
- HDTV Compatible, use HDMI 1.4 and HDCP compliant.
- Support PoC & CEC.
- Connect with a displayer to transmit EDID and HPD signals constantly by using a CAT5e cable.
- Use HDBaseT technology.
- Bi-directional RS232/IR control.

④ **Control panel**

- Every button can be programmed to send the bi-direction RS232 and RS485 commands simultaneously to control third party devices.
- Every button can be programmed to send the infrared code, control the relay, to let them work simultaneously to control the third party devices.
- Every button is built in the infrared code and RS232 code learning function, and baud-rate setting.
- ID looping function. 99pcs control panel can be looped and controlled together, by ID

identifying.

- Programmed by USB or RS232, working with the PC software (PS-WP).
- Crystal and backlit buttons with easy user-friendly customizable changeable labels.
- The backlit brightness is controllable.
- Dimension: 11.4cm long and 7cm wide.

5. System Operations

5.1 Button Control

The operation examples are showed in ***2.1 Front Panel.*** Here we make a brief introduction to the system inquiry operations.

Press and hold the button “AV” for 3 seconds, it will enter into system inquiry menu. Use Left and Right direction buttons to check the previous/next item.

Function Items	Example	Description
Check the connection status of inputs	In 1 2 3 4 Connect Y Y Y Y	Y means the corresponding port is connected with input device, N means not.
Check the connection status of outputs	Out 1 2 3 4 Connect Y Y N N	Y means the corresponding port is connected with output device, N means not.
Correspondence between inputs and outputs	Out 1 2 3 4 Input 1 2 3 3	Shows the correspondence between the 4 inputs and 4 outputs.
Check if the input is with HDCP	In 1 2 3 4 HDCP Y Y Y N	Y means the input signal is with HDCP, N means not.
Check if the output is with HDCP	Out 1 2 3 4 HDCP Y Y Y N	Y means the output signal is with HDCP, N means not.
Check the output resolution	Resolution Out 1 1920x1080	Use the **UP** and **DOWN** direction button to check all the 4 output resolutions.

5.2 IR Control

By using IR & HDBaseT transmission technology, the HDBaseT 4x4 Matrix Switcher-N has some functions as follows:

1) Control far-end output device from local.
2) Control local input/output device remotely.
3) Control the HDBaseT 4x4 Matrix Switcher-N locally/remotely.

The HDBaseT 4x4 Matrix Switcher-N can be controlled by its built-in IR receiver or through the IR EYE port by connecting with extended IR receiver, or even can be controlled remotely by a far-end IR device through the twisted pair.

5.2.1 Usage of IR Remote

Standby button, press it to enter / exit standby mode.

Input channels, range from 1~4, IR signals are switched synchronously with HDMI signal

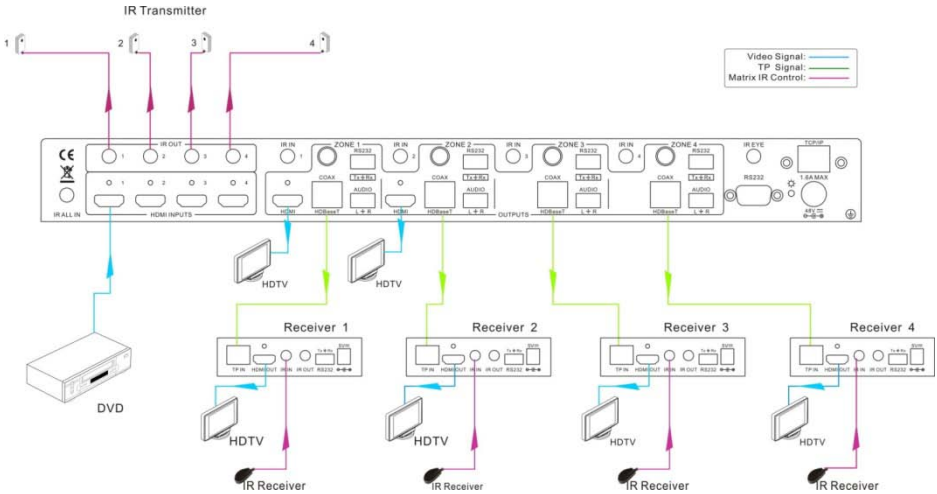
Menu buttons, button **AV** and **ALL** have the same function as the front panel. **THROUGH**: To transfer the signals directly to the corresponding output channels
Example: Press “3”, “THROUGH”, the result will be IN 3→OUT 3. Press “ALL”, “THROUGH”, the result will be: 1→1, 2→2, 3→3, 4→4

Output channels, range from 1~4.
Each channel has 1 IR IN, 1 COAX, 1 HDBaseT, 1 RS232, and 1 AUDIO output, and channel No.1 & No.2 has 1 HDMI output.

5.2.2 IR Operations

1) IR Matrix Switching

The 4 “IR OUT” ports make up a 4x4 IR matrix with the “IR IN” ports of the far-end receivers. See as below:



Control Local Devices or the HDBaseT 4x4 Matrix Switcher-N Remotely

The IR signal is received from corresponding IR remote, then transferred to HDBaseT receiver, then to corresponding zone of the matrix through the twisted pair, finally transferred to IR OUT port and received by controlled device.

Switching Operation:

a) Sending command (reference to *5.3 RS232 Control)*: [x1]R[x2].

x1: Corresponding to the 4 IR OUT ports of the matrix, The IR transmitter connected to this port can be placed at IR receiving area of output device or the matrix itself.

x2: Corresponding to the zone number (IR signal transmit to the HDBaseT receiver and then gets to HDBaseT port of this zone via the twisted pair)

E.g.: Command “3R2.” means to transfer IR signal received from zone 2 to IR OUT port 3.

b) Using IR remote: Input channel→button **IR**→Output channel

Input channel: the 4 INPUTS buttons, corresponding to the 4 IR OUT ports of the matrix.

Output channel: the 4 OUTPUTS buttons, corresponding to the zone (receive IR signal from HDBaseT receiver with IR IN port connects with IR receiver) number of the matrix.

E.g.: Press buttons “3”, “IR”, “1” in order, “3” in OUTPUTS area, “1” in INPUTS area, to transfer IR signal received from zone 3 to IR OUT port 1.

Note: When switch all the 4 IR input signal channels to a same IR out channel, it is not able to control the controlled device(s) at the same time.

2) IR Carrier Enforcing

a) Only if the IR receiver connected with HDBaseT receiver is with IR carrier, the received IR signal can be transferred to IR OUT port of the matrix.

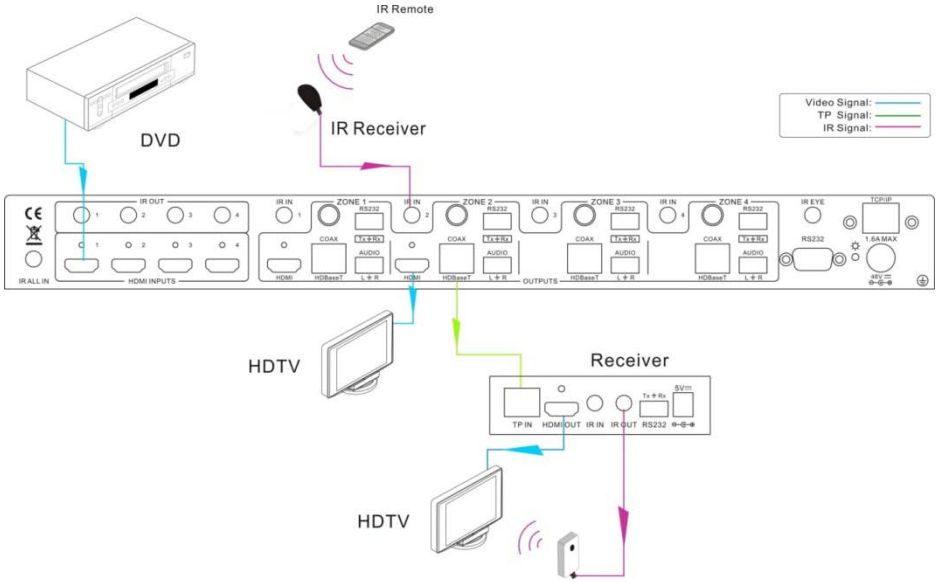
b) Only if the IR receiver connected with IR **ALL IN** port of the matrix is with IR carrier, the received IR signal can be transferred to IR OUT port of the matrix.

If the IR receiver connected with HDBaseT receiver or IR ALL IN port of the matrix is not with IR carrier, you need to send the command "**%0901.**", and then you are able to transfer the IR signal to IR OUT port.

3) Control far-end output device from local

When need to control a remote displayer from local, the IR receiver used must be with IR carrier. The IR signal is transferred to the corresponding zone connected with HDBaseT receiver connected with the **IR transmitter**. When the **IR receiver** is connected to IR ALL IN port, the IR signal can be finally transferred to all the 4 IR transmitters connected with HDBaseT receivers.

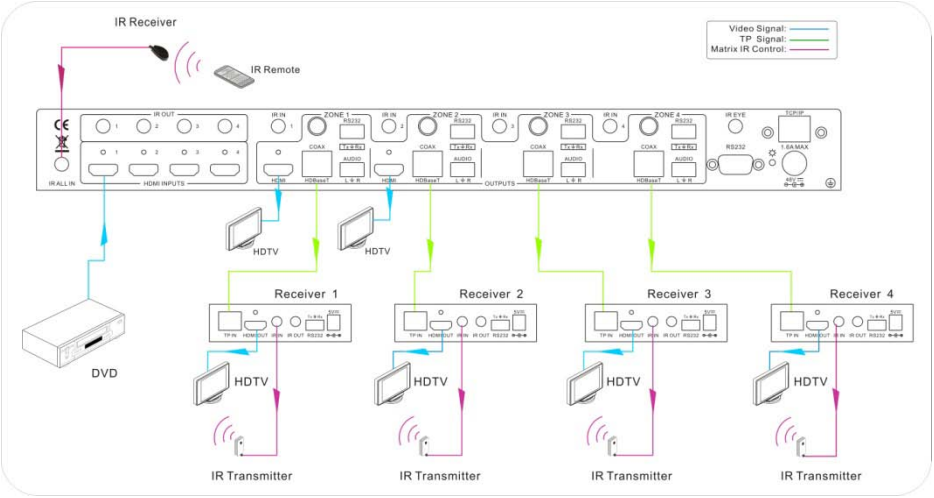
As the figure below:



Control far-end device from Local

4) Control far-end device through IR ALL IN port

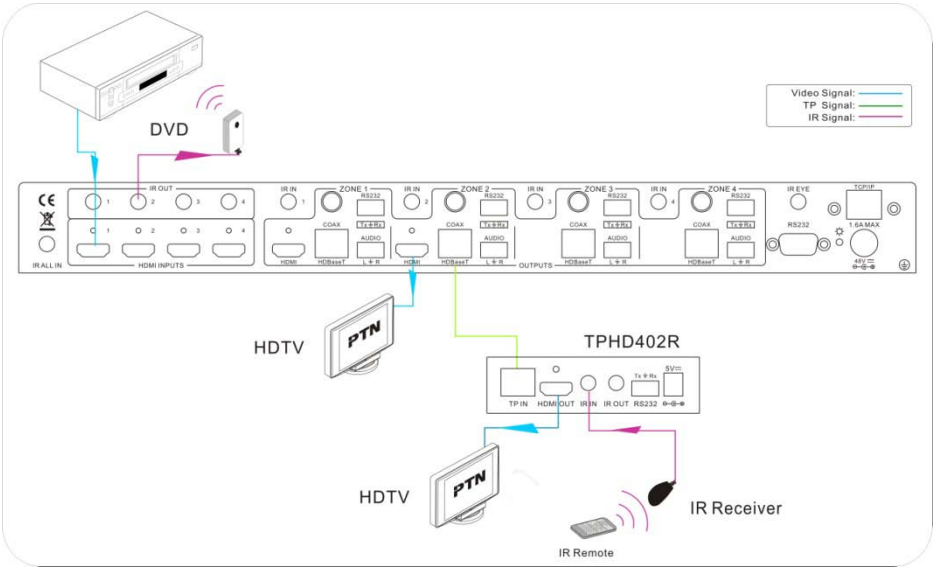
The IR signal received from IR ALL IN port will be transmitted to all the four far-end HDBaseT receivers connected to HDBaseT ports of the HDBaseT 4x4 Matrix Switcher-N. See as below:



Control far-end device through IR ALL IN port

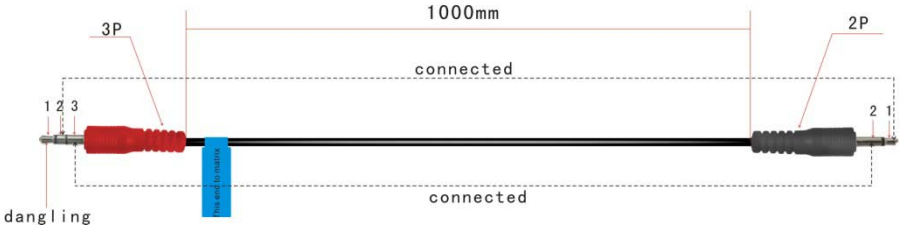
5) Control local device from remote

User can control local device such as video source device, HDBaseT 4x4 matrix etc remotely. When using, the IR signal received from the HDBaseT receiver will be transmitted to the corresponding IR OUT port of the HDBaseT 4x4 Matrix Switcher-N. See below:



6) Controlled by a Third-party IR Control Device

Use the included IR converting cable (see as below), connect the **3-pin** end to IR input port of the HDBaseT 4x4 Matrix Switcher-N, the **2-pin** end to IR output port of the third-party control device. Then the IR signal is able to be transmitted via the twisted pair, and finally gets to the remote output device.



5.3 RS232 Control

5.3.1 RS232 Commands

Through the RS232 communication port, user can control a far-end device whose bound rate is 2400, 4800, 9600, 19200, 38400, 57600 or 115200. Default setting of the HDBaseT 4x4 Matrix Switcher-N: bound rate is 9600, data bit is 8, stop bit is 1 and parity bit is none.

Communication protocol: RS232 Communication Protocol

Baud rate: 9600 Data bit: 8 Stop bit: 1 Parity bit: none

Command Types	Command Codes	Functions
System Command	/*Type;	Inquire the models information.
	/%Lock;	Lock the front panel buttons on the Matrix.
	/%Unlock;	Unlock the front panel buttons on the Matrix.
	/^Version;	Inquire the version of firmware
	/:MessageOff;	Turn off the feedback command from the com port. It will only show the “Switch Ok”.
	/:MessageOn;	Turn on the feedback command from the com port.
	Demo.	Switch to the “demo” mode, 1->1, 2->2, 3->3 … and so on .The switching interval is 2 seconds.
	Undo.	To cancel the previous operation.
Operation Command	[x]All.	Transfer signals from the input channel [x] to all output channels
	All#.	Transfer all input signals to the corresponding output channels respectively.
	All$.	Switch off all the output channels.
	[x]#.	Transfer signals from the input channel [x] to the output channel [x].
	[x]$.	Switch off the output channel [x].
	[x]@.	Switch on the output channel [x].
	All@.	Switch on all output channels.
	[x1] V[x2].	Transfer the AV signal from the input channel [x1] to the output channel [x2].
	[x1] B[x2].	Transfer the AV and IR signal from the input channel [x1] to the output channel [x2].
	Status.	Inquire the input channel to the output channels one by one.
	Save[X].	Save the present operation to the preset command [X], ranges from 0 to 9.
	Recall[Y].	Recall the preset command [Y].
	Clear[Y].	Clear the preset command [Y].
	PWON.	Work in normal mode.
	PWOFF.	Enter into standby mode and cut off the power supply to HDBaseT receivers.
	STANDBY.	Enter into standby mode.

	/%[Y]/[X]:[Z].	HDCP management command. [Y] is for input (value: I) or output (value: O). [X] is the number of one port, if the value of X is ALL, it means all ports. [Z] is for working status (value: 1 or 0). ➢ Y=I & Z=1, means the input port is compliant with HDCP. ➢ Y=O & Z=1, means output with HDCP. ➢ Y=I & Z=0, means the input port is not compliant with HDCP. ➢ Y=O & Z=0, means output without HDCP.
	[x1] R[x2].	Transfer the IR signal from the input channel [x1] to the output channel [x2].
	DigitAudioON[x].	Enable HDMI audio output of port x. ● X=1, 2, 3, 4, enable this one port. ● X=5, enable all the 4 ports.
	DigitAudioOFF[x].	Disable HDMI audio output of port x. ● X=1, 2, 3, 4, disable this one port. ● X=5, disable all the 4 ports.

	/+[Y]/[X]:******.	Set communication between PC and HDBaseT receiver. ① Y is for RS232 port (connect with RS232 port of HDBaseT receiver) Value = 1,2,3,4,5,A,B,C,D,E,F,G or H The value of **Y** is defined into the following meanings (in a given baud rate depended by the value of X): **a.** Y = **1**, **2**, **3** or **4**, send this command to the corresponding HDBaseT receiver to control far-end device. **b.** Y = **5**, send this command to all HDBaseT receivers to control all far-end devices. **c.** Y = **A**, **B**, **C** or **D** **d.** Y = **E**, **F**, **G** or **H** For items **c** or **d**, send this command, it will be saved to the matrix switcher but taken without action to corresponding HDBaseT receiver. And its command function will be effective almost at the same time when you send the command **PWON** (for item **c**) or **PWOFF** (for item **d**). **Note:** **A** & **E** are for port **1.** **B** & **F** are for port **2.** **C** & **G** are for port **3.** **D** & **H** are for port **4.** ② X is for bound rate (Value ranges from 1 to 7, 1 is for 2400, 2 for 4800, 3 for 9600, 4 for 19200, 5 for 38400, 6 for 57600 and 7 for 115200) ③ ***** is for data (**max 48 Byte**) ④ The symbol "." is the end of one command. If there are some symbols of "." in one command, this case is allowed and the last one is the end.
	EDIDH[x]B[y].	Copy the EDID from output port [x] to input port [y]. If the EDID data is effective and the audio part supports not only PCM mode, then force-set it to PCM mode. If the EDID data is not effective, then set it as initialized EDID data.
	EDIDPCM[x].	Set the audio part of input port [x] to PCM format in EDID database.
	EDIDG[x].	Get EDID data from the output and display the output port number of X.

	EDIDMInit.	Recover the factory default EDID data.
	EDIDM[X]B[Y].	Manually EDID switching. Copy the EDID data of output[X] to the input[Y].
	EDIDUpgrade [x].	Upgrade EDID data via the RS232 port [X] is for input port, when the value of X is 5, it means to upgrade to all input ports. When the switcher gets the command, it will show a message to send EDID file (.bin file). Operations will be canceled after 10 seconds. (Note 1) Please cut off all connections of HDBaseT ports.
	UpgradeIntEDID[x].	Select one type of EDID data and upgrade built-in EDID data. Supports 4 types of EDID data: 1. 1080P, 2D, PCM2.0 2. 1080P, 2D, 5.1 (audio) 3. 1080P, 3D, PCM2.0 4. 1080P, 3D, 5.1 (audio) [x] = 1, 2, 3 or 4 When the switcher gets the command, it will show a message to send EDID file (.bin file). Operations will be canceled after 10 seconds.
	EDID/[x]/[y].	Set the built-in EDID data of input port [x] to type [y]. The value of [y] is 1, 2, 3, and 4. The EDID data types are same as mentioned above.
	%0801.	Automatically HDCP management. Input is with HDCP, so is output.
	%0900.	Set as infrared carrier following mode.
	%0901.	Set as infrared carrier enforcing mode.
	%0911.	Reset to factory default.
	%9951.	Check the command sent by port 1 when PWON.
	%9952.	Check the command sent by port 2 when PWON.
	%9953.	Check the command sent by port 3 when PWON.
	%9954.	Check the command sent by port 4 when PWON.
	%9955.	Check the command sent by port 1 when PWOFF.
	%9956.	Check the command sent by port 2 when PWOFF.
	%9957.	Check the command sent by port 3 when PWOFF.
	%9958.	Check the command sent by port 4 when PWOFF.
	%9961.	Check the system locking status.

	%9962.	Check the status while in standby mode.
	%9963.	Check the working mode of infrared carrier.
	%9964.	Check the IP address (**only for the PCB with GUI**).
	%9971.	Check the connection status of the inputs.
	%9972.	Check the connection status of the outputs.
	%9973.	Check the HDCP status of the inputs.
	%9974.	Check the HDCP status of the outputs.
	%9975.	Check the switching status.
	%9976.	Check the output resolution.
	%9977.	Check the status of digital audio of output channels.
	%9978.	Check the HDCP status of the input ports.

Note:

1) Please disconnect all the twisted pairs before sending command EDIDUpgrade[X].

2) In above commands, "["and "]" are symbols for easy reading and do not need to be typed in actual operation.

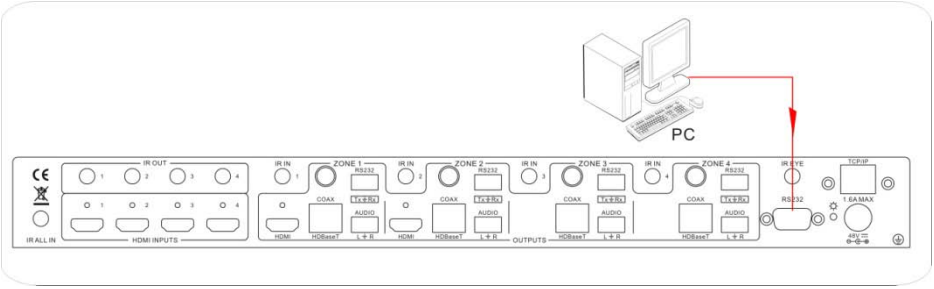
3) Please remember to end the commands with the ending symbols "." and ";".

4) Type the command carefully, it is case-sensitive.

5.3.2 Control the HDBaseT 4x4 Matrix Switcher-N

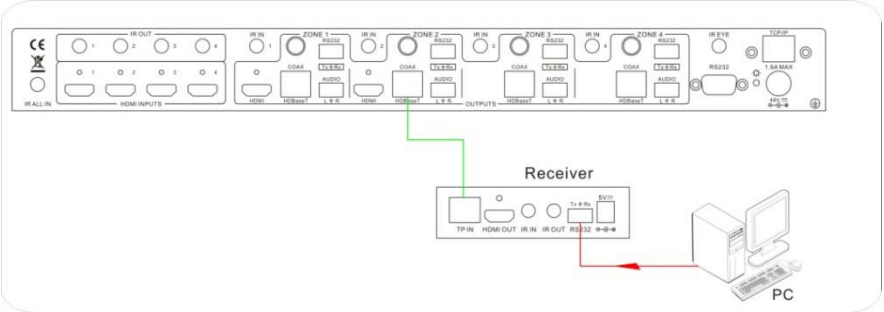
To control the HDBaseT 4x4 Matrix Switcher-N, you need to connect its 9 pin female RS232 port to PC's RS232 port, or you can just connect any one of the HDBaseT receiver's RS232 port with PC (RS232 command transmits to the HDBaseT 4x4 Matrix Switcher-N via the twisted pair). By using RS232 control software and setting right specifications, you are able to control the HDBaseT 4x4 Matrix Switcher-N.

- **Control the HDBaseT 4x4 Matrix Switcher-N from local**



Control the HDBaseT 4x4 Matrix Switcher-N from local

- **Control the HDBaseT 4x4 Matrix Switcher-N from remote**

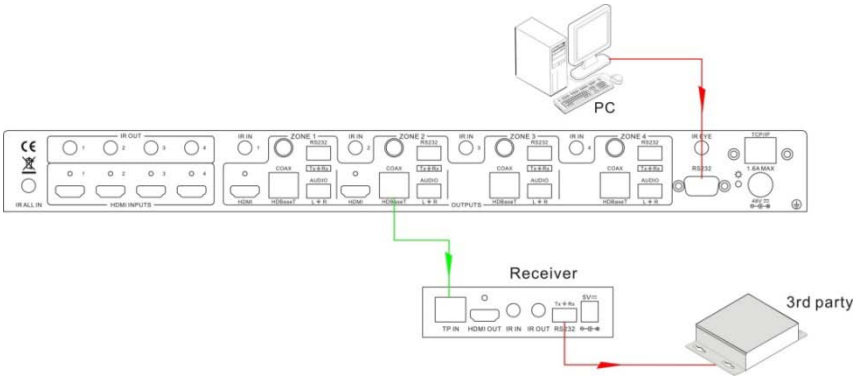


Control the HDBaseT 4x4 Matrix Switcher-N from remote

5.3.3 Control 3rd-Party Device from Local

Connect the 9 pin female RS232 port of the HDBaseT 4x4 Matrix Switcher-N with PC, by using the RS232 command "**/+[Y]/[X]:******.**", you are able to control the 3rd-party device connected with the HDBaseT receiver.

Please reference to the detailed command description *in 5.3.1 RS232 Commands.*



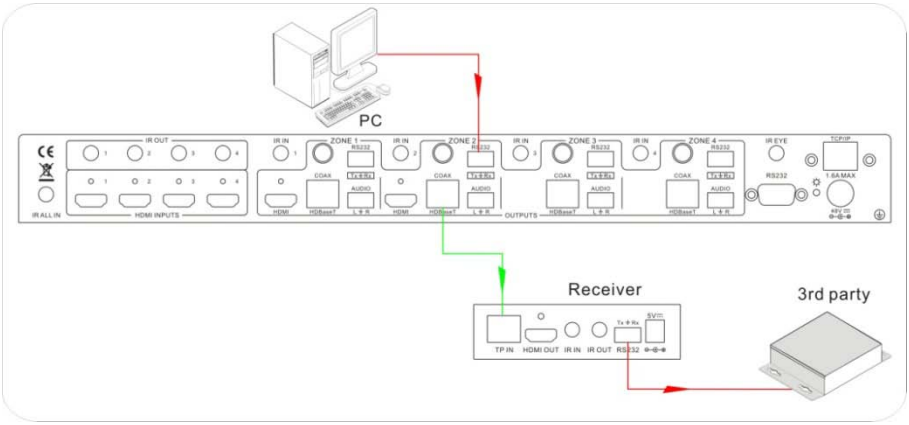
Control 3rd-party Device through 9 pin female RS232 port

5.3.4 Bi-directional RS232 Control

By connecting one 3p captive screw RS232 port with PC (or controlled device), and connecting the RS232 port of **corresponding HDBaseT receiver** with controlled device (or PC), the RS232 signal is able to be transmitted bi-directionally.

- **Control far-end device from local**

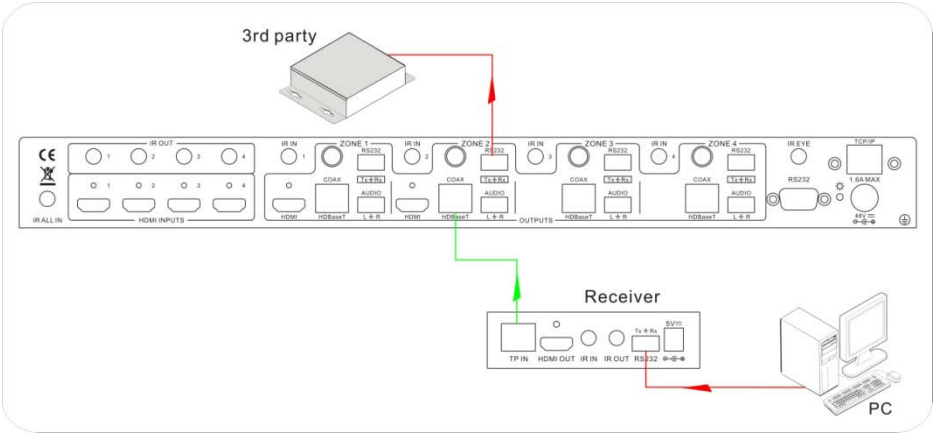
Connect the RS232 (3P captive screw) port in one zone to PC, and connect the controlled RS232 device (3rd party device) to the corresponding (same zone as PC) receiver, see below:



Control far-end device from local

- **Control the HDBaseT 4x4 Matrix Switcher-N from remote**

Connect the RS232 (3p captive screw) port in one zone to controlled device (3rd party device), and connect PC to the corresponding (same zone as controlled device) receiver, see below:



Control the HDBaseT 4x4 Matrix Switcher-N from remote

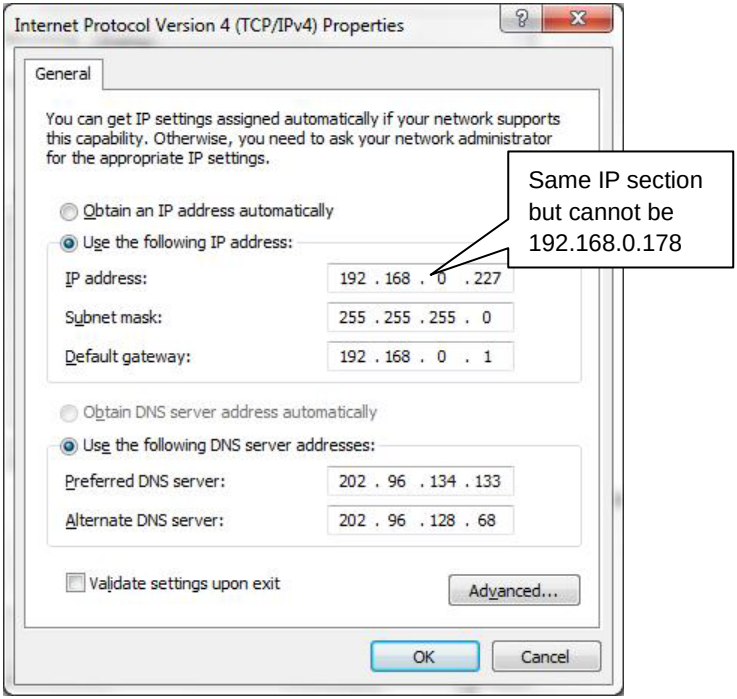
5.4 TCP/IP Control

5.4.1 Control Modes

TCP/IP default settings: IP is 192.168.0.178, Gateway is 192.168.0.1, and Serial Port is 4001. IP & Gateway can be changed as you need, Serial Port cannot be changed.

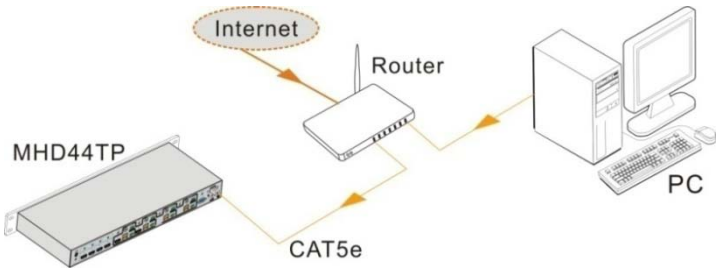
- **Controlled by PC without network accessing**

Connect a computer to the HDBaseT port of HDBaseT 4x4 Matrix Switcher-N, and set its IP address and gateway to the same IP section as the default IP of HDBaseT 4x4 Matrix Switcher-N (192.168.0.178).



- **Controlled by PC(s) in LAN**

HDBaseT 4x4 Matrix Switcher-N can be connected with a router to make up a LAN with the PC(s), this make it able to be controlled in a LAN. Make sure HDBaseT 4x4 Matrix Switcher-N's IP section is the same with the router. Please connect like the following figure for LAN control.



Step1. Connect the TCP/IP port of HDBaseT 4x4 Matrix Switcher-N to Ethernet port of PC with twisted pair.

Step2. Set the PC's IP address and gateway to the same IP section as HDBaseT 4x4 Matrix Switcher-N's. Do remember the PC's original IP address and gateway.

Step3. Set HDBaseT 4x4 Matrix Switcher-N's IP address and gateway to the same IP section as the router's.

Step4. Set the PC's IP address and gateway to the original one.

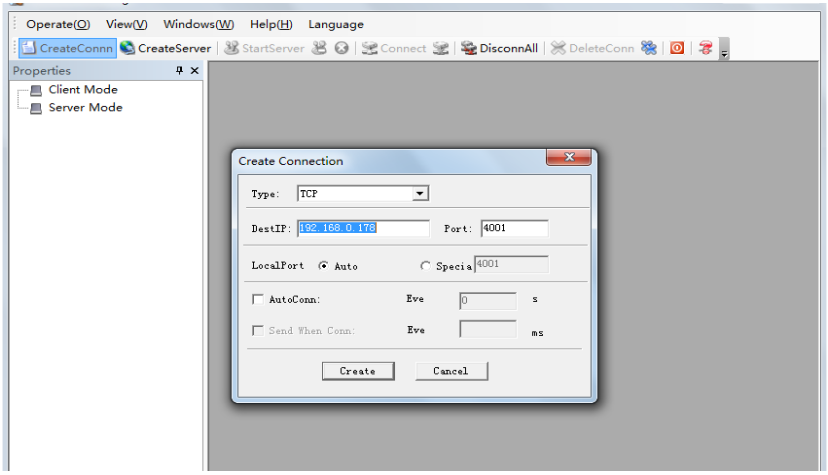
Step5. Connect HDBaseT 4x4 Matrix Switcher-N and PC(s) to the router. PCs in the same LAN are able to control HDBaseT 4x4 Matrix Switcher-N **asynchronously**.

Then it's able to control the device via a TCP/IP communication software.

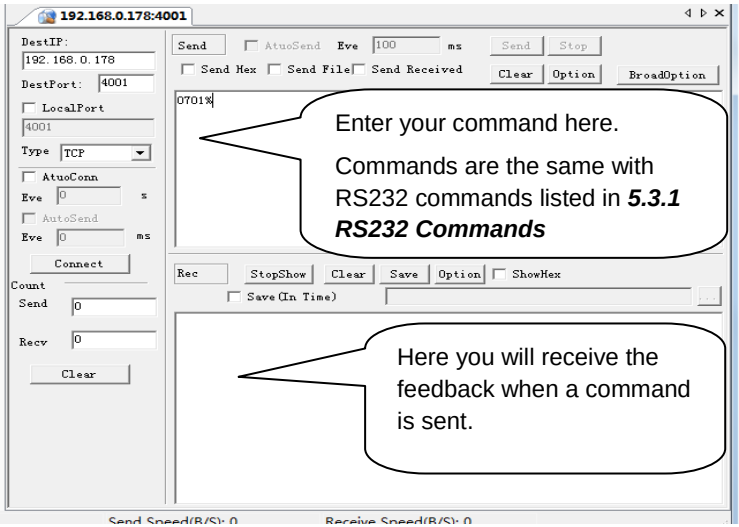
5.4.2 Control HDBaseT 4x4 Matrix Switcher-N via TCP/IP communication software

(Exampled by TCPUDP software)

1) Connect a computer and HDBaseT 4x4 Matrix Switcher-N to the same network. Open the TCPUDP software (or any other TCP/IP communication software) and create a connection, enter the IP address and port of HDBaseT 4x4 Matrix Switcher-N (default IP: 192.168.0.178, port:4001):



2) After connect successfully, we can enter commands to control the HDBaseT 4x4 Matrix Switcher-N, as below:

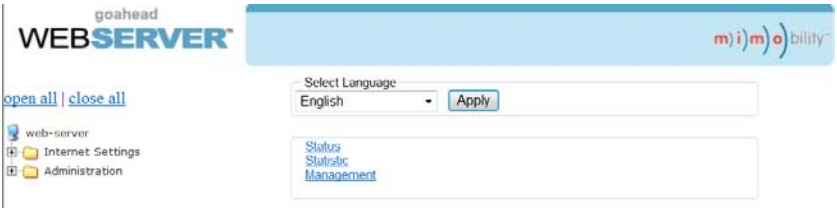


5.4.3 TCP/IP Configuration

Type the designed website (Default: 192.168.0.178:100, changeable) in your browser. Enter correct username and password to log in the WebServer:

Username: admin; **Password**: admin

Here is the main configuration interface of the WebServer:

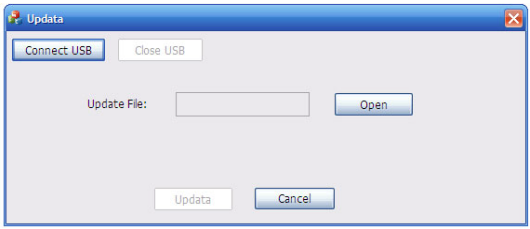


Users can configure the IP port, including the IP reset, Serial reset and password reset, update firmware of the IP module on the WebServer.

5.5 USB Firmware Updating

To meet the needs of different users or further addition function, the firmware of the device can be upgraded via USB. When you need to upgrade it, please download the latest upgrade file and then you are able to upgrade it through the update .exe file. Copy the .exe file to the PC in controlled and double chick the program to upgrade the firmware.

When the program is running normally, it will enter into the interface (as shown in the next figure), please press the button Open and choose the upgrade file downloaded, and then press the button Connect USB. It is ready to upgrade.



When all are done, it will appear with a window showing the message **Update success**.

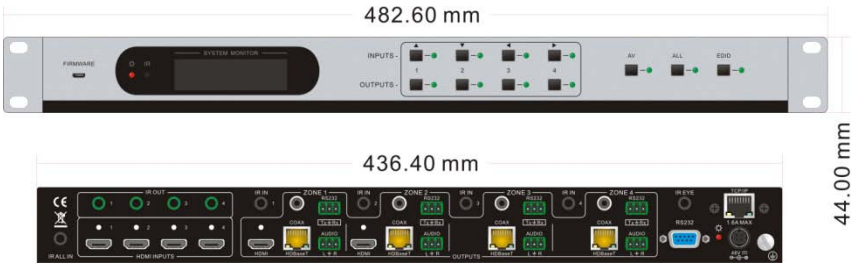
Note: The COM number connected with PC is available only when in 1 to 9.

6. Specification

Video Input		**Video Output**	
Input	4 HDMI	Output	2 HDMI 4 HDBaseT
Input Connector	Female HDMI	Output Connector	Female HDMI Female RJ45(with LED indicators)
Input Level	T.M.D.S. 2.9V~3.3V	Output Level	T.M.D.S. 2.9V~3.3V
Input Impedance	100Ω (Differential)	Output Impedance	100Ω (Differential)
Video General			
Gain	0 dB	Bandwidth	6.75Gbit/s
Video Signal	HDMI (or DVI-D)	Maximum Pixel Clock	225MHz
Resolution Range	Up to 1920 x 1200@60Hz or 1080P@60Hz	Switching Speed	200ns (Max.)
Transmission Distance	60m with PoC	HDBaseT Output Resolution	1080P@60Hz
EDID Management	In-built EDID data and manual EDID management		
HDCP	Supports HDCP 1.3, auto and manual HDCP management.		
Audio General			
Output Signal	Stereo audio Digital audio	Output Connector	4 3p captive screw connectors 4 Coax (RCA)

Stereo Output	Earphone output distortion: 0.1% 32Ω/70mW@1KHz, 0.1% 16Ω/105mW @1KHz	Coax Output	Supports PCM, Dolby, DTS 5.1
Frequency Response	20Hz~20KHz	CMRR	>90dB @20Hz ~ 20KHz
Control Parts			
Control Ports	4 IR OUT (green) 4 IR IN (black) 1 IR EYE (black) 1 TCP/IP (female RJ45) 1 RS232 (9 pin female D) 4 RS232 (3p captive screw connectors)	Panel Control	Front panel buttons
IR	Default IR remote Extend IR EYE	TCP/IP Control	Works with the Network Controller V2.2
General			
Power Supply	DC48V,1.6A	Power Consumption	48W
Temperature	-10 ~ +40℃	Humidity	10% ~ 90%
Dimension (W*H*D)	483 x 44 x 235 mm (1U high, full rack wide)	Weight	1.8Kg

7. Panel Drawing



8. Troubleshooting & Maintenance

Problems	Causes	Solutions
Color losing or no video signal output	The connecting cables may not be connected correctly or it may be broken.	Check whether the cables are connected correctly and in working condition.
	Fail or loose connection	Make sure the connection is good
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.
EDID management does not work normally	The HDMI cable is broken at the output end.	Change for another HDMI cable which is in good working condition.
There is a blank screen on the display when switching	The display does not support the resolution of the video source.	Switch again.
		Manage the EDID data manually to make the resolution of the video source automatically compliant with the output resolution.
Cannot control the device by control device (e.g. a PC) through RS232 port	Wrong RS232 communication parameters	Type in correct RS232 communication parameters.
	Broken RS232 port	Send it to authorized dealer for checking.
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 remote / front panel buttons	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.

9. After-sales Service

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

1) **Product Limited Warranty:** We warrant that our products will be free from defects in materials and workmanship for **three years,** 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:**
   - 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
     - 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.