

User Manual

HDBaseT 8x8 Matrix Switcher



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Version: HDBaseT 8x8 Matrix Switcher_2014V1.1

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.

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NOTICE: Please 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 June 2014. Any changes of functions and parameters since then will be informed separately. Please refer to the dealers for the latest details.

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All product function is valid till 2014-06-20.

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1. Introduction

1.1 Introduction to the HDBaseT 8x8 Matrix Switcher

HDBaseT 8x8 Matrix Switcher includes 8 HDMI inputs, 8 HDBaseT outputs, 4 local HDMI outputs, and 8 stereo audio outputs. It can work with HDBaseT receivers. Its transmission distance for HDMI, IR, RS232 and PoC signals is up to 60 meters through CAT5e/6 cable.

1.2 Features

- Support 1080P@60Hz & 3D, DVI1.0 compliant
- HDCP Compliant and DVI compatible, support HDMI 1.4a
- Powerful EDID&HDCP management
- 8 HDBaseT outputs, to transmit HDMI, IR&RS232 to a 60-meter-long distance over a CAT5e/6 cable
- Support PoC, provides power for all the receivers connected to HDBaseT outputs.
- Support multiple control methods, including front panel, RS232, IR and optional TCP/IP control (works with the Network Controller).
- Support remote control from receiver by IR&RS232
- Support GUI for TCP/IP
- Multiple EDID management
- LCD indicator shows real-time connection status, switching status, HDCP status, and output resolution.

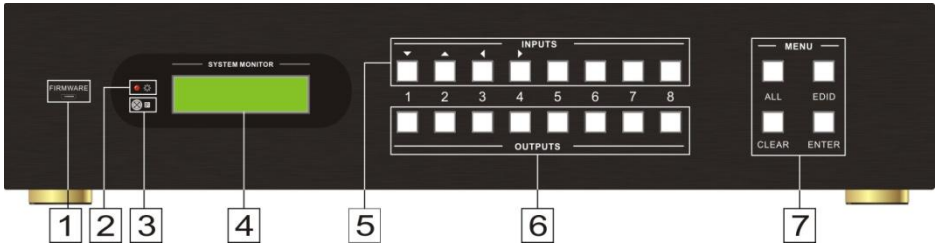
1.3 Package Contents

- 1 x HDBaseT 8x8 matrix switcher
- 2 x Mounting ears (6 x Screws)
- 1 x Power cord
- 1 x RS232 cable
- 16 x Captive screw connectors
- 4 x Plastic cushions (4 x Screws)
- 1 x IR remote
- 1 x IR converting cable
- 1 x Receiver
- 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 of the HDBaseT 8x8 Matrix Switcher

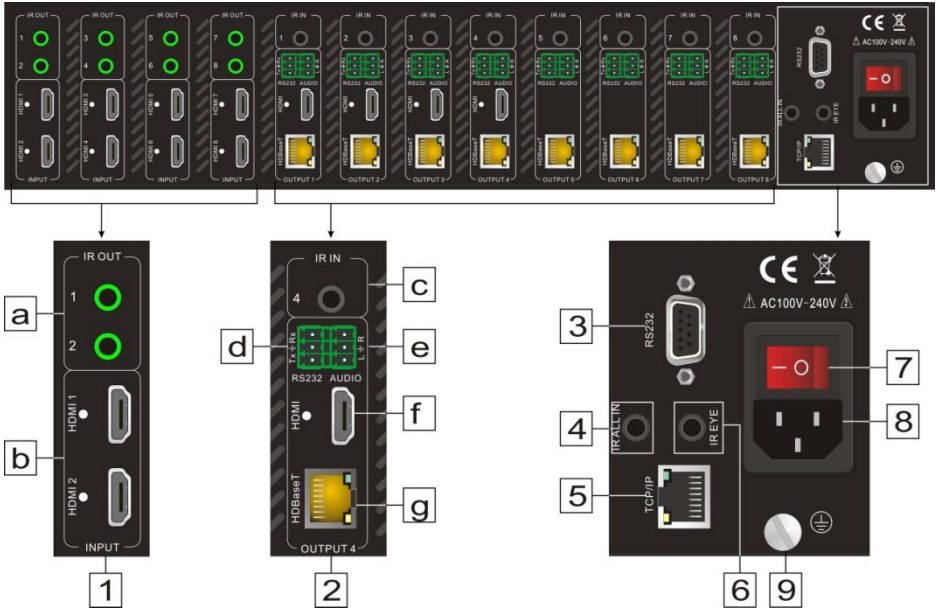
2.1 Front Panel



No.	Name	Description
①	Firmware	Micro USB port for updating firmware.
②	Power Indicator	Turn red when power on.
③	IR	In-built IR sensor, receive IR signals sent from IR remote.
④	LCD Screen	Display real-time operation status.
⑤	INPUTS/ Menu buttons	<ul style="list-style-type: none"> ➤ Normal mode: Input buttons, ranging from "1" to "8". ➤ Inquiry mode (buttons 1~4): Press "ENTER" for more than 3 seconds to enter this mode. Dial ◀▶ to change different menus, ▼▲ to change different options.
⑥	OUTPUTS buttons	Output buttons, ranging from "1" to "8". HDMI INPUTS 1~4 support local HDMI output.
⑦	Function buttons	<ul style="list-style-type: none"> ➤ ALL: Select all outputs to transfer one input to all outputs. Example: To transfer both AV and IR signals from input channel No.1 to all output channels. Operation: Press buttons in this order: "1", "ALL", "ENTER" ➤ EDID management button: Enable input port to manually capture and learn the EDID data of output devices. Example: Input channel No.2 captures and learns the EDID data of output channel No.4 Operation: Press buttons in this order: "EDID", "2", "4", "ENTER" ➤ Clear: Withdraw an operation like switching output channel, learning EDID data before it comes into effect. Meanwhile, the matrix will return to the previous status. ➤ ENTER: Confirm operation. Press and hold it for 3 seconds to enter in Inquiry mode.

Notes: 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	INPUTS	a. IR OUT: 8 in total, connect with IR emitters to deliver the IR signal sent from the far-end receivers connected to the HDBaseT ports. These IR OUTs make up an IR matrix with the IR INs on the far-end receivers, and all can be switched synchronously with the AV signal, or separately switching. In default setting, the 8 IR OUTs corresponds with the 8 IR INs, i.e. IR OUT1→IR IN1, IR OUT2→IR IN2, ...IR OUT8→IR IN8.
		b. HDMI: HDMI input ports, 8 in total, type A female HDMI connector, connect with HDMI input source devices.
②	OUTPUTS	c. IR IN: Connect with IR receiver, 8 in total, correspond to the 8 IR OUTs, cannot be switched separately. It makes up an IR bi-directional transmission with the IR OUT on the corresponding far-end receiver.
		d. RS232: 3-pin captive connectors, 8 in total, correspond to 8 output sources separately, communicate with the RS232 port on corresponding HDBaseT receiver, cannot be switched separately. When controlled by HDBaseT

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		<p>receiver, the communication protocol must be the same with the HDBaseT 8x8 matrix switcher's.</p> <p>e. AUDIO: HDMI de-embedded stereo audio output ports, 8 in total</p> <p>f. HDMI: Local HDMI output ports for HDMI Inputs 1~4, 4 in total, connect with HDMI output devices, to split HDMI output for local monitoring.</p> <p>g. HDBaseT: output extension ports, works with HDBaseT receivers, for example TPHD402R, TPHD403R etc., to extend transmission distances to 60m for signals such as HDMI, RS232 and IR. Meanwhile, it can provide power for the receivers which support PoC.</p>
③	RS232	Serial port for unit control, 9-pin female connector, connects with control device such as a PC. (Please type in the right communication protocol and ID.)
④	IR ALL IN	Input port for IR control signal, connect with IR receiver, delivers the received IR signal to all the 8 far-end receivers.
⑤	TCP/IP	TCP/IP port for unit control
⑥	IR EYE	Connect with extended IR receiver, use the IR remote to control the HDBaseT 8x8 matrix switcher.
⑦	Power	Press the button to turn on/off the matrix. The indicator turns red when power on.
⑧	Power Supply	Connect with 110V~240V AC power adaptor.
⑨	GROUND	Connect to grounding, make the unit ground well.

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

3. System Connection

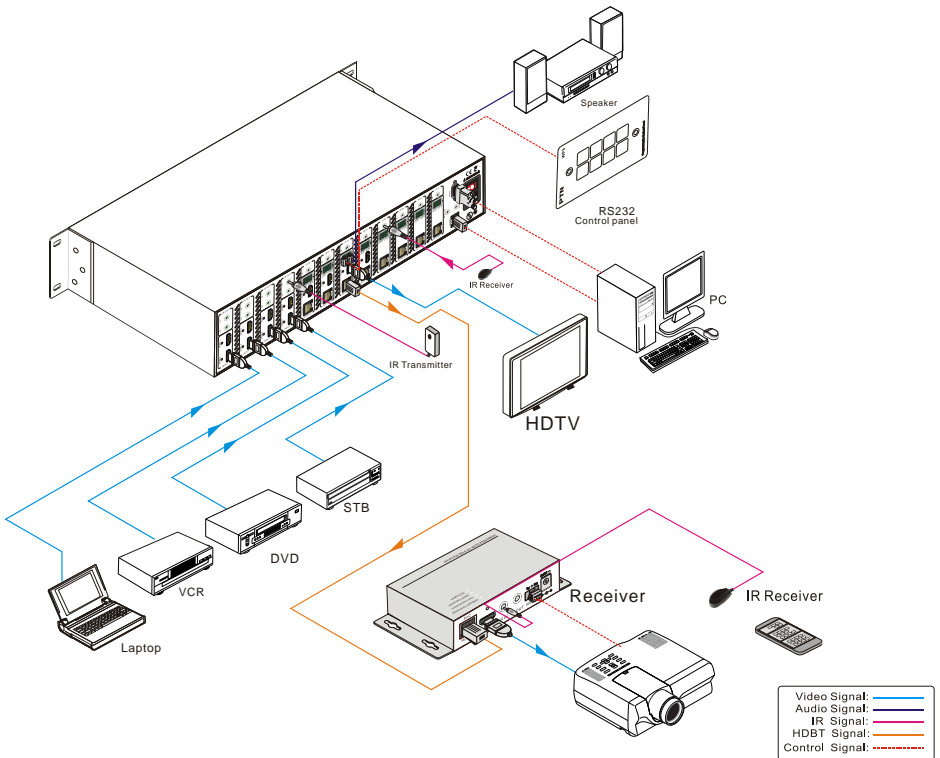
3.1 System Applications

As its good performance in control and transmission, the HDBaseT 8x8 matrix switcher can be widely used in computer realm, monitoring, large screen displaying, conference system, television education and bank securities institutions etc.

3.2 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.

3.3 Connection Diagram

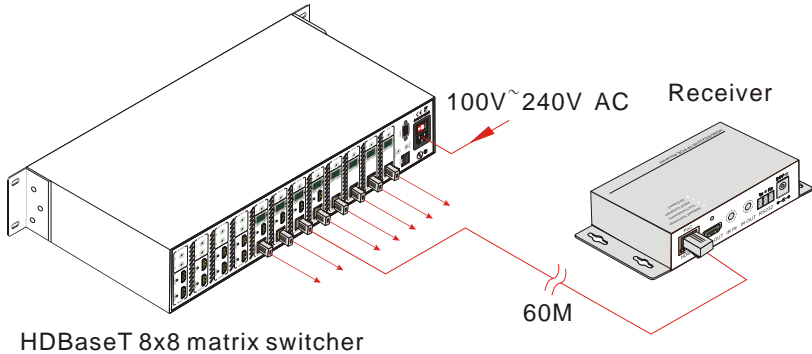


3.4 Connection with HDMI Twisted Pair PoC Receiver

HDBaseT 8x8 matrix switcher can work with HDMI Twisted Pair PoC Receiver to extend

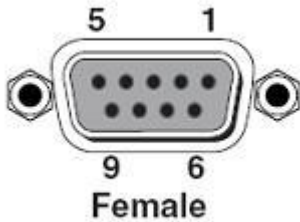
HDBaseT 8x8 Matrix Switcher

transmission distance up to 60m. Meanwhile, the ports support PoC. Connect the HDBT output port of HDBaseT 8x8 matrix switcher to HDMI Twisted Pair PoC Receiver with twisted pair. As the port supports PoC, once powered the HDBaseT 8x8 matrix switcher, the HDMI Twisted Pair PoC Receiver will be energized synchronously, which allows the two devices energized with the same adapter.



3.5 Connection with RS232 Communication Port

Except the front control panel, the HDBaseT 8x8 matrix switcher 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.

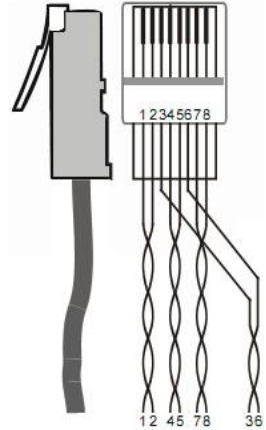


No.	Pin	Function
1	N/u	Unused
2	Tx	Transmit
3	Rx	Receive
4	N/u	Unused
5	Gnd	Ground
6	N/u	Unused
7	N/u	Unused
8	N/u	Unused
9	N/u	Unused

3.6 Twisted Pair Cable Connection

The cables used to connect 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		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



3.7 Connection Procedure

- 1) Connect HDMI sources (e.g. DVD) to HDMI inputs of the HDBaseT 8x8 matrix switcher with HDMI cables.
- 2) Connect HDMI displays (e.g. HDTV) to HDMI outputs of the HDBaseT 8x8 matrix switcher with HDMI cables.
- 3) Connect speakers/earphones to AUDIO output ports (3-pin captive screw connectors).
- 4) Connect the HDBaseT port of HDBaseT receiver and the HDBaseT 8x8 matrix switcher with twisted pair.
- 5) Connect the RS232 port (9 pin female D) of the HDBaseT 8x8 matrix switcher with control device, e.g. a PC.
- 6) Connect the RS232 port of controlled device to any RS232 port (3-pin captive screw connector) of the HDBaseT 8x8 matrix switcher. The control signal can be transmitted bi-directionally.
- 7) The HDBaseT 8x8 matrix switcher can be controlled by its built-in IR receiver or through the IR EYE port by connecting with external IR receiver. The IR signal can also be transmitted bi-directionally (connect IR OUT port of the HDBaseT 8x8 matrix switcher to IR IN port of a far-end IR device, and connect IR IN ports of the HDBaseT 8x8 matrix switcher to IR OUT port of the far-end IR device), and in this mode, we can control the HDBaseT 8x8 matrix switcher remotely.

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

- 8) Connect an AC 100V~240V power adapter to the HDBaseT 8x8 matrix switcher.

4. System Operations

4.1 Front Panel Button Control

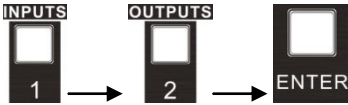
The operation examples are showed in *2.1 Front Panel*. Here we make a brief introduction to the system inquiry operations.

4.1.1 I/O channel control

1) To convert an input to an output:

Operation: “input”+“output”+“ENTER”

Example: input 1 to output 2



Note: In default status, 8 IR OUTs correspond with 8 HDMI INPUTS. When you convert an HDMI input to an output, the corresponding IR OUT will be switched synchronously.

2) To convert an input to several outputs:

Operation: “input” + “output” + “output” + ... + “ENTER”

Example: Switch input 2 to output 2, 4, 7



3) To convert an input to all outputs:

Operation: “input” + “ALL” + “ENTER”

Example: Convert input 1 to all outputs



Note: Indicators of the pressed buttons will blink green for three times if the conversion is done, then it will be off. If the conversion failed, they will be off immediately.

4.1.2 EDID Data Learning

➤ One input port learns the EDID data of one output port

Operation: Press “EDID”, “INPUTS”+“OUTPUTS”+“ENTER”.

Example: Input 2 learns EDID data from output 4



- All input ports learn EDID data from one output port

Operation: Press “EDID”, “ALL”+“OUTPUTS”+“ENTER”

Example: All input ports learn EDID data from output 4



Note: Indicators of the pressed buttons will blink green for three times if the conversion is done, then it will be off. If the conversion failed, they will be off immediately.

4.1.3 EDID Setting

There are four types of embedded EDID data (shown as below). Select one type of EDID data in EDID setting status.

OUTPUT 1: 1080P 2D PCM2.0

OUTPUT 2: 1080P 3D 5.1

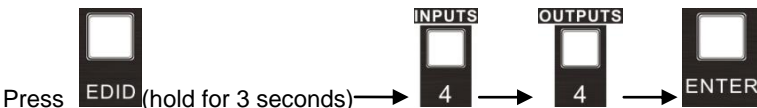
OUTPUT 3: 1080P 2D PCM2.0

OUTPUT 4: 1080P 2D 5.1

- Set EDID data for one input port

Operation: Press “EDID” (hold for 3 seconds to enter in EDID setting status), “INPUTS”+“OUTPUTS”+“ENTER”.

Example: Set the EDID data of INPUT 4 to the forth type of embedded EDID data:



- Set EDID data for all input ports

Operation: Press “EDID” (hold for 3 seconds to enter in EDID setting status), “ALL”+“OUTPUTS”+“ENTER”.

Example: Set the EDID data of all input ports to the second type of EDID data:



Note: Indicators of the pressed buttons will blink green for three times if the conversion

is done, then it will be off. If the conversion failed, they will be off immediately.

4.1.4 Inquiry

➤ Check status

Press and hold the button “ENTER” for 3 seconds, it will enter into system inquiry menu. Use Left and Right direction button to navigate checking previous/next items.

Function Items	Example	Description
Check the connection status of inputs	<pre>In 1 2 3 4 Connect Y Y Y Y</pre>	Y means the corresponding port is connected with input device, N means not.
Check the connection status of outputs	<pre>Out 1 2 3 4 Connect Y Y N N</pre>	Y means the corresponding port is connected with output device, N means not.
Correspondence between inputs and outputs	<pre>Out 1 2 3 4 Input 1 2 3 3</pre>	Shows the correspondence between the 8 inputs and 8 outputs.
Check if the input is with HDCP	<pre>In 1 2 3 4 HDCP Y Y Y N</pre>	Y means the input signal is with HDCP, N means not.
Check if the output is with HDCP	<pre>Out 1 2 3 4 HDCP Y Y Y N</pre>	Y means the output signal is with HDCP, N means not.
Check the output resolution	<pre>Resolution Out 1 1920x1080</pre>	Use button ▲▼ to check the 8 output resolutions separately.

➤ Output check

Press any output button to check its corresponding input.

Example: Check which one is the corresponding input for output 2. (Presume Output 2 corresponds to Input 1.)

Operation: Press Output 2 button, LCD screen displays “01B02 01R02”, and indicators of input 1 and output 2 turn on and last for 3 seconds. Then output 2 corresponds to input 1.

4.1.5 Clear operation

When you switch output channel, learn EDID data, or set EDID data, press Clear button to withdraw the operation before you press “ENTER” to carry it on. When you press it,

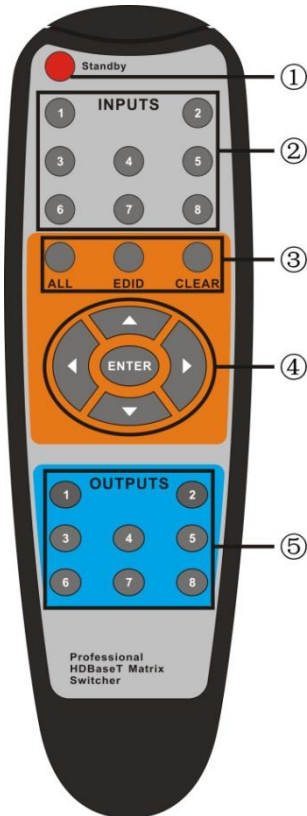
the matrix will return to the previous status.

4.2 IR Control

By using IR & HDBaseT transmission technology, the HDBaseT 8x8 matrix switcher has some functions as follows:

- 1) Control far-end output device from local.
- 2) Control local input/output device remotely.
- 3) Control the HDBaseT 8x8 matrix switcher locally/remotely.

4.2.1 Usage of IR Remote



- ① Standby button, press it to enter/ exit standby mode
- ② Input channels, range from 1~8, corresponding IR signal switched synchronously when switching input channels.
- ③ Menu buttons, **ALL**, **EDID** and **CLEAR** buttons have the same function as the front panel buttons. Please refer to *4.1 Front Panel Button Control* for details.
- ④ ▲▼◀▶: Navigation buttons.
ENTER: Confirm button.
- ⑤ Output channels, range from 1~8. Each channel has 1 IR IN, 1 HDMI, 1 HDBaseT, 1 RS232, and 1 AUDIO outputs, and channel 5~8 are without HDMI outputs.

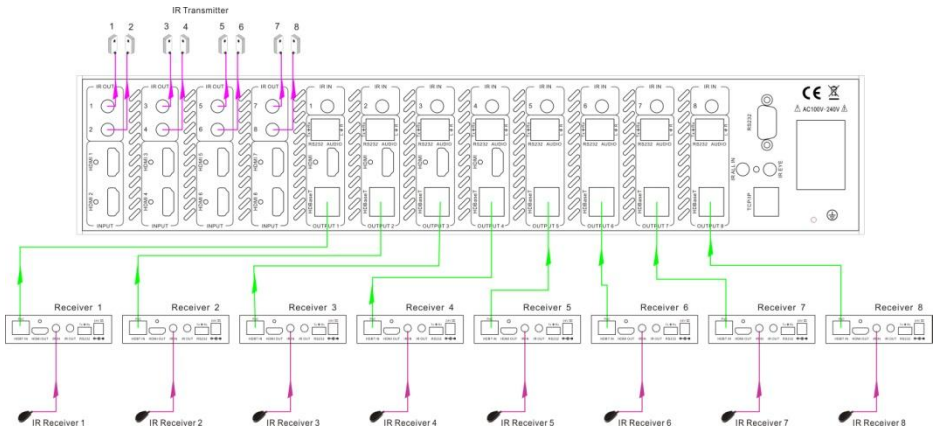
Note: With this IR remote, HDBaseT 8x8 Matrix Switcher can be controlled by the built-in IR, the extended IR receiver connected to the "IR EYE" and the IR receiver on the far-end receiver.

4.2.2 IR Operations

1) IR Matrix Switching

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The 8 “IR OUT” ports and the 8 “IR IN” ports on the far-end receivers make up an 8x8 IR matrix. See as below:



Control Local Devices or the HDBaseT 8x8 Matrix Switcher Remotely

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

Switching Operation: (8 IR IN ports correspond to 8 HDMI input ports separately in default mode.)

a) Sending command (reference to 4.3 RS232 Control): [x1]R[x2].

x1: Corresponding to the 8 IR OUT ports of the matrix, the IR transmitter connected to this port can be placed at IR receiving area of output device or HDBaseT 8x8 Matrix Switcher itself.

x2: Corresponding to the zone (receive IR signal from HDBaseT receiver with IR IN port connects with IR receiver) number of HDBaseT 8x8 Matrix Switcher.

Example: Send command “3R2.” to transfer IR signal received from zone 2 to IR OUT port 3.

Note: When switch all the 8 IR input signal channels to the same IR out channel, it is not able to control the 8 far-end IR receivers at the same time.

2) IR Carrier Enforcing

Factory Default:

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

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If the IR receiver connected with HDBaseT receiver or IR ALL IN port of the matrix is not with IR carrier, send the command “%0901.” to enter infrared carrier enforcing mode, and then IR signal can be transferred to IR OUT port.

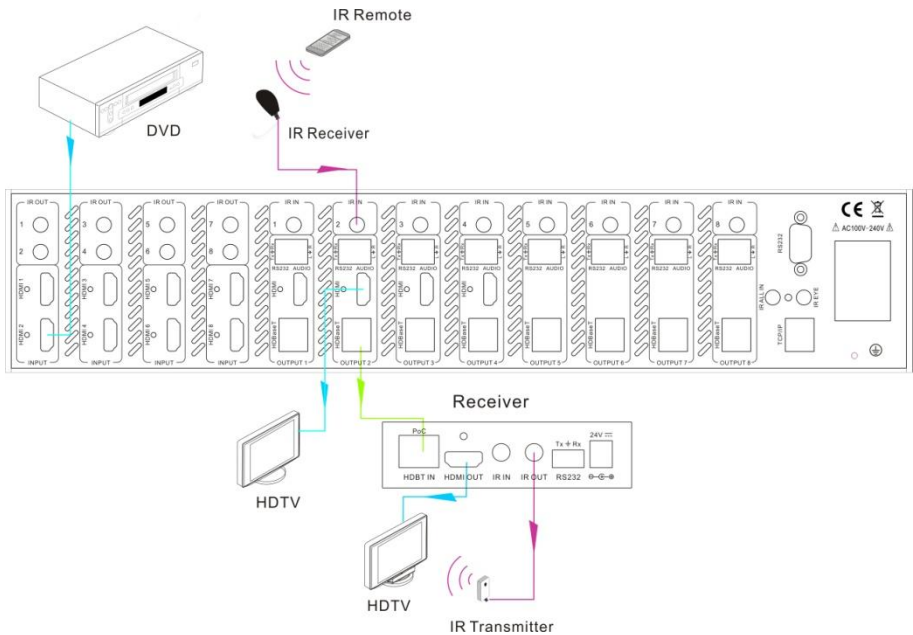
3) IR control setting

● Control far-end output device from local

Connect an IR receiver with IR carrier to the IR IN port of HDBASET 8X8 MATRIX SWITCHER, users can control far-end output displayer via its IR remote from local.

In that case, the IR signal is transferred via twisted pair. Only the corresponding IR OUT port can emit control signals to the remote displayer.

See the figure below:

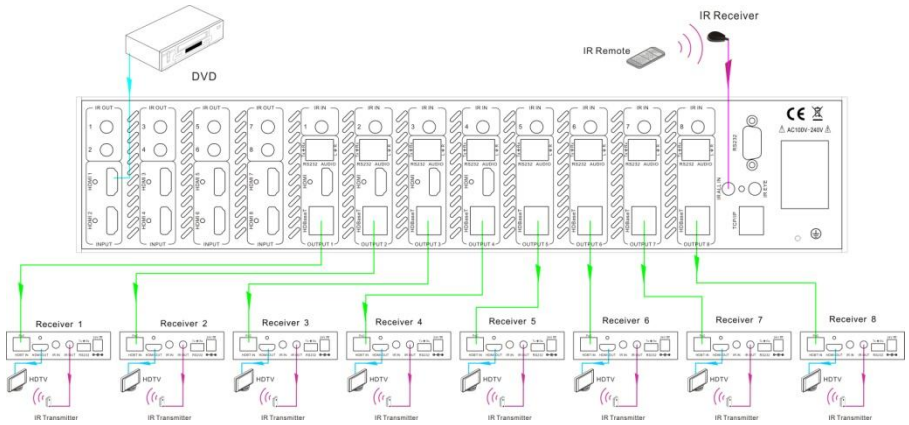


Control far-end device from Local

Note: The IR receiver connected to **IR IN** must be with IR carrier

The IR signal received from IR ALL IN port will be transmitted to all the eight far-end HDBaseT receivers connected to HDBaseT ports of the HDBASET 8X8 MATRIX SWITCHER. See as below:

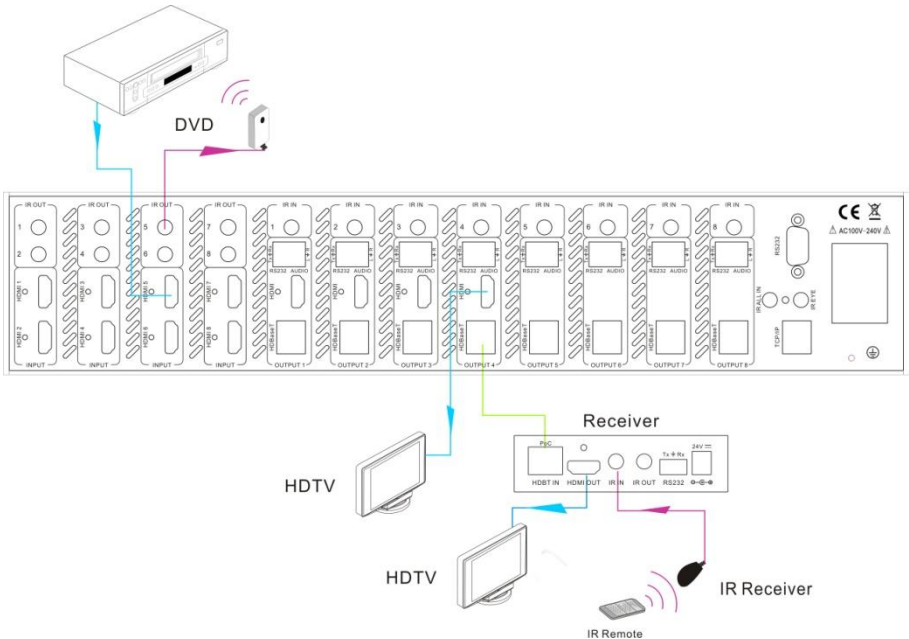
HDBaseT 8x8 Matrix Switcher



Control far-end device through IR ALL IN port

- **Control local device from remote**

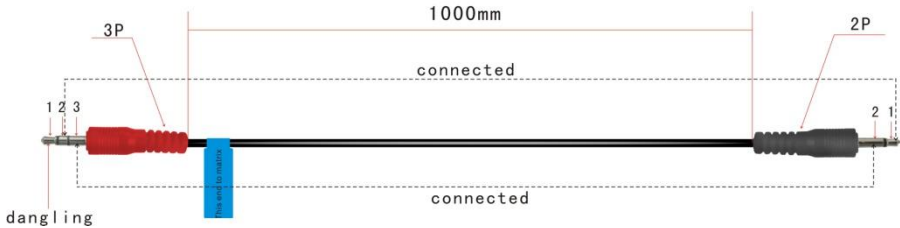
User can control local source devices with their IR remote from remote too. When using, the IR signal received by the HDBaseT receiver will be transmitted to the corresponding IR OUT port of the HDBASET 8X8 MATRIX SWITCHER. See below:



Control local device from remote

● **Controlled by a Third-party IR Control Device**

Connect the **3-pin** end of the included IR converting cable (see as below) to IR IN port of the HDBaseT 8x8 matrix switcher, and plug the **2-pin** end to IR OUT port of the third-party control device. Then the IR signal received by the third-party control device is able to be transmitted via the twisted pair, and finally gets to the remote displayer.



IR converting cable

4.3 RS232 Control

4.3.1 RS232 Commands

Through the RS232 communication port, users can control a far-end device whose bound rate is 2400, 4800, 9600, 19200, 38400, 57600 or 115200. Default settings of the HDBaseT 8x8 matrix switcher: 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	Function	Feedback Example
System Commands		
/*Type;	Inquire the models information.	MHD88TP
/%Lock;	Lock the front panel buttons on the Matrix.	System Locked!
/%Unlock;	Unlock the front panel buttons on the Matrix.	System Unlock!
/^Version;	Inquire the version of firmware	V1.X.X
/:MessageOff;	Turn off the feedback command from the com port. It will only show simple words like “Switch OK!”.	/:MessageOff;
/:MessageOn;	Turn on the feedback command from the com port.	/:MessageOn;

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Command	Function	Feedback Example
Demo.	Switch to the “demo” mode, convert input and output in turn like 1->1, 1->2, ... 8->7, 8->8, 1->1... and so on .The switching interval is 2 seconds.	Demo Mode 01B01 01B02 01B03 ... 02B01 02B02 02B03 ...
Undo.	To cancel the previous operation.	Undo Ok!
Operation Commands		
[x]All.	Transfer signals from the input channel [x] to all output channels	X To All. (X=01、02、03、04..)
All#.	Transfer all input signals to the corresponding output channels respectively like 1->1, 2->2...	All Through.
All\$.	Switch off all the output channels.	All Closed.
[x]#.	Transfer signals from the input channel [x] to the output channel [x].	X Through.(X=01、02、03、04..)
[x]\$.	Switch off the output channel [x].	X Closed.(X=01、02、03、04..)
[x]@.	Switch on the output channel [x].	X Open.(X=01、02、03、04..)
All@.	Switch on all output channels.	All Open.
[x1] V[x2].	Transfer the video signal from the input channel [x1] to the output channel [x2].	X1BX2(X1、X2=01、02、03、04..)
[x1] B[x2].	Transfer the AV and IR signal from the input channel [x1] to the output channel [x2].	X1BX2(X1、X2=01、02、03、04..)
Status[x]	Check the status of the output channel [x]	XB X (X=01、02、03、04..)
Status.	Inquire the input channel to the output channels one by one.	XB X X XB X X XB X X XB X (X=01、02、03、04..)
Save[Y].	Save the present operation to the preset command [Y], ranges from 0 to 9.	Save To FY (Y=0-9)

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Command	Function	Feedback Example
Recall[Y].	Recall the preset command [Y].	Recall From FY (Y=0-9)
Clear[Y].	Clear the preset command [Y].	Clear FY (Y=0-9)
PWON.	Work in normal mode.	PWON
PWOFF.	Enter into standby mode and cut off the power supply to HDBaseT receivers.	PWOFF
STANDBY.	Enter into standby mode. (Do not cut off the power supply to HDBaseT receivers, press other buttons or send other commands to start.)	STANDBY
/%[Y]/[X]:[Z].	<p>HDCP management command. [Y] is for input (value: I) or output (value: O). [X] is the number of the port, if the value of X is ALL, it means all ports. [Z] is for working status (value: 1 or 0).</p> <ul style="list-style-type: none"> ➤ Y=I & Z=1, means the input port is with HDCP. ➤ Y=O & Z=1, means the output port is with HDCP. ➤ Y=I & Z=0, means the input port is not with HDCP. ➤ Y=O & Z=0, means the output port without HDCP. 	<p>/%I/1:1.: Input 1 is with HDCP; /%I/1:0.: Input 1 is without HDCP; /%I/ALL:1.: All input ports are with HDCP; /%I/ALL:0.: all input ports are without HDCP; /%O/1:1.: Output 1 is with HDCP; /%O/1:0.: Output 1 is without HDCP; /%O/ALL:1.: all output ports are with HDCP /%O/ALL:0.: all output ports are without HDCP</p>
[x1] R[x2].	Transfer the IR signal from input channel [x1] to output channel [x2].	IR: X1R X2(X1、X2=01、02、03、04..)
DigitAudioON[x].	<p>Enable HDMI audio output of port x.</p> <ul style="list-style-type: none"> ● X=1, 2, 3, 4, 5, 6, 7, 8, enable this port. ● X=9, enable all the 8 ports. 	DigitAudioON[x].
DigitAudioOFF[x].	<p>Disable HDMI audio output of port x.</p> <ul style="list-style-type: none"> ● X=1, 2, 3, 4, 5, 6, 7, 8, disable this port. ● X=9, disable all the 8 ports. 	DigitAudioOFF[x].

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Command	Function	Feedback Example
/+[Y]/[X]:*****.	<p>Set communication between PC and HDBaseT receiver.</p> <p>① Y is for RS232 port (connect with RS232 port of HDBaseT receiver) Y=1~9, or A~P The value of Y is defined into the following meanings (in a given baud rate depended by the value X):</p> <p>a. Y=1,2,3,4,5,6,7, or 8, send command to the corresponding HDBT receiver.</p> <p>b. Y = 9, send command to all HDBT receivers.</p> <p>c. Y = A, B, C, D, E, F, G or H, preset command to be sent to single port when the matrix switcher is powered on (A~G corresponds to port 1~8 separately)</p> <p>d. Y = I, J, K, L, M, N, O or P, preset command to be sent to single port when the matrix switcher is powered off (I~P corresponds to port 1~8 separately)</p> <p>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)</p> <p>③ ***** is for data (max 48 Byte)</p> <p>④ 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.</p>	/+[Y]/[X]:*****.
EDIDH[x]B[y].	<p>Learn 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 support PCM mode only. If the EDID data is not effective, then set it as initialized EDID data.</p>	EDIDH[x]B[y].
EDIDPCM[x].	<p>Set the audio part of input port [x] to PCM format in EDID database.</p>	EDIDPCM[x].

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Command	Function	Feedback Example
EDIDG[x].	Get EDID data from the output port and display the output port number of X.	Hexadecimal EDID data and carriage return character
EDIDMInit.	Recover the factory default EDID data.	EDIDMInit.
EDIDM[X]B[Y].	Manually EDID switching. Enable input[Y] to learn the EDID data of output[X]. If the EDID data is not effective, then set it as initialized EDID data.	EDIDM[X]B[Y].
EDIDUpgrade [x].	Upgrade EDID data via the RS232 port. [X] is for input port, when the value of X is 9, it means to upgrade all input ports. When the switcher receives the command, it will show a message to prompt you to send EDID file (.bin file). Operations will be canceled after 10 seconds. Please cut off all connections of HDBaseT ports.	Please send the EDID file
UpgradeIntED ID[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.	Please send the EDID file
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.	EDID/[x]/[y].
%0801.	Automatically HDCP management. Input is with HDCP, so is output.	%0801.
%0900.	Set as infrared carrier following mode.	Carrier native

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Command	Function	Feedback Example
%0901.	Set as infrared carrier enforcing mode.	Force carrier
%0911.	Reset to factory default.	Factory Init
%9951.	Check the command sent by port 1 when PWON.	Port 1:data when PWON
%9952.	Check the command sent by port 2 when PWON.	Port 2:data when PWON
%9953.	Check the command sent by port 3 when PWON.	Port 3:data when PWON
%9954.	Check the command sent by port 4 when PWON.	Port 4:data when PWON
%9955.	Check the command sent by port 5 when PWON.	Port 5:data when PWON
%9956.	Check the command sent by port 6 when PWON.	Port 6:data when PWON
%9957.	Check the command sent by port 7 when PWON.	Port 7:data when PWON
%9958.	Check the command sent by port 8 when PWON.	Port 8:data when PWON
%9941.	Check the command sent by port 1 when PWOFF.	Port 1:data when PWOFF
%9942.	Check the command sent by port 2 when PWOFF.	Port 2:data when PWOFF
%9943.	Check the command sent by port 3 when PWOFF.	Port 3:data when PWOFF
%9944.	Check the command sent by port 4 when PWOFF.	Port 4:data when PWOFF
%9945.	Check the command sent by port 5 when PWOFF.	Port 5:data when PWOFF
%9946.	Check the command sent by port 6 when PWOFF.	Port 6:data when PWOFF
%9947.	Check the command sent by port 7 when PWOFF.	Port 7:data when PWOFF
%9948.	Check the command sent by port 8 when PWOFF.	Port 8:data when PWOFF
%9961.	Check the system locking status.	System Unlock!
%9962.	Check the status while in standby mode.	In working mode: PWON In standby mode: PWOFF

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Command	Function	Feedback Example
%9963.	Check the working mode of infrared carrier.	In native mode: Carrier native In force mode: Force carrier
%9964.	Check the IP address.	192.168.1.1
%9971.	Check the connection status of the inputs.	In 1 2 3 4 Connect N Y Y Y In 5 6 7 8 Connect N Y Y Y
%9972.	Check the connection status of the outputs.	Out 1 2 3 4 Connect N Y Y Y Out 5 6 7 8 Connect N Y Y Y
%9973.	Check the HDCP status of the inputs.	In 1 2 3 4 HDCP N N Y Y In 5 6 7 8 HDCP N N Y Y
%9974.	Check the HDCP status of the outputs.	Out 1 2 3 4 HDCP N N Y Y Out 5 6 7 8 HDCP N N Y Y
%9975.	Check the switching status.	Out 1 2 3 4 In 1 2 3 4 Out 5 6 7 8 In 5 6 7 8
%9976.	Check the output resolution.	Resolution Out 1 0000x0000 Out 2 1920x1080 Out 3 1920x1080 Out 4 1920x1080 Out 5 0000x0000 Out 6 1920x1080 Out 7 1920x1080 Out 8 1920x1080
%9977.	Check the status of digital audio of output channels.	Out 1 2 3 4 Audio Y Y Y Y Out 5 6 7 8 Audio Y Y Y Y

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Command	Function	Feedback Example
%9978.	Check the HDCP status of the input ports.	In 1 2 3 4 HDCPEN Y Y Y Y In 5 6 7 8 HDCPEN Y Y Y Y

Note:

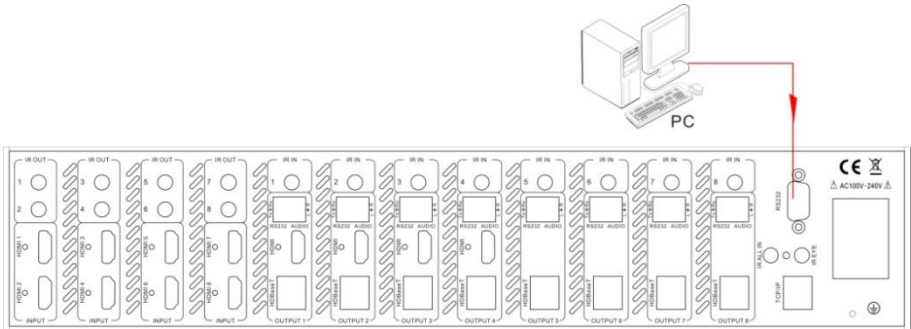
- 1) Please disconnect all the twisted pairs before sending command EDIDUpgrade[X].
- 2) In above commands, “[” and “]” are symbols for easy reading and do not need to be typed in actual operation.
- 3) Please remember to end the commands with the ending symbols “.” and “;”.
- 4) Type the command carefully, it is case-sensitive.

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4.3.2 Control the HDBaseT 8x8 Matrix Switcher

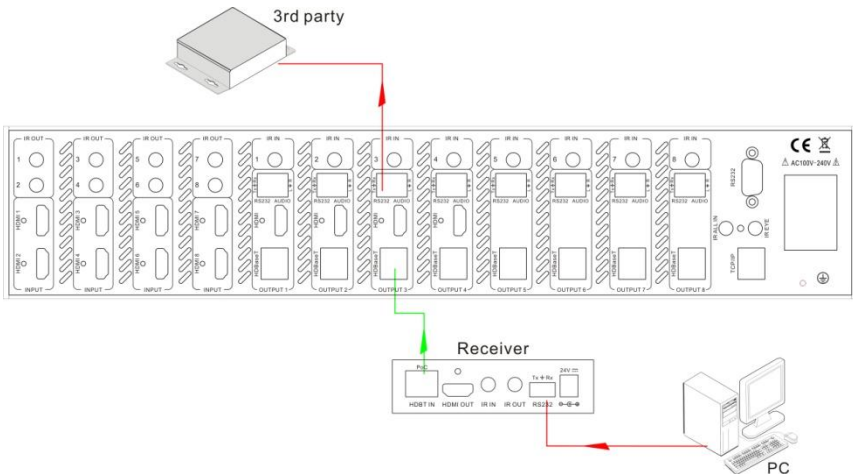
To control the HDBaseT 8x8 matrix switcher, you need to connect its 9 pin female RS232 port to a PC's RS232 port, or you can just connect any one of the HDBaseT receiver's RS232 port with PC (RS232 command can be transmitted to the HDBaseT 8x8 matrix switcher via the twisted pair). By using RS232 control software and with right specification settings, you are able to control the HDBaseT 8x8 matrix switcher.

- **Control the HDBaseT 8x8 Matrix Switcher from local**



Control the HDBaseT 8x8 Matrix Switcher from local

- **Control the HDBaseT 8x8 Matrix Switcher from remote**



Control the HDBaseT 8x8 Matrix Switcher from remote

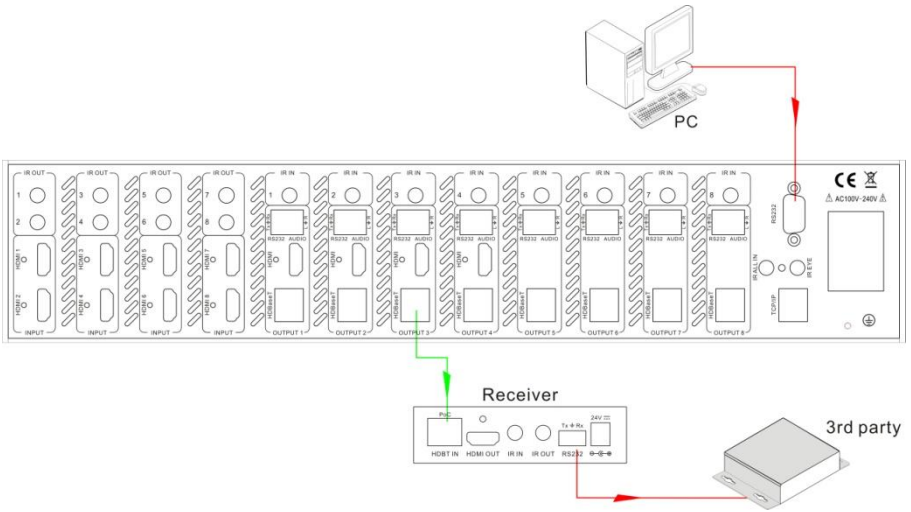
4.3.3 Control 3rd-Party Device from Local

Connect the 9 pin female RS232 port of the HDBaseT 8x8 matrix switcher with PC, by

HDBaseT 8x8 Matrix Switcher

using the RS232 command “/+[Y]/[X]:*****.”, you are able to control the 3rd-party device connected with the HDBaseT receiver.

Please refer to the detailed command description in *4.3.1 RS232 Commands*.



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

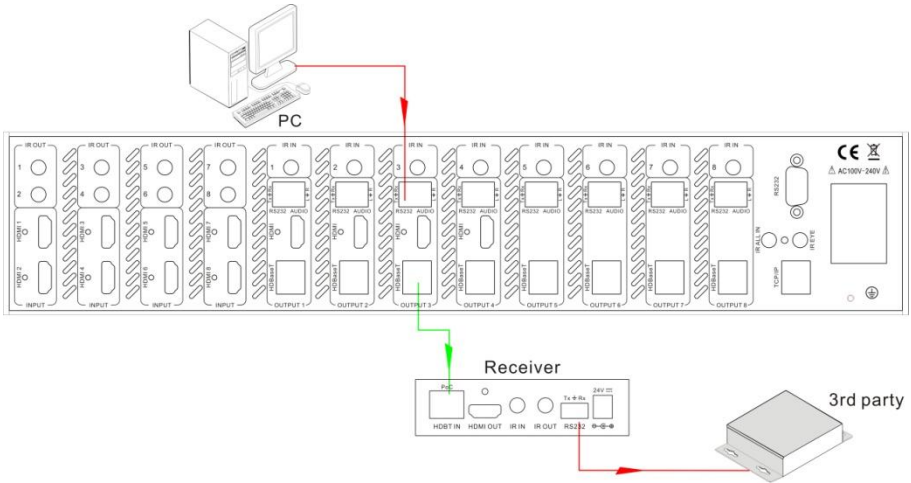
4.3.4 Bi-directional RS232 Control

By connecting one 3-pin 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 (3-pin captive screw) port in any zone to PC, and connect the controlled RS232 device (3rd party device) to the corresponding (same zone as PC) receiver, see below:

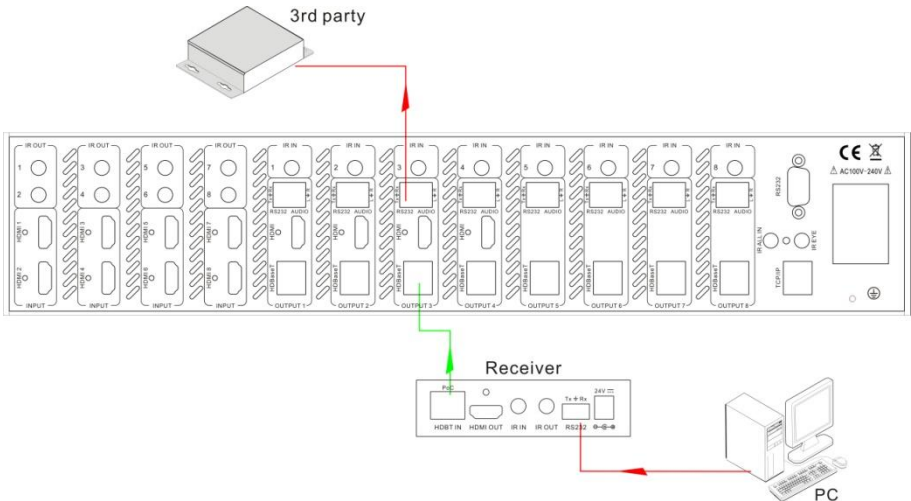
HDBaseT 8x8 Matrix Switcher



Control far-end device from local

- **Control the HDBaseT 8x8 matrix switcher from remote**

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



Control the HDBaseT 8x8 matrix switcher from remote

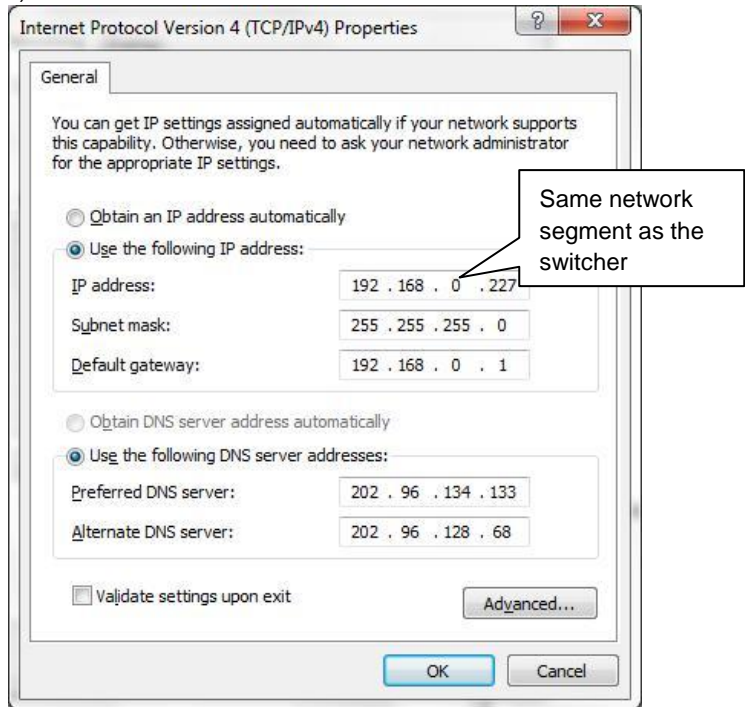
4.4 TCP/IP Control

4.4.1 Control Modes

TCP/IP default settings: IP is 192.168.0.178, Gateway is 192.168.0.1, and Serial Port is 8080. IP & Gateway can be changed as you need, Serial Port cannot be changed.

- **Controlled by Single PC**

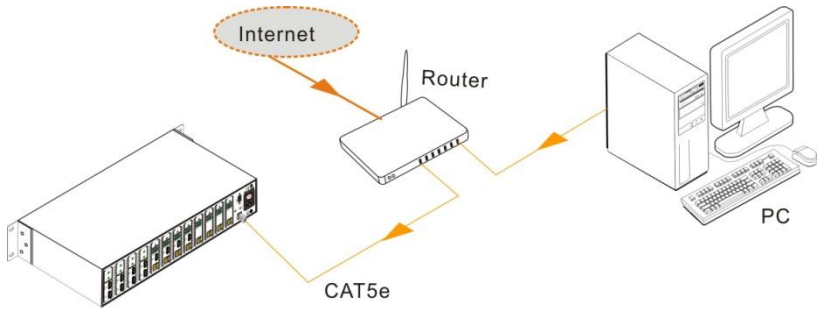
Connect a computer to the TCP/IP port of the HDBaseT 8x8 matrix switcher, and set its network segment to the same as the default IP of the HDBaseT 8x8 matrix switcher (192.168.0.178).



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

The HDBaseT 8x8 matrix switcher 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. When control, just make sure the HDBaseT 8x8 matrix switcher's network segment is the same with the router. Please connect as the following figure for LAN control.

HDBaseT 8x8 Matrix Switcher



- Step1.** Connect the TCP/IP port of the HDBaseT 8x8 matrix switcher to Ethernet port of PC with twisted pair.
- Step2.** Set the PC's IP address and gateway to the same IP section as the HDBaseT 8x8 matrix switcher. Do please remember the PC's original IP address and gateway.
- Step3.** Set the HDBaseT 8x8 matrix switcher's IP address and gateway to the same IP section as the router.
- Step4.** Set the PC's IP address and gateway as the original one.
- Step5.** Connect the HDBaseT 8x8 matrix switcher and PC(s) to the router. In the same LAN, each PC is able to control the HDBaseT 8x8 matrix switcher asynchronously.
- Step6.** Connect the TCP/IP port of the HDBaseT 8x8 matrix switcher to Ethernet port of PC with twisted pair.
- Step7.** Set the PC's network segment to the same as the HDBaseT 8x8 matrix switcher. Do please remember the PC's original network segment.
- Step8.** Set the HDBaseT 8x8 matrix switcher's network segment to the same as the router.
- Step9.** Set the PC's network segment to the original one.
- Step10.** Connect the HDBaseT 8x8 matrix switcher and PC(s) to the router. In the same LAN, each PC is able to control the HDBaseT 8x8 matrix switcher asynchronously.

Then it's able to control the device via GUI or TCP/IP communication software. Here we make a brief introduction to TCP/IP communication software controlling.

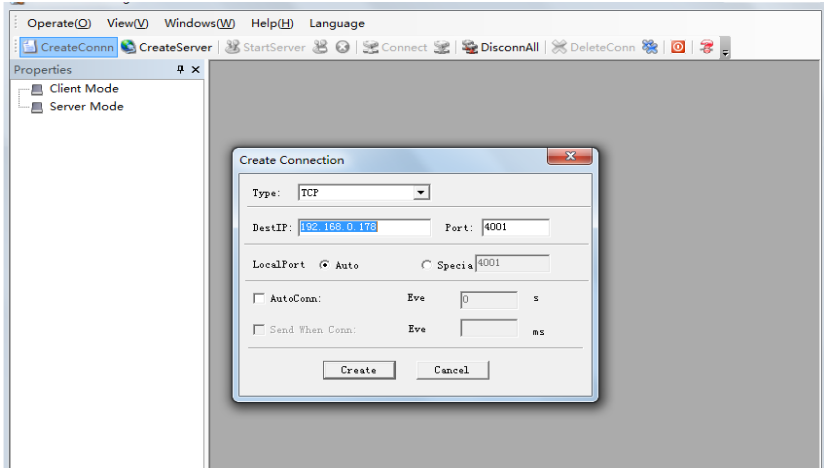
4.4.2 Control HDBaseT 8x8 matrix switcher via TCP/IP communication software

(Exemplified by TCPUDP software)

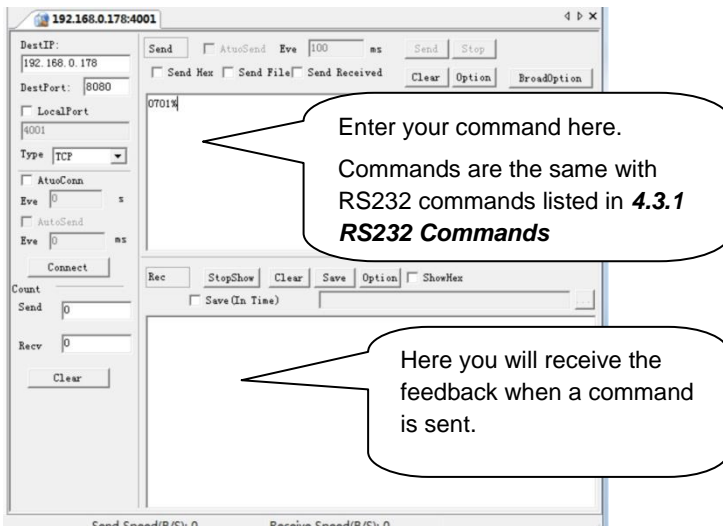
- 1) Connect a computer and HDBaseT 8x8 matrix switcher to the same network. Open

HDBaseT 8x8 Matrix Switcher

the TCPUDP software (or any other TCP/IP communication software) and create a connection, enter the IP address and port of HDBaseT 8x8 matrix switcher (default IP: 192.168.0.178, port:8080):



- 2) After connect successfully, we can enter commands to control the HDBaseT 8x8 matrix switcher, as below:

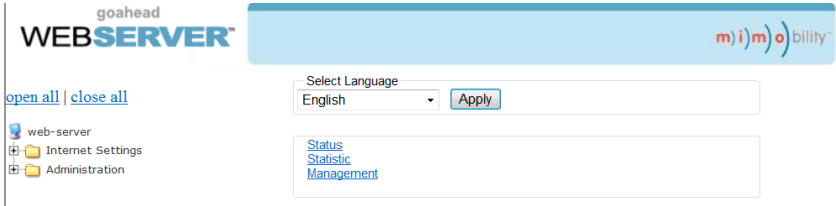


4.4.3 TCP/IP Configuration

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.

4.5 USB Firmware Updating

HDBaseT 8x8 matrix switcher boasts a USB port for online firmware upgrade on the front panel. Follow these steps to upgrade firmware:

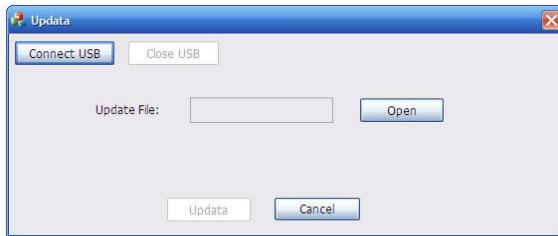
Step1. Copy the upgrade software and the latest upgrade file (.bin) to PC.

Step2. Connect the USB ports of HDBaseT 8x8 matrix switcher and the PC via USB cable.

Step3. Double-click the update software icon (see as below).



It will enter the upgrade interface shown as below:



Step4. Click **Connect USB**.

Step5. Click **Open** to load the upgrade file, then click **Updata** to start firmware upgrading.

Note: To ensure available control, the COM number of the PC should be 1~9.

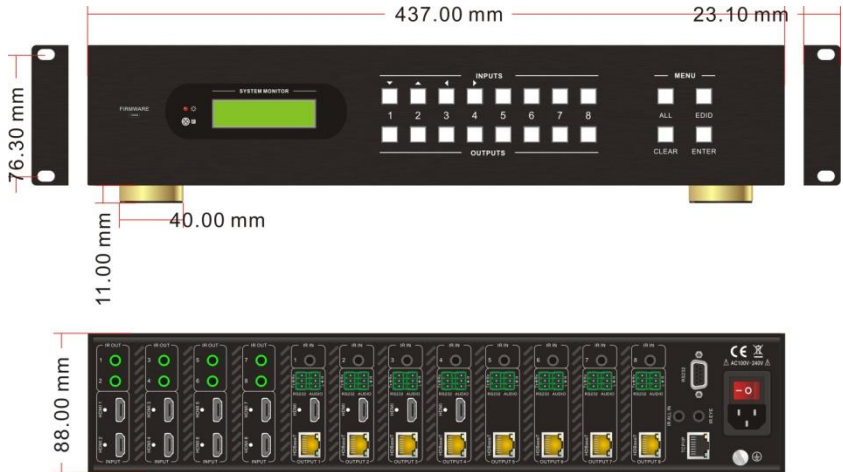
5. Specification

Video Input		Video Output	
Input	8 HDMI	Output	4 HDMI 8 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)
		HDBaseT Output	Up to 60m1080P@60Hz CAT5e/6
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	8 3-pin captive screw connectors
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	8 IR OUTs (green) 8 IR INs (black) 1 IR EYE (black) 1 TCP/IP (female RJ45)	Panel Control	Front panel buttons

HDBaseT 8x8 Matrix Switcher

	1 RS232 (9 pin female D) 8 RS232s (3-pin captive screw connectors)		
IR	Default IR remote Extend IR EYE	TCP/IP Control	Works with the Network Controller V2.2
General			
Power Supply	110V~240V AC	Power Consumption	Full load: 117.8W Floating: 54.4W
Temperature	-10 ~ +40°C	Humidity	10% ~ 90%
Dimension (W*H*D)	437 x 88 x 380 mm	Weight	5.6Kg

6. Panel Drawing



7. 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	The device has already	Send it to authorized

HDBaseT 8x8 Matrix Switcher

by RS232 / IR remote / front panel buttons	been broken.	dealer for repairing.
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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 reference to this user manual. Any transport costs are borne by the users during the warranty.

1) Product Limited Warranty: We warrants that its 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.

