User Manual

MP-HD-88A-E Kit

4K Home Distribution Hub

All Rights Reserved

Version: MP-HD-88A-E Kit_2016V1.0

Preface

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

This manual is only for operation instruction only, not for any maintenance usage. The functions described in this version are updated till August 2016. 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 2016-8-22.

Trademarks

Product model and logo are trademarks. Any other trademarks mentioned in this manual are acknowledged as the properties of the trademark owner. No part of this publication may be copied or reproduced without the prior written consent.

FCC Statement

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial installation.

Operation of this equipment in a residential area is likely to cause interference, in which case the user at their own expense will be required to take whatever measures may be necessary to correct the interference

Any changes or modifications not expressly approved by the manufacture would void the user's authority to operate the equipment.

SAFETY PRECAUTIONS

To insure the best from the product, please read all instructions carefully before using the device. Save this manual for further reference.

- Unpack the equipment carefully and save the original box and packing material for possible future shipment

- Follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.

- Do not dismantle the housing or modify the module. It may result in electrical shock or burn.

- Using supplies or parts not meeting the products' specifications may cause damage, deterioration or malfunction.

- Refer all servicing to qualified service personnel.

- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.

- Do not put any heavy items on the extension cable in case of extrusion.

- Do not remove the housing of the device as opening or removing housing may expose you to dangerous voltage or other hazards.

- Install the device in a place with fine ventilation to avoid damage caused by overheat.

- Keep the module away from liquids.

- Spillage into the housing may result in fire, electrical shock, or equipment damage. If an object or liquid falls or spills on to the housing, unplug the module immediately.

- Do not twist or pull by force ends of the optical cable. It can cause malfunction.

- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.

- Unplug the power cord when left unused for a long period of time.

- Information on disposal for scrapped devices: do not burn or mix with general household waste, please treat them as normal electrical wastes.

Contents

1. Introduction

1.1 Brief Introduction

This Kit is a professional 4K HDBaseT Home Distribution Hub Kit, which consists of a 4K HDBaseT Matrix Switcher, 7 HDBaseT Receivers and accessories.

The 4K HDBaseT Matrix Switcher is a professional 8x8 HDBaseT Matrix Switcher that consist of the following inputs and outputs, 8 HDMI IN (4kx2K@60Hz signal at max), 7 IR IN, 1 IR EYE, 8 IR OUT, 1 IR ALL, 7 HDBaseT OUT, 1 HDMI OUT, 1 SPDIF OUT, 1 L&R RCA OUT, and TCP/IP, RS232 control port via phoenix connector.

The receiver is an HDBaseT Receiver that consists of the following inputs and outputs, 1 HDBaseT IN, 1 IR IN, 1 IR OUT and HDMI OUT. The receiver is powered directly by the Matrix Switcher.

All HDMI inputs can be selected by either the front panel buttons, IR, RS232 or GUI. The selected source is delivered to HDBaseT zoned outputs 1~7 & HDMI Output.

The Matrix Switcher is capable of delivering 4K signals up to 40m, 1080p up to 70m and powering the receivers via a single CAT5e cable. It is however recommended to use good quality CAT6 cable.

The Matrix Switcher supports EDID management and is HDCP 2.2, 1.4 compliant.

Audio sources can be selected via RS232 commands and TCP/IP at the Matrix Switcher or by 3rd Party control.

1.2 Features

- HDBaseT Matrix Switcher that features 7 HDBaseT outputs and 1 HDMI output
- Supports HDCP 2.2, and is backwards compatible with previous version of HDCP and HDMI
- Transmits 4Kx2K @ 60Hz 4:2:0 up to 26 ft. (8m) via HDMI port and 131 ft. (40m) via HDBaseT port
- 7 HDBaseT outputs with distances up to 230 ft. (70m) at 1080p and 131 ft. (40m) at 4Kx2K on a single Cat5e/6 cable
- HDBaseT Receivers are powered by the matrix using PoC technology
- LED indicators show real-time switching status
- Controllable via front panel, RS232, IR and TCP/IP
- Built-in GUI for TCP/IP control and setup
- Powerful EDID management
- Support CEC to control far-end display devices via RS232 commands
- Features Micro USB port for firmware upgrades

- Easy installation with rack-mounting design, mounting hardware included
- Power Supply: Matrix Unit, AC100V~ 240V; Receivers, PoC.

1.3 Package List

- 1 x 4K HDBaseT Matrix Switcher
- 7 x HDBaseT Receivers
- 1 x Power Cord(Optional)
- 1 x IR Receiver
- 1 x IR remote
- 1 x RS232 cable(Phoenix to DB9)
- 2 x Mounting ears & 6 x Screws (For 4K HDBaseT Matrix Switcher)
- 14 x Mounting ears & 28 x Screws (For HDBaseT Receivers)
- 4 x Trapezoidal Plastic pads (For 4K HDBaseT Matrix Switcher)
- 28 x Round Plastic pads(For HDBaseT Receivers)
- 1 x User manual

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

2. Product Appearance

2.1 4K HDBaseT Matrix Switcher

1. **Front Panel**

No.	Name	Description
①	FIRMWARE	Micro USB port for updating firmware
②	Power Indicator	➢ **OFF**: No power; ➢ **RED:** DC power present or Standby Mode.
③	INPUTS	8 input selector buttons & 8 green indicators. numbered from "1" to "8".
④	OUTPUTS	8 output selector buttons & 8 green indicators, press the buttons to switch input cycle for the outputs.

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

2. **Rear Panel**
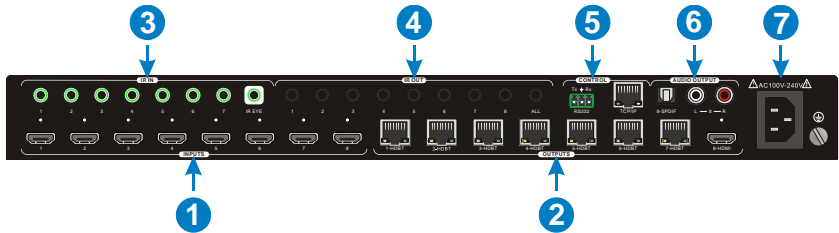
No.	Name	Description
①	INPUTS	8 x HDMI inputs: Type A female HDMI connector, connect the source device with an HDMI cable to any of the HDMI inputs.
②	OUTPUTS	➢ **7 x HDBaseT outputs:** The HDBT RJ45 outputs

		deliver HD video, Audio and PoC to the HDBaseT Receiver up to 70m.
		➢ **1 x HDMI output:** Connect an HDMI cable from the Matrix Switcher to the displayer.
③	IR IN	➢ **7 x 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.
		➢ **1 x IR EYE:** Connect with extended IR receiver, use the IR remote to control the Matrix Switcher.
④	IR OUT	➢ **8 x IR OUT:** Plug in IR emitters to deliver the IR signal sent from the far-end receivers connected to the HDBaseT ports. These IR OUT sockets make up an IR matrix with the IR IN sockets on the far-end receivers, and all can be switched simultaneously with the AV signal, or separately from switching. In default setting, the 1~7 IR OUT corresponds with the 1~7 IR IN, i.e. IR OUT1 - IR IN1, IR OUT2 - IR IN2, …IR OUT7 - IR IN7.
		➢ **1 x IR ALL OUT:** Plug in IR emitter to deliver the IR signal to control input source device form any of far-end receivers.
⑤	CONTROL	➢ **RS232:** Serial port for unit control, 3-pin pluggable terminal block, connects with control device (e.g. PC).
		➢ **TCP/IP:** RJ45 port. Connect with PC for Web-based GUI control.
⑥	AUDIO OUTPUTS	➢ **SPDIF:** Digital audio output connects directly via an optic fibre cable to the Toslink input on a sound bar.
		➢ **RCA (L&R):** PCM Analogue audio output sockets connect the de-embedded audio additional speakers.
⑦	AC100V~240V	Power port, connect with power cord.

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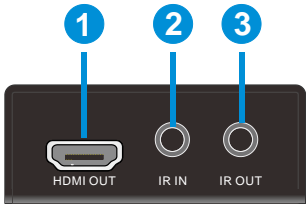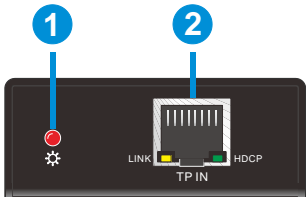
2.2 HDBaseT Receiver

1.   Front Panel

No.	Name	Description
①	HDMI OUT	Connect to HDMI display.
②	IR IN	Plug in the IR receiver, this will receive the IR signals from the RCU and send through to the Matrix Switcher and then control the desired source.
③	IR OUT	Plug in the IR emitter and attached to the fornt of the display, this will send the IR signals form the Matrix Switcher to control the display which is connected to the HDMI OUT port.

2.   Rear Panel

No.	Name	Description
①	Power Indicator	RED when DC power present (PoC).
②	TP IN	The RJ45 socket has two LED status indicators. Plug in the Pre-installed CAT cable in to the HDBT RJ45 socket. ➢ **HDCP**: HDCP compliant indicator. OFF: No HDMI traffic (no picture); GREEN: Signals with HDCP; Blinking GREEN: Signal without HDCP. ➢ **LINK**: HDBT Link status indicator. OFF: No Link; YELLOW:Link Successful; Blinking YELLOW: Link Error.

3. System Connection

3.1 System Applications

The new 4K Home Distribution Hub Kit is designed for the residential market delivering HD Video, Audio to 4 zones with total control and simplicity.

Usage Precautions:

1) The 4K Home Distribution kit should be installed in a clean and dust free environment.
2) Ensure that all plugs, power cords and sockets are in good condition without signs of damage.
3) All devices should be connected before power on.

3.2 Connection Diagram

6
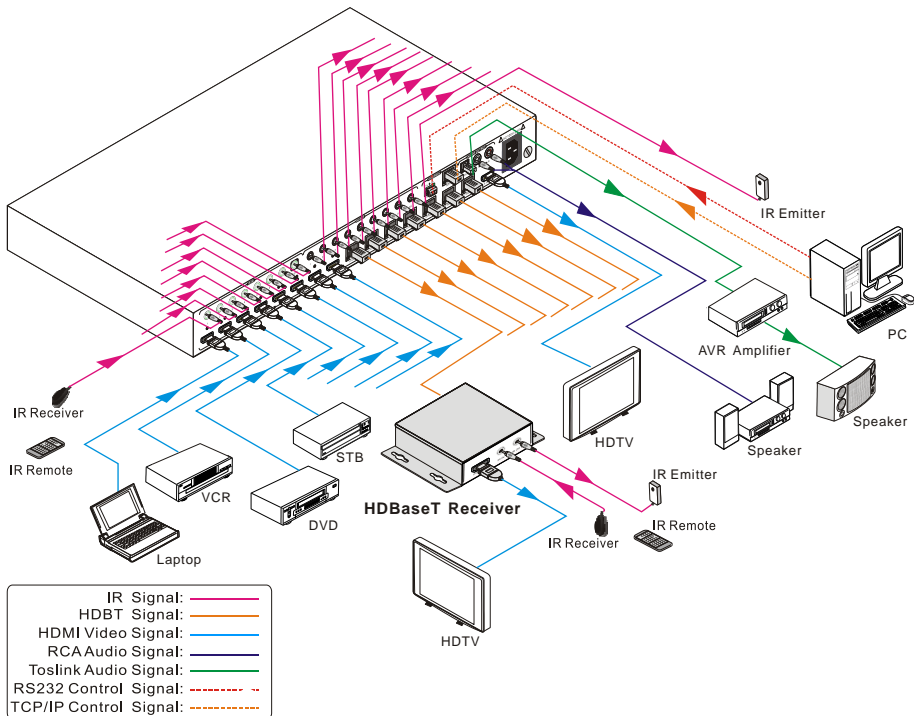
3.3 Connection Procedure

1) Connect HDMI sources (e.g. DVD) to HDMI input ports of the Matrix Switcher via good quality HDMI cables.

2) Connect the Pre-Installed CAT5e/CAT 6 cable infrastructure to Matrix Switcher and HDBaseT receivers via good quality patch leads.

3) Connect HDTV to HDMI output port via HDMI cable.

4) Plug in an HDMI cable in to each of HDBaseT Receiver and connect to the local display [HDTV].

5) Connect AVR amplifier to SPDIF output port or via the Toslink optic fibre cable.

6) Connect speaker to L&R (RCA) output port via audio cable.

7) Plug the IR Receivers 3.5mm jack into the IR IN sockets on HDBaseT Receivers and plug in the IR Emitters to the IR OUT sockets (1~8) on Matrix Switcher to make up as IR Matrix.

8) Plug the phoenix connector in to the RS232 socket on the matrix, this will enable the Matrix Switcher to be controlled via a PC.

9) Plug in a Patch lead from the router in to the Ethernet port on Matrix Switcher to control Matrix Switcher by TCP/IP protocol.

10) Plug in the power supply cord. Once all components have been connected and the installation is completed, switch on the mains supply at the socket.

Note:

1. Connect HDBT ports of Matrix Switcher and far-end HDBaseT Receivers with straight-through cable.

2. IR receivers connected to IR IN should be with carrier. If not, send command %0900. or %0901.to activate native carrier mode or force carrier mode in the IR matrix launched between Matrix Switcher and far-end HDBaseT Receiver.

3.4 Connection with HDBaseT Receiver

The Matrix Switcher features 7 HDBaseT outputs which support PoC technology. Plug in the 7 RJ45 patch leads in to the HDBT outputs and connect to the pre-installed infrastructure. Connect the HDBaseT Receivers to the pre-installed cabling via additional patch leads. Plug the power supply in to the power socket on the matrix, the HDBaseT Receivers will be powered by the Matrix Switcher.

Power Supply

HDBaseT Receiver(PoC)

PoC
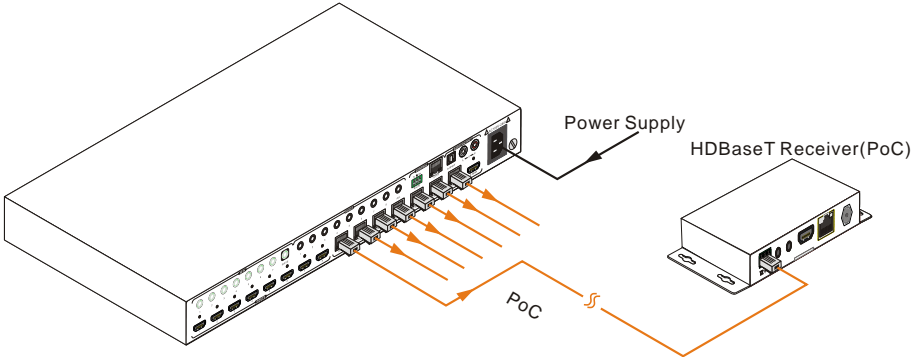
4. System Operations

4.1 Front Panel Button Control

The Matrix Switcher can be controlled via the front panel. Please follow the basic programing instructions below:

1. **To convert one input to an output:**

    Example: Input 1 to Output 3

    → Press INPUTS 1 + OUTPUTS 3

    > **NOTE:**
    >
    > Default status, on first boot up this matrix assigns the IR outputs to the corresponding HDMI input, meaning, IR out 1 is directly associated to HDMI input 1 and so on. When you switch an HDMI input to a different output, the corresponding IR OUT will be switched synchronously to allow the IR commands to be sent from the select zone back through the Matrix Switcher to the source.

2. **To convert an input to several outputs:**

    Example: Convert Input 2 to Output 3, 4 and 5

   → Press INPUTS 2 + OUTPUTS 3 + OUTPUTS 4 + OUTPUTS 5

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.

4.2 IR Control

4.2.1 IR Remote

Connect an IR receiver to the **IR EYE** port of the Matrix Switcher, users can control it through the included IR remote. Here is a brief introduction to the IR remote.

① Standby button:

Press it to enter/ exit standby mode.

② INPUTS:
Input channel selection buttons, range from 1~8.

③ OUTPUTS:

Output channel selection buttons, range from 1~8.

④ Menu buttons:

➢ **ALL**: Select all outputs.

➢ **EDID** management button: Enable input port to manually capture and learn the EDID data of output devices.

➢ **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.
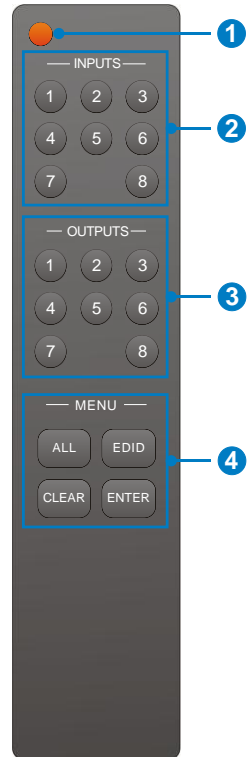
By using IR & HDBaseT transmission technology, the 4K HDBaseT Matrix Switcher has some functions as follows:

1) Control far-end output device from local.

2) Control local input/output device remotely.

3) Control the Matrix Switcher locally/remotely.

4.2.2 Force Carrier

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

b) Only if the IR receiver connected to the Matrix Switcher is with IR carrier, can the received IR signal be transferred to IR OUT port of the Matrix Switcher.

If the IR receiver connected to HDBaseT receiver or the Matrix Switcher is without an IR carrier signal, send the command "%0901." to enter infrared carrier enforcing mode, and then IR signal can be transferred to IR OUT port.

4.2.3 Control Far-end Device locally

Connect an IR receiver with IR carrier to the IR IN port of the 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 display.

See the figure below:
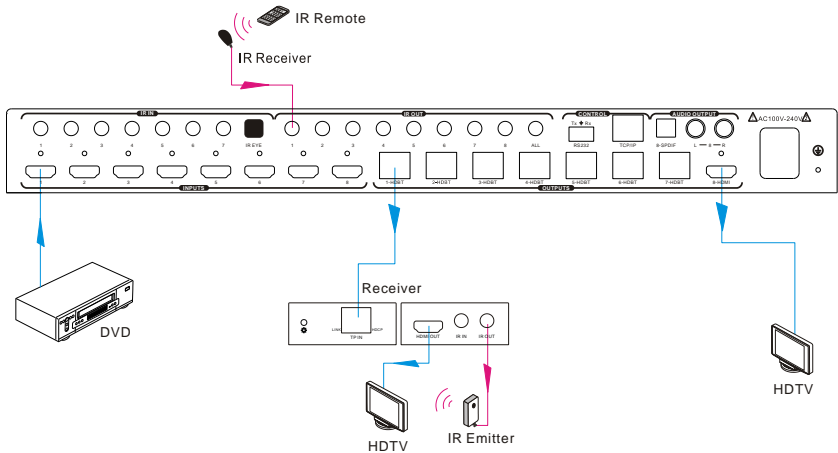
Control far-end device from Local

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

4.2.4 Control Local Device Remotely

Connect IR receiver(s) to IR IN on far-end HDBT receiver(s), and IR Emitter(s) to IR OUT port of the switcher, and use the IR Remote of local source to control the device remotely.

- 1 to 1:

  Connect an IR receiver to IR IN on far-end HDBT receiver, and an IR Emitter to IR OUT port of the switcher. Use the IR Remote of local source to control the device remotely. See below:
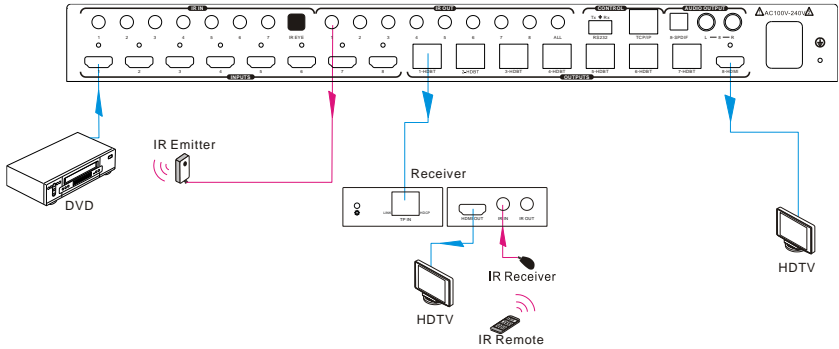
Control local device from remote

  Note: Send command "%0901." to enter infrared carrier enforcing mode if the IR Receiver connected to IR IN of the receiver is not with carrier.

- Multiple to Multiple: (IR Matrix)

  The 8 "IR OUT" ports and the 7 "IR IN" ports on the far-end receivers make up a 7 x 8 IR matrix. See as below:

IR Matrix

The IR signal is sent by 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:
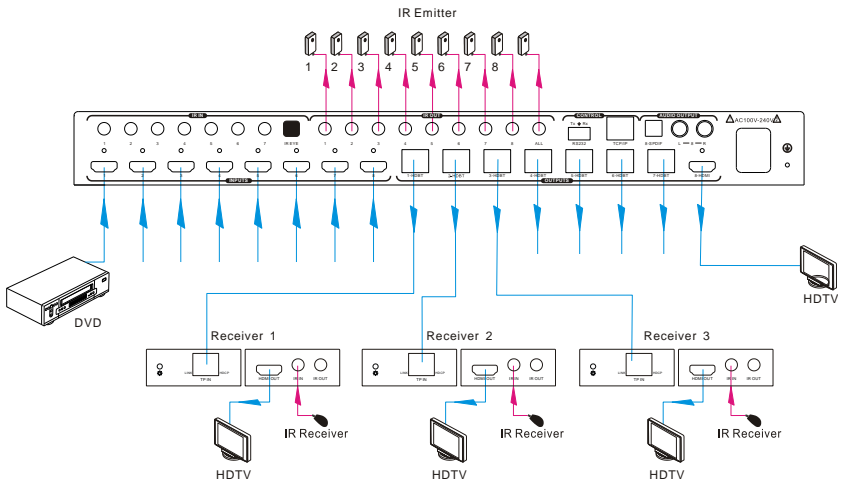
Sending command (reference to *4.3 RS232 Control)* : [x1]R[x2].

> x1: Corresponding to the 8 IR OUT ports of the Matrix Switcher, the IR transmitter connected to this port can be placed at IR receiving area of output device or the Matrix Switcher itself.
>
> x2: Corresponding to the zone (receive IR signal from HDBaseT receiver with IR IN port connects with IR receiver) number of the Matrix Switcher.
>
> → Example: Send command "3R2." to transfer IR signal received from zone 2 to IR OUT port 3.

4.3 RS232 Control

4.3.1 RS232 connection

Except the front control panel, the Matrix Switcher can be controlled by far-end control system through the RS232 communication port. This RS232 communication port is a 3-pin phoenix connector. User can use the RS232 cable (Phoenix to 9-pin D-Sub) to connect the RS232 port to PC, see as below:
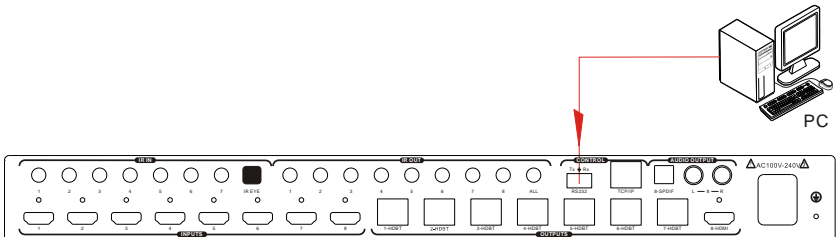
4.3.2 Installation/uninstallation of RS232 Control Software

● **Installation** Copy the control software file to the computer connected with the Matrix Switcher.

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

4.3.3 Basic Settings

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

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

CommWatch.exe

The interface of the control software is showed as below:

Parameter Configuration area

Monitoring area, indicates whether the command sent works.

Command Sending area
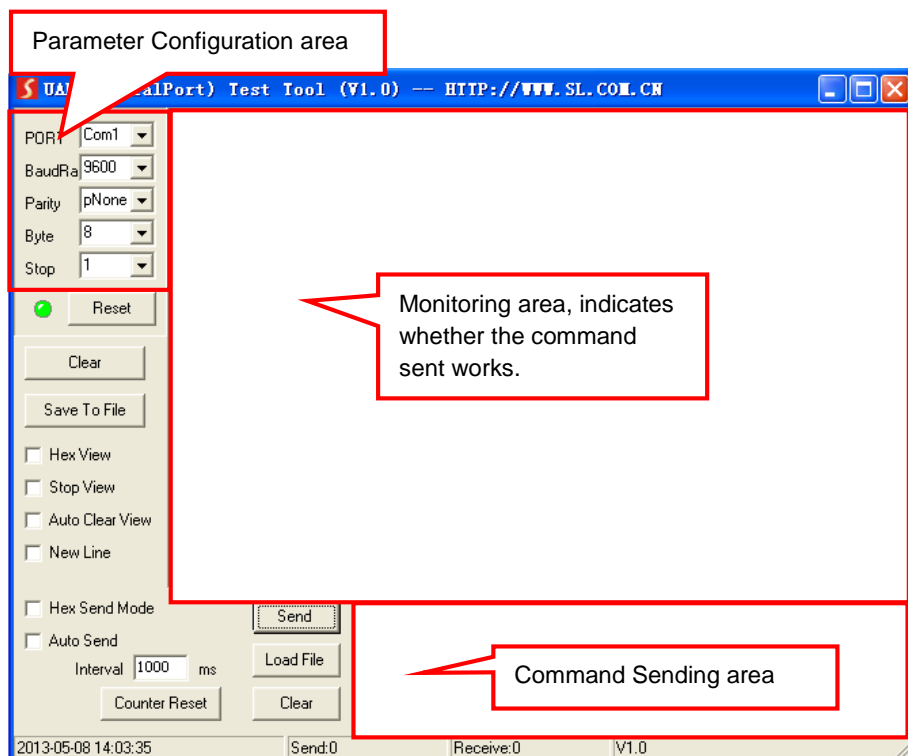
Please set the parameters of COM number, baud rate, data bit, stop bit and the parity bit correctly, only then will you be able to send command in Command Sending Area.

4.3.4 RS232 Communication Commands

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.

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

Command	Function	Feedback Example
System Commands		
/*Type;	Inquire the models information.	XXXX
/%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	VX.X.X
Demo.	Switch to the "demo" mode, convert input and output in turn like1B1, 1B2, …4B3, 4B4, 1B1… and so on .The switching interval is 2 seconds.	Demo Mode AV:01->01 IR:01->01 AV:01->02 IR:01->02 …… AV:08->08 IR:07->07 ……
Operation Commands		
[x]All.	Transfer signals from the input channel [x] to all output channels	X To All. (X=01~08)
All#.	Transfer all input signals to the corresponding output channels respectively like 1->1, 2->2…	All Through.
All$.	Switch off all the output channels.	All Closed.
[x]#.	Transfer signals from the input channel [x] to the output channel [x].	X Through. (X=01~08)
[x]$.	Switch off the output channel [x].	X Closed. (X=01~08)
[x]@.	Switch on the output channel [x].	X Open. (X=01~08)
All@.	Switch on all output channels.	All Open.
[x1]V[x2], [x3], [x4].	Transfer the AV signal from the input channel [x1] to one or several output channels [x2], [x3], [x4], separate output channels with comma).	AV: X1-> X2 (X1/X2/X3...=01~08)
[x1]B[x2], [x3], [x4].	Transfer the AV and IR signal from input channel [x1] to one or several output channels ([x2], [x3], [x4] separate output channels with	AV: X1-> X2 (X1/X2/X3...=01~08)

Command	Function	Feedback Example
	comma).	
[x1] R[x2].	Transfer the IR signal from output [x1] to input [x2].	IR: X1-> X2(X1 、 X2=01~08)
Status[x].	Check the I/O connection status of output [x]	AV: Y-> X (X=01~08, Y=01~08)
Status.	Inquire the input channel to the output channels one by one.	AV: 01->01 … …. AV: 08->08 IR: 01->01 … …. IR: 07->07
Save[Y].	Save the present operation to the preset command [Y], ranges from 0 to 9.	Save To FY (Y=0-9)
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 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].	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 HDCP compliant status, the value may be 1 (HDCP compliant) or 0 (not HDCP compliant).	/%[Y]/[X]:[Z].
DigitAudioON[x].	● X=1~8, enable HDMI audio output for the port x. ● X=9, enable HDMI audio output for all ports.	DigitAudio ON with ALL Outputs

Command	Function	Feedback Example
DigitAudioOFF[x].	● Disable HDMI audio output of port x. X=1~8, disable HDMI audio output for the port x. ● X=9, disable HDMI audio output for all ports.	DigitAudio OFF with ALL Outputs
/+[Y]/[X]:******.	Set communication between PC and HDBaseT receiver. ① Y is for RS232 port (connect with RS232 port of HDBaseT receiver) The value of Y is defined into the following meanings (in a given baud rate depended by the value of X): **a.** Y = 1~8, send this command to the corresponding HDBaseT receiver to control far-end device. **b.** Y = 9, send this command to all HDBaseT receivers to control all far-end devices. **c.** Y = A~H, under PWON mode, send this command to the corresponding HDBaseT receiver to control far-end device. **d.** Y = a~h, under PWOFF mode, send this command to the corresponding HDBaseT receiver to control far-end device. ② X is for baud rate, its value ranges from 1 to 7 (1--2400, 2--4800, 3--9600, 4--19200, 5--38400, 6—57600, 7--115200) ③ ***** is for data (max 48 Byte)	/+[Y]/[X]:******
EDIDH[x]B[y].	Input port [y] learns the EDID from output port [x]. If the EDID data is available and the audio part supports not only PCM mode, then force-set it to support	EDIDH4B3

Command	Function	Feedback Example
	PCM mode only. If the EDID data is not available, then set it as initialized EDID data.	
EDIDPCM[x].	Set the audio part of input port [x] to PCM format in EDID database. X=1~8.	EDIDPCM1
EDIDG[x].	Get EDID data from output [x] and display the output port number. X=1~8.	Hexadecimal EDID data and carriage return character
EDIDMInit.	Restore the factory default EDID data of every input.	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 available, then set it as initialized EDID data. X/Y=1~8.	EDIDM7B6
EDIDUpgrade[x].	Upgrade EDID data via the RS232 port. [x] is the 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
EDID/[x]/[y].	Set the EDID data of input port [x] to built-in EDID No.[y]. [y]=1~6, correspond to the 6 embedded EDID data separately	EDID/7/1
UpgradeIntEDID[x].	Upgrade one of the 6 embedded EDID data, x is the serial number for EDID data: 1. 1080P 2D 2CH 2. 1080P 3D 2CH 3. 1080P 2D Multichannel 4. 1080P 3D Multichannel 5. 3840x2160 2D (30Hz)	Please send the EDID file

Command	Function	Feedback Example
	6. 3840x2160 2D (60Hz) When the switcher gets the command, it will show a message to send EDID file (.bin file). Operations will be invalid after 10 seconds.	
GetInPortEDID[X]	Gain the current EDID data of input [x], [x]=1~8	
GetIntEDID[x].	Gain the embedded EDID data ranked x, [x]=1~6	
%0801.	Auto HDCP management, activate carrier native mode	%0801
%0900.	Switch to carrier native mode.	Carrier native
%0901.	Switch to force carrier mode.	Force carrier
%0911.	Reset to factory default.	Factory Default
%9951.	Under PWON mode, check the command which was sent from port 1 to far-end device.	Port 1: ******** when PWON
%9952.	Under PWON mode, check the command which was sent from port 2 to far-end device.	Port 2: ******** when PWON
%9953.	Under PWON mode, check the command which was sent from port 3 to far-end device.	Port 3: ******** when PWON
%9954.	Under PWON mode, check the command which was sent from port 4 to far-end device.	Port 4: ******** when PWON
%9955.	Under PWON mode, check the command which was sent from port 5 to far-end device.	Port 5: ******** when PWON
%9956.	Under PWON mode, check the command which was sent from port 6 to far-end device.	Port 6: ******** when PWON
%9957.	Under PWON mode, check the command which was sent from port 7 to far-end device.	Port 7: ******** when PWON
%9958.	Under PWON mode, check the command which was sent from port 8 to far-end device.	Port 8: ******** when PWON

Command	Function	Feedback Example
%9941.	Under PWOFF mode, check the command which was sent from port 1 to far-end device.	Port 1: ******** when PWOFF
%9942.	Under PWOFF mode, check the command which was sent from port 2 to far-end device.	Port 2: ******** when PWOFF
%9943.	Under PWOFF mode, check the command which was sent from port 3 to far-end device.	Port 3: ******** when PWOFF
%9944.	Under PWOFF mode, check the command which was sent from port 4 to far-end device.	Port 4: ******** when PWOFF
%9945.	Under PWOFF mode, check the command which was sent from port 5 to far-end device.	Port 5: ******** when PWOFF
%9946.	Under PWOFF mode, check the command which was sent from port 6 to far-end device.	Port 6: ******** when PWOFF
%9947.	Under PWOFF mode, check the command which was sent from port 7 to far-end device.	Port 7: ******** when PWOFF
%9948.	Under PWOFF mode, check the command which was sent from port 8 to far-end device.	Port 8: ******** when PWOFF
%9961.	Check the system locking status.	System Locked/ Unlock!
%9962.	Check the power status	STANDBY/PWOFF/ PWON
%9963.	Check the working mode of infrared carrier.	Carrier native/ Force carrier
%9964.	Check the IP address.	IP:192.168.0.178 (default)
%9971.	Check the connection status of the inputs.	In 01 02 03 04 Connect Y Y Y Y In 05 06 07 08 Connect Y Y Y Y
%9972.	Check the connection status of the outputs.	Out 01 02 03 04 Connect Y Y Y N

Command	Function	Feedback Example
		Out 05 06 07 08 Connect N Y Y Y
%9973.	Check the HDCP status of the inputs.	In 01 02 03 04 HDCP Y Y Y N In 05 06 07 08 HDCP Y Y Y Y
%9974.	Check the HDCP status of the outputs.	Out 01 02 03 04 HDCP Y Y Y Y In 05 06 07 08 HDCP Y Y Y Y
%9975.	Check the I/O connection status.	Out 01 02 03 04 In 07 07 07 07 Out 05 06 07 08 In 07 07 07 07
%9976.	Check the output resolution.	Resolution Out 1 1920x1080p Out 2 1920x1080p Out 3 1920x1080p Out 4 1920x1080p Out 5 1920x1080p Out 6 1920x1080p Out 7 1920x1080p Out 8 1920x1080p
%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
%9978.	Check the HDCP compliant status of the inputs.	In 01 02 03 04 HDCPEN Y Y Y Y In 05 06 07 08 HDCPEN Y Y Y Y

Command	Function	Feedback Example
I-Lock[X].	Lock the channel [x], X=1~8.	Channel[x] Lock!
I-Unlock[X].	Unlock the channel [x], X=1~4.	Channel[x] Unlock!
A-Lock.	Lock all channels.	All Channel Lock!
A-Unlock.	Unlock all channels.	All Channel Unlock!
Lock-Sta.	Check the lock status of all channels.	Channel 1->1 Unlock! Channel 2->1 Unlock! Channel 3->1 Unlock! … Channel 8->1 Unlock! Channel 1->2 Unlock! Channel 2->2 Unlock! …. Channel 8->8 Unlock!
CEC Commands(These commands below are shown for reference only)		
43 45 43 01 36 2E	Turn off the display devices.	
43 45 43 01 44 6C 2E		
43 45 43 01 04 2E	Turn on the display devices.	
43 45 43 01 44 6D 2E		
43 45 43 01 44 41 2E	Volume up	
43 45 43 01 44 42 2E	Volume down	

4.4 TCP/IP Control

Besides IR control, RS232 control, the Matrix Switcher boasts option TCP/IP port for IP control.

Default settings: IP: 192.168.0.178; Subnet Mast: 255.255.255.0; Gateway: 192.168.0.1; Serial Port: 4001.

IP& gateway can be changed as you need, Serial Port cannot be changed.

Connect the Ethernet port of control device and TCP/IP port of the Matrix Switcher, and set same network segment for the 2 devices, users are able to control the device via web-based GUI or designed TCP/IP communication software.

4.4.1 Control Modes

The Matrix Switcher can be controlled by PC without Ethernet access or PC(s) within a LAN.

● **Controlled by PC**
Connect a computer to the TCP/IP port of the Matrix Switcher, and set its network segment to the same as the Matrix Switcher's.
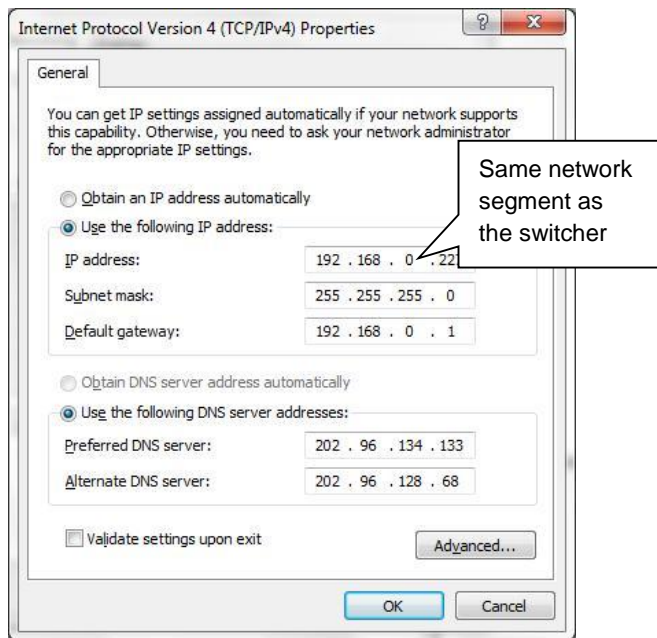
● **Controlled by PC(s) in LAN**

Connect the Matrix Switcher, a router and several PCs to setup a LAN (as shown in the

following figure). Set the network segment of the Matrix Switcher to the same as the router's, then PCs within the LAN are able to control the Matrix Switcher.
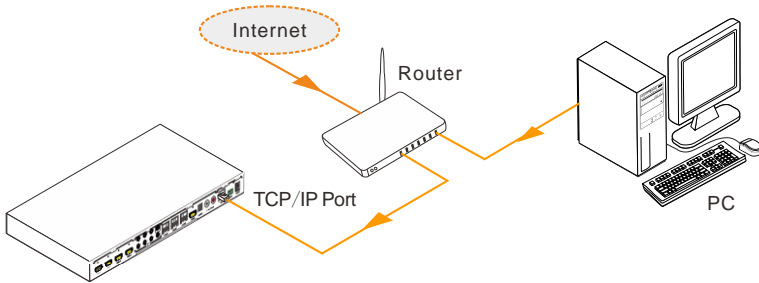
Follow these steps to connect the devices:

Step1. Connect the TCP/IP port of the Matrix Switcher to Ethernet port of PC with twisted pair.

Step2. Set the PC's network segment to the same as the Matrix Switcher's. Do please remember the PC's original network segment.

Step3. Set the Matrix Switcher's network segment to the same as the router.

Step4. Set the PC's network segment to the original ones.

Step5. Connect the Matrix Switcher and PC(s) to the router. PC(s) within the LAN is able to control the Matrix Switcher asynchronously.

Then it's able to control the device via GUI.

4.4.2 GUI for TCP/IP control

The 4K HDBaseT Matrix Switcher provides with built-in GUI for convenient TCP/IP control. GUI allows users to interact with 4K HDBaseT Matrix Switcher through graphical icons and visual indicators.

Type 192.168.0.178 in your browser, it will enter the log-in interface shown as below:
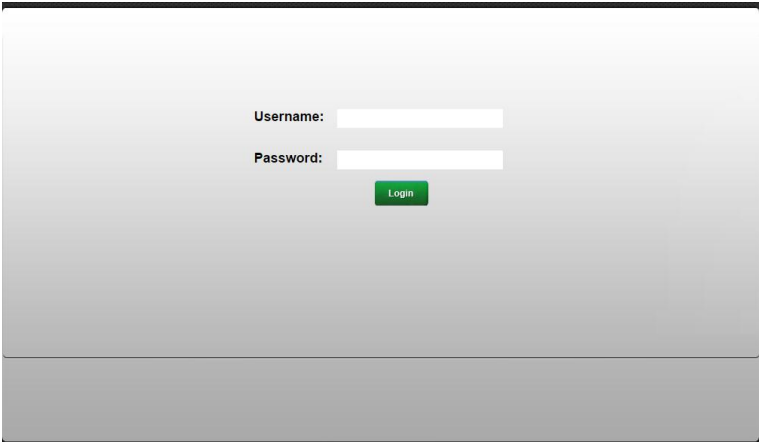
There are 2 selectable usernames – admin (default password: admin) and user (default password: user). Log in as admin can access more configuration interfaces than user.

Enter username and the right password. Here is a brief introduction to the interfaces.

Main: Interface shown after logging in, provide intuitive I/O connection switching. See the screenshot below:
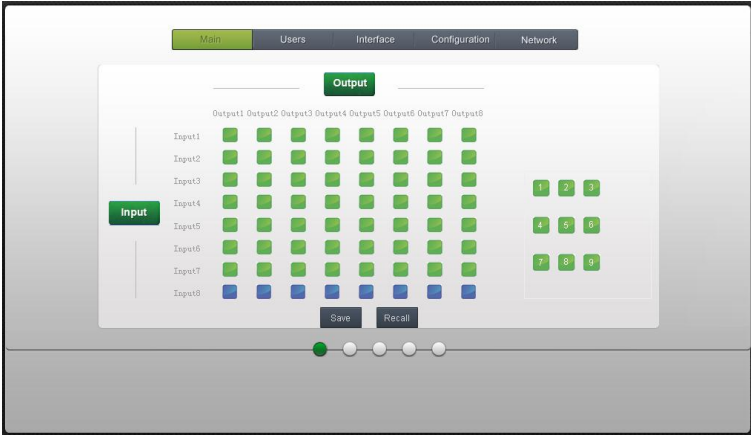
The button matrix displays every possible connection between every input and output, users can carry on the connections by clicking corresponding button.
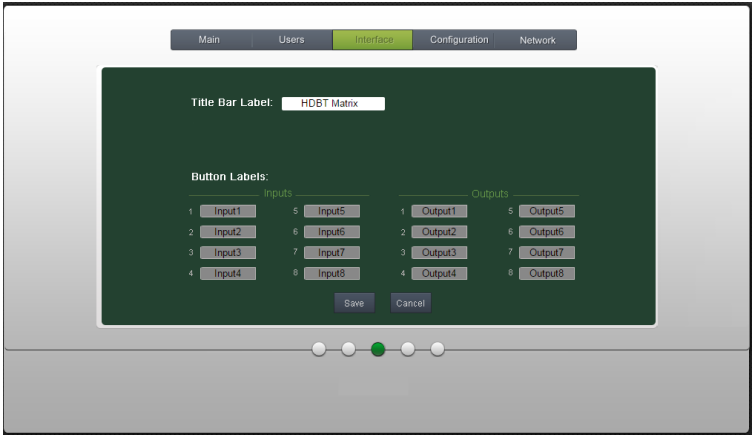
Buttons 1~9 at the right-bottom corner provides quick saving and recall for overall switching status.

Users: Display or modify credential settings, front panel lock, and GUI version.
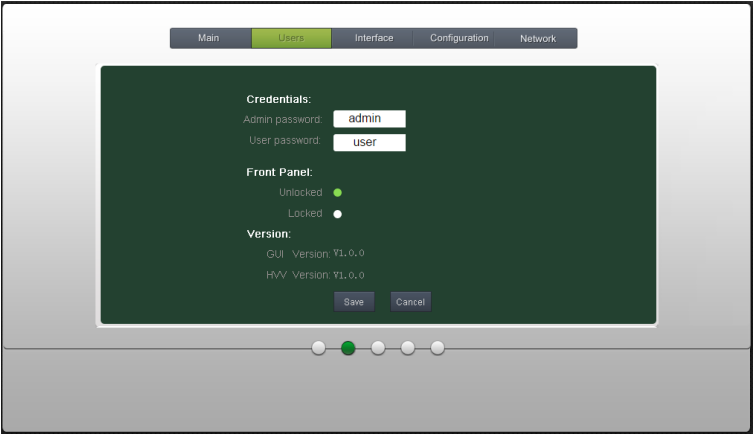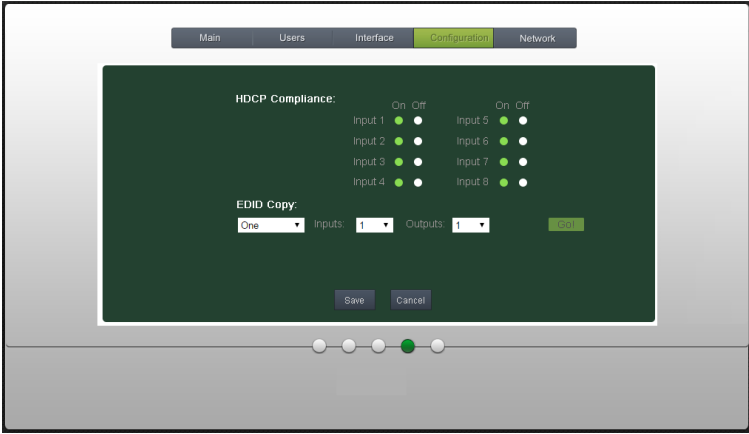
If there is any modification, press **Save** to restore the settings, or press **Cancel** to withdraw.
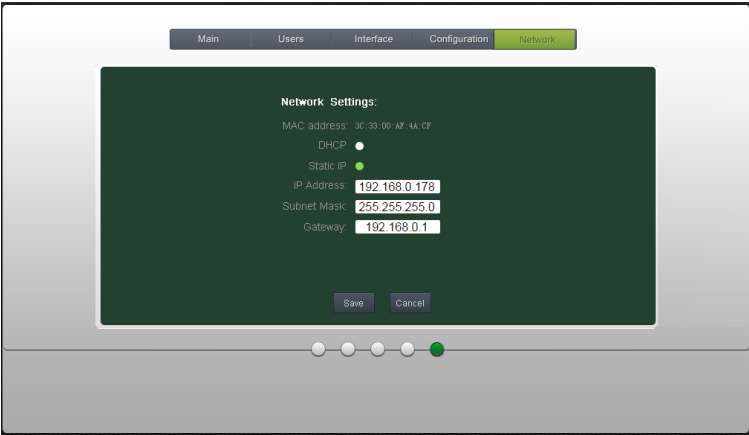
Interface: Set title bar label and button labels, press **Save** to save the settings

Configuration: Set HDCP Compliance status for every input, and manage EDID. See the screenshot below:

26

Network: Inquire and configure network settings including MAC address, IP address, subnet mask, and Gateway

Note: Log in as user access main interface only.

4.4.3 GUI Update

GUI for 4K HDBaseT Matrix Switcher supports online update in http://192.168.0.178:100. Type the username and password (the same as the GUI log-in settings, modified password will be available only after rebooting) to log in the configuration interface. After that, click **Administration** at the source menu to get to **Upload Program** as shown below:
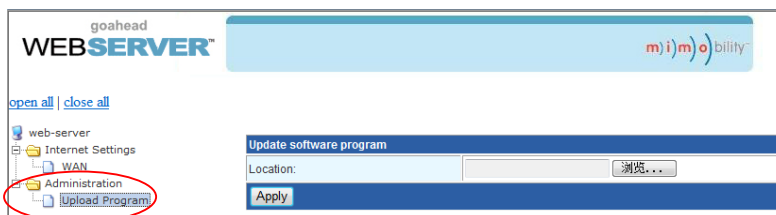
Select the desired update file and press Apply, it will start upgrading then.

4.5 EDID Management

The 4K HDBaseT Matrix Switcher features EDID management to maintain compatibility between all devices. It can be controlled via EDID learning and EDID invoking.

4.5.1 EDID learning

The included IR remote can be used to enable the Matrix Switcher to learn the EDID of all sink devices.

✓ **One input port learns the EDID data of one output port:**

Example: Input 2 learns EDID data from output 4

→Press EDID + INPUTS 2 + OUTPUTS 4 + ENTER

✓ **All input ports learn EDID data from one output port:**

Example: all input ports learn EDID data from output 4

→Press: EDID + ALL + OUTPUTS 4 + ENTER

4.5.2 EDID invoking

There are six types of embedded EDID data. The chart below illustrated the detailed information of the embedded EDID data:

No.	EDID Data
1	1080P 2D 2CH
2	1080P 3D 2CH
3	1080P 2D Multichannel
4	1080P 3D Multichannel
5	3840x2160 2D（30Hz）
6	3840x2160 2D（60Hz）

Sending the command "UpgradeIntEDID[x]." via RS232 Control Software to upgrade the embedded EDID data, x=1~6.

4.6 Firmware Update via USB

The Matrix Switcher boasts a USB port for online firmware upgrade on the front panel. Follow these steps to upgrade firmware:
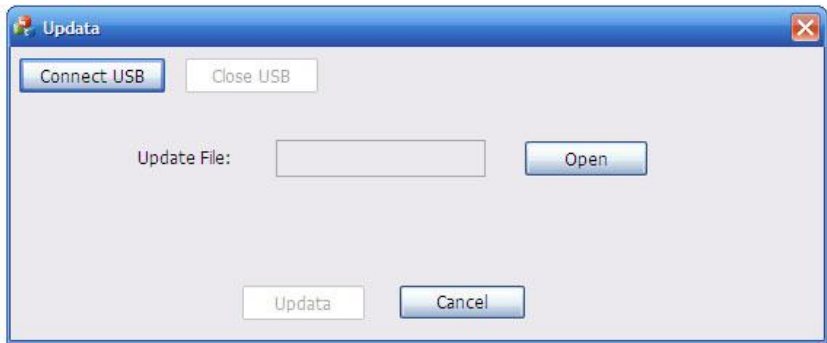
Step1. Copy the upgrade software and the latest upgrade file (.bin) to PC.

Step2. Connect the USB ports of the 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

5.1 4K HDBaseT Matrix Switcher

Video Input	
Input	8 HDMI
Input Connector	Female HDMI
Input Level	T.M.D.S. 2.9V~3.3V
Input Impedance	100Ω (Differential)
HDMI Standard	Support 4K@60 4:2:0 & HDCP2.2 and is backward compatible with all previous standards.
Video Output	
Output	1 HDMI

	7 HDBaseT
Output Connector	Female HDMI Female RJ45(with LED indicators)
Output Level	T.M.D.S. 2.9V~3.3V
Output Impedance	100Ω (Differential)
HDMI Standard	Support 4K@60 4:2:0 & HDCP1.4 and is backward compatible with all previous standards.
Video general	
Video Signal	HDMI (or DVI-D)
Transmission Distance	1080P@60Hz ≤70m 4Kx2K@60Hz ≤40m
Resolution Range	Up to 4Kx2K@60Hz
EDID Management	In-built EDID data and manual EDID management
Gain	0 dB
Bandwidth	10.2Gbit/s
Switching Speed	200ns (Max.)
Audio general	
Output Signal	Stereo audio Digital audio
Analog Audio Output	Support PCM
Digital Audio Output	Supports PCM, Dolby, DTS, DTS-HD
Frequency Response	20Hz~20KHz
Output Connector	1 L&R(RCA) 1 SPDIF
Control Parts	
Control Ports	8 IR OUT 1 IR ALL OUT 7 IR IN 1 IR EYE 1 TCP/IP (female RJ45) 1 RS232 (3-pin pluggable terminal block)
Panel Control	Front panel buttons
RS232 Control	3-pin pluggable terminal block
IR	Extended IR receiver
TCP/IP Control	Web-based GUI
General	
Power Supply	AC100-240V~, 50/60Hz
Power Consumption	93W (Max)
Temperature	0 ~ +50℃

Reference Humidity	10% ~ 90%
Dimension (W*H*D)	436.4mm x 44.0mm x 300.0 mm
Net weight	2.9Kg

5.2 HDBaseT Receiver

Input & Output	
Input	1 HDBaseT
Input Connector	Female RJ45(with LED indicators);
Output	1 HDMI
Output Connector	Female HDMI
Control	1 IR IN 1 IR OUT
Control Connector	3.5mm mini jacks
General	
Resolution Range	Up to 4K×2K@60Hz
Transmission Mode	HDBaseT
Transmission Distance	1080P@60Hz ≤70m 4Kx2K@60Hz ≤40m
Bandwidth	10.2Gbps
HDMI Standard	Support HDMI1.4 and HDCP1.4
Temperature	0 ~ +50℃
Humidity	10% ~ 90%
Power Supply	Powered by 4K HDBaseT Matrix Switcher.
Dimension (W*H*D)	62mm x 24mm x 121mm
Net Weight	280g

6. Panel Drawing

6.1 4K HDBaseT Matrix Switcher
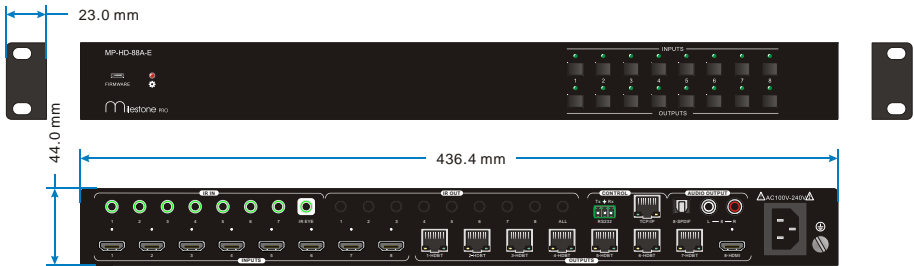
6.2 HDBaseT Receiver
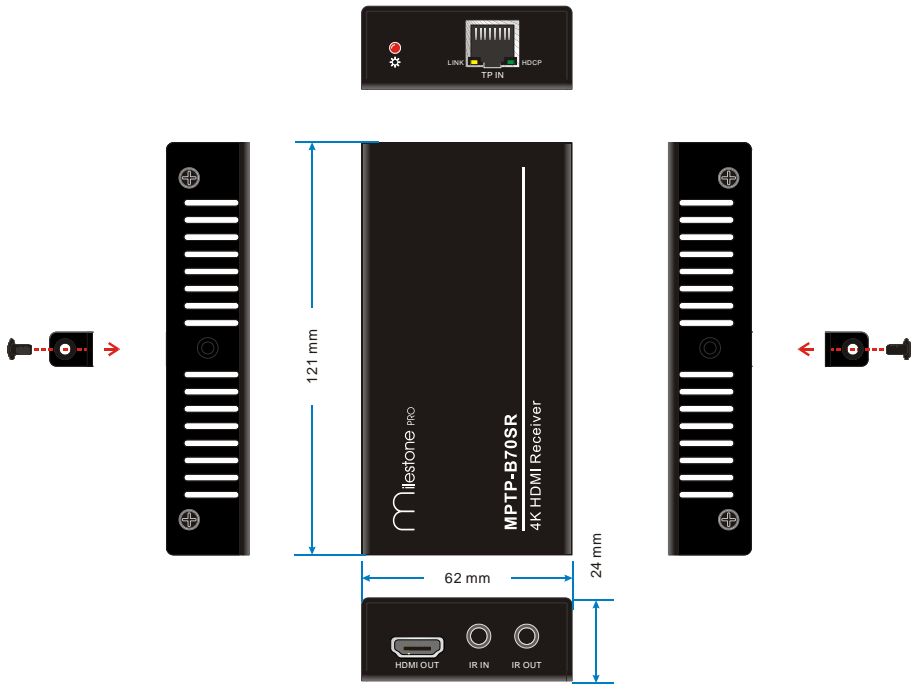
7. Troubleshooting & Maintenance

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
	Input source is with HDCP while the HDCP compliance is switched off.	Send command /%[Y]/[X]:1. or change HDCP compliance status in GUI.
	The display doesn't support the input resolution.	Switch for another input source or enable the display to learn the EDID data of the input.
Cannot control the device via front panel buttons	Front panel buttons are locked.	Send command /%Unlock; or select unlock in GUI interface to unlock
Cannot control the device via IR remote	The battery has run off.	Change for new battery.
	The IR remote is broken.	Send it to authorized dealer for repairing.
	Beyond the effective range of the IR signal or not pointing at the IR receiver	Adjust the distance and angle and point right at the IR receiver.
	The IR receiver connected to IR IN port is not with carrier	Change for an IR receiver with carrier.
Power Indicator remains off when powered on	Fail or loose power connection	Check whether the cables are connected correctly

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 connection	Check to ensure the connection between the control device and the unit
	Wrong RS232 communication parameters	Type in correct RS232 communication parameters: Baud rate:9600; Data bit: 8; Stop bit: 1; Parity bit: none
	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.

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.

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 the product leaves warehouse (check the SN mark on the product).
   Proof of purchase in the form of a bill of sale or receipted invoice 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.