USER MANUAL

AVG-UHMS44PRO

4K HDBaseT 4x4
Matrix Switcher

Version: UHMS44PRO_2016V1.0

The UHMS44PRO 4K HDBaseT 4x4 Matrix Switcher is a professional 4x4 HDBaseT Matrix Switcher that accommodates 4 HDMI IN, 4 IR IN with 4 HDBT Outputs. HDMI inputs are selected by front panel buttons, IR, RS232 or GUI.

Features

- Supports HDMI 1.4 & HDCP 2.2, and is compliant with earlier standards, able to transmit 4Kx2K@60Hz & 1080p 3D
- Supports manual HDCP management and auto-detection
- Transmits a 4Kx2K signal for 8m via HDMI port, 40m via HDBT port
- 4 HDBaseT outputs, for simple extension to 70m at 1080p and 40m at 4Kx2K on a single CAT5e/6 cable
- Supports PoC
- LCD screen shows real-time I/O connection status, switching status, HDCP status, and output resolution
- Controllable via front panel, RS232, IR and TCP/IP
- Supports bi-directional IR & RS232 control
- Built-in GUI for TCP/IP control
- Powerful EDID management
- Supports memory off function for reliability
- Supports firmware upgrades through the Micro USB port
- Easy installation with rack-mounting design

PLEASE READ THIS PRODUCT MANUAL CAREFULLY BEFORE USING THIS PRODUCT.

This manual is only for operational instruction only, and not to be used in a maintenance capacity. The functions described in this version are current as at May 2016. Any changes of functions and operational parameters will be updated in future manual versions. Please refer to your dealer for the latest product details.

Version 1.0 1/5/16

SAFETY OPERATION GUIDE 

In order to guarantee the reliable operation of the equipment and safety of the user, please abide by the following procedures in installation, use and maintenance:

1. The system must be earthed properly. Please do not use two blade plugs and ensure the AC power supply ranges from 100v to 240v and from 50Hz to 60Hz.
2. Do not install the switcher in an environment where it will be exposed to extreme hot or cold temperatures.
3. This unit will generate heat during operation, please ensure that you allow adequate ventilation to ensure reliable operation.
4. Please disconnect the unit from mains power if it will be left unused for a long time.
5. Please DO NOT try to open the casing of the equipment, DO NOT attempt to repair the unit. Opening the unit will void the warranty. There are high voltage components in the unit and attempting to repair the unit could result in serious injury.
6. Do not allow the unit to come into contact with any liquid as that could result in personal injury and product failure.

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1. Introduction

1.1. Introduction to the AVG-UHMS44PRO

The UHMS44PRO 4K HDBaseT 4x4 Matrix Switcher is a professional 4x4 HDBaseT Matrix Switcher that accommodates 4 HDMI IN, 4 IR IN with 4 HDBT Outputs.

HDMI inputs are selected by front panel buttons, IR, RS232 or GUI. The selected source is delivered to HDBaseT outputs 1~4 with mirrored HDMI outputs on HDMI outputs 1~2 (signal extension up to 70m at 1080p and 40m at 4Kx2K on a single CAT5e/6 connection with HDBaseT receivers, with PoC) simultaneously. The unit also supports EDID management, HDCP, bi-directional RS232 & IR control.

1.2. Features

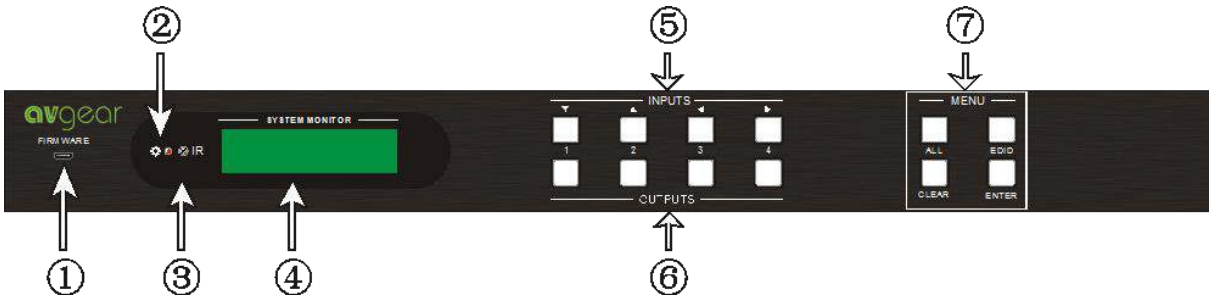
- Supports HDMI 1.4 & HDCP 2.2, and is compliant with earlier standards, able to transmit 4Kx2K@60Hz & 1080p 3D
- Supports manual HDCP management and auto-detection
- Transmit a 4Kx2K signal for 8m via HDMI port, 40m via HDBT port
- 4 HDBaseT outputs, for simple extension up to 70m at 1080p and 40m at 4Kx2K on a single CAT5e/6 cable
- Supports PoC
- LCD screen shows real-time I/O connection status, switching status, HDCP status, and output resolution
- Controllable via front panel, RS232, IR and TCP/IP
- Supports bi-directional IR & RS232 control
- Built-in GUI for TCP/IP control
- Powerful EDID management
- Supports memory off function for reliable operation
- Supports firmware upgrades through the Micro USB port
- Easy installation with rack-mounting design

2. What's in the Box

- 1 x 4K HDBaseT 4x4 Matrix Switcher
- 2 x Mounting ears (6 x Screws)
- 1 x RS232 cable
- 1 x IR Receiver
- 4 x Plastic cushions (4 x Black Screws)
- 1 x IR remote
- 1 x Power Adapter (DC 24V 2.5A)
- 8 x Pluggable Terminal Blocks
- 1 x User manual

Note: Please confirm if the product and the accessories are all included, if not, please contact your dealer.

3. Product Appearance of the AVG-UHMS44PRO

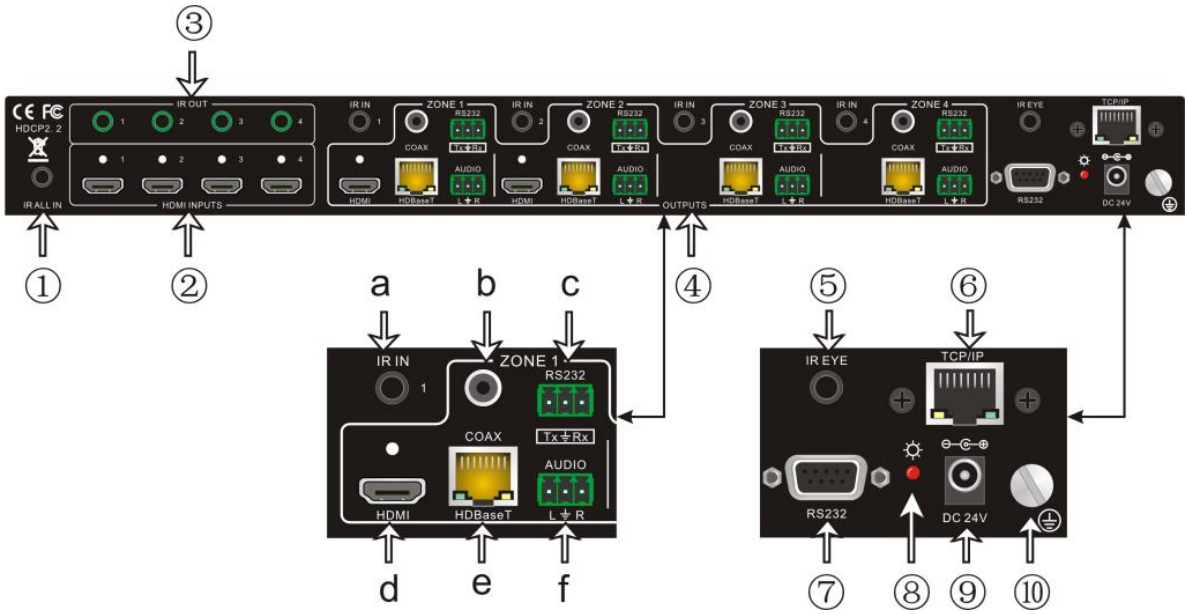


3.1. Front Panel

No.	Name	Description
①	Firmware	Micro USB port for updating firmware
②	Power Indicator	Illuminates red when power is on
③	IR	In-built IR sensor, receives IR signals sent from the IR remote.
④	LCD Screen	Displays real-time operation status.
⑤	INPUTS/ Menu buttons	Normal mode: Back-lit buttons, ranging from "1" to "4". Query mode (buttons 1~4): Press “ENTER” for more than 3 seconds to enter this mode. Dial ◄► to select different menus, ▲▼ to select different options.
⑥	OUTPUTS buttons/ EDID Management buttons	Normal mode: Back-lit buttons, ranging from "1" to "4". Output 1~2 support synchronous local HDMI output. EDID Programming mode: press and hold EDID button for 3 seconds or more to enter this mode, in this mode, button 1, 2 are used to switch to the previous/ next EDID data.
⑦	Function buttons	**ALL**: Select all inputs/ outputs.
⑦	Function buttons	**ALL**: Select all inputs/ outputs.
		EDID management button: Enable input port to manually capture and learn the EDID data of output devices.
		CLEAR: Withdraw an operation like switching an output channel, learning EDID data before it comes into effect. Meanwhile, the matrix will return to its previous state.
		ENTER: Confirm operation. Press and hold it for 3 seconds to enter into Query mode.

Note: Pictures shown in this manual are for reference only.

3.2. Rear Panel



No.	Name	Description
①	IR ALL IN	Input port for IR control signal, connect with an IR receiver, delivers IR signal to all the HDBaseT ports to control the 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 OUT sockets make up an IR matrix with the IR IN sockets on the HDBaseT receivers, and all IR signals can be switched synchronously with the AV signal, or separately switched.
④	OUTPUTS	**a. IR IN**: Connect with an 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. **b. COAX**: HDMI de-embedded digital audio output. **c. RS232**: Serial port to communicate with the RS232 port on the corresponding HDBaseT receiver. **d. HDMI**: HDMI output port, connect with HDMI displays, mirrored HDBaseT display signal. **e. HDBaseT**: Works with HDBaseT receivers, such as HDMI Twisted Pair PoC Receiver. It can extend AV, IR and RS232 signal up to 70m in distance. Meanwhile, it can provide power for the receivers which support PoC. **f. AUDIO**: HDMI de-embedded stereo audio output
⑤	IR EYE	Connect with extended IR receiver, use the IR remote to control the 4K HDBaseT 4x4 Matrix Switcher.

⑥	TCP/IP	TCP/IP port for unit control
⑦	RS232	Serial port for unit control, 9-pin female connector, connects with a control device such as a PC.
⑧	Power Indicator	Illuminates red when powered on.
⑨	DC 24V	Connect with a DC 24V power adaptor.
⑩	GROUND	Connect to ground.

Note: Pictures shown in this manual are for reference only.

4. System Connection

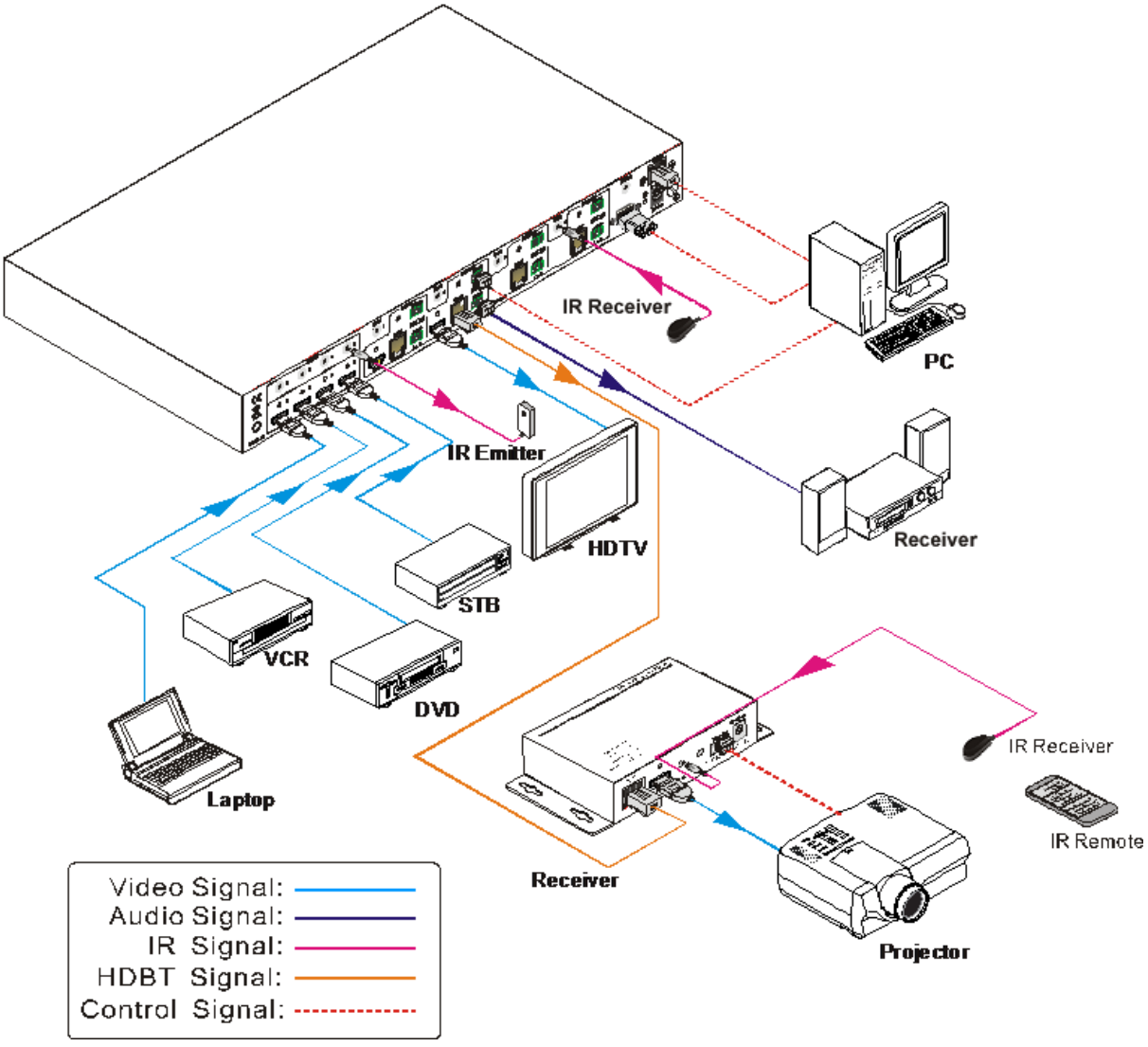
4.1. System Applications

Reliable performance for control and transmission makes the AVG-UHMS44PRO ideal in the IT computer space, signal monitoring, big screen displays, conference systems, television broadcast, education, banking and security institutions etc.

4.2. Usage Precautions

1. System should be installed in a clean environment with temperature and humidity maintained to within equipment specification.
2. All of the power switches, plugs, sockets and power cords should be insulated and safe.
3. All devices should be connected before power is turned on.

4.3. Connection Diagram



4.4. Connection Procedure

Step 1. Connect HDMI sources (e.g. DVD) to HDMI inputs of the AVG-UHMS44 with HDMI cables.

Step 2. Connect HDBaseT receivers (e.g. AVG-HD300R) to the HDBaseT Output ports with twisted pair cable.

Step 3. Connect HDMI displays (e.g. HDTV) to HDMI outputs of the AVG-UHMS44PRO or the receivers with HDMI cables

Step 4. Connect Receiver, Audio Matrix etc. to AUDIO output ports

Step 5. Connect the RS232 port of control device (e.g. a PC) to the RS232 port of either the AVG-UHMS44PRO or far-end receivers. RS232 signal can be transmitted bi-directionally between the AVG-UHMS44PRO and far-end receivers.

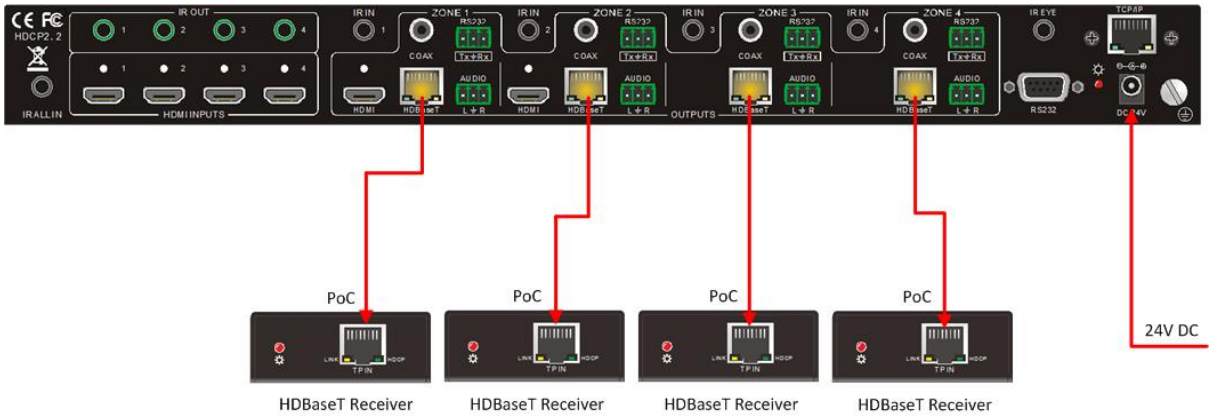
Step 6. The AVG-UHMS44PRO can collect IR signals transmitted by the included IR remote via its built-in IR sensor or through an external IR receiver connected to the IR IN/ IR EYE/ IR ALL IN port. The IR signal can be transmitted bi-directionally between the AVG-UHMS44PRO and far-end receivers.

Step 7. Connect a DC 24V power adapter to the AVG-UHMS44PRO.

Note: IR receivers connected to IR IN & IR ALL IN should have a carrier. If not, send the RS-232 command %0900. or %0901.to activate native carrier mode or force carrier mode in the IR matrix launched between AVG-UHMS44PRO and the far-end receivers.

4.5. Connection with a PoC Receiver

The 4K HDBaseT 4x4 Matrix Switcher contains 4 HDBaseT output ports which support the PoC solution. Connect the HDBT output ports of the 4K HDBaseT 4x4 Matrix Switcher to the HDBaseT Receivers supporting via twisted pair cable. Plug a power supply to the power port of the 4K HDBaseT 4x4 Matrix Switcher, the HDBaseT Receivers will be powered synchronously via the PoC solution.



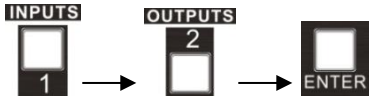
5. System Operations

5.1. Front Panel Button Control

AVG-UHMS44PRO has convenient front panel button controls. Below is an introduction to the system operations.

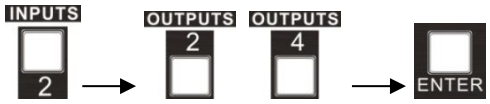
5.1.1. Switching I/O Connection

1. To select one input to an output:
Operation: “input”+“output”+“ENTER”
Example: input 1 to output 2

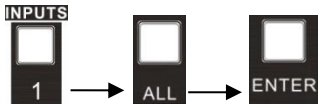


Note: In default status, 4 IR OUT sockets correspond with 4 HDMI INPUTS. When you select a HDMI input to an output, the corresponding IR OUT will be switched synchronously.

2. To select an input to several outputs:
Operation: “input” + “output” + “output” +… + “ENTER”
Example: Switch input 2 to output 2, 4



3. To select an input to all outputs:
Operation: “input” + “ALL” + “ENTER”
Example: select input 1 to all outputs



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

5.1.2. EDID Management

AVG-UHMS44PRO features EDID management to maintain compatibility between all devices. It can be controlled via EDID learning and EDID programming.

EDID Learning (from output):

- 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 process is successful, then it will turn off. If the process fails, they will be off immediately.

EDID programming:

There are five types of embedded EDID data. The chart below illustrates 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）

Press and hold “**EDID**” for 3 seconds to enter EDID programming mode, in this mode, use output buttons 1/2 to switch among the 5 embedded EDID data. Then press “**ENTER**” to confirm programming.

Format: Press and hold “EDID” for 3 seconds, “INPUTS”+“OUTPUTS 1/2”+“ENTER”.

Operations:

- Invoke embedded EDID data for one input
  Operation: Press “EDID” (hold for 3 seconds to enter in EDID setting status), “INPUTS”+“OUTPUTS”+“ENTER”.
  Example: Set the EDID data of INPUT 2 to the fourth type of embedded EDID data:

  Press 

(hold for 3 seconds)⟶ 

⟶ 

or 

to switch to the 4th EDID data⟶ 

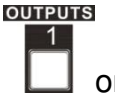
.

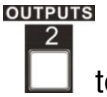
- Invoke embedded EDID data for all inputs
  Operation: Press “EDID” (hold for 3 seconds to enter in EDID setting status),

"ALL"+"OUTPUTS"+"ENTER".
Example: Set the EDID data of all input ports to the second type of EDID data:

Press 

(hold for three seconds)⟶ 

⟶ 

or 

to switch to the 2nd EDID data⟶ 

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Note: If the conversion is successful, indicators of the pressed buttons will blink green for three times at normal speed; if the conversion failed, they will blink for three times quickly.

5.1.3. Query

- Check status:
  Press and hold the button "ENTER" for 3 seconds, it will enter into system Query menu. Use Left and Right direction button to navigate checking the previous/next items.

Function Items	Example	Description
Check the connection status of inputs	In 01 02 03 04 Conncet Y Y N N	Y means the corresponding port is connected with input device, N means not.
Check the connection status of outputs	Out 01 02 03 04 Conncet Y Y N N	Y means the corresponding port is connected with output device, N means not.
Correspondence between inputs and outputs	Out 01 02 03 04 In 01 02 03 04	Shows the correspondence between the 4 inputs and 4 outputs.
Check if the input is with HDCP	In 01 02 03 04 HDCP Y Y N N	Y means the input signal is with HDCP, N means not.
Check if the output is with HDCP	Out 01 02 03 04 HDCP Y Y N 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.

- 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 display "AV: 1->2 IR: 1->2", and indicators of input 1 and output 2 turn on and last for 3 seconds. Then output 2 corresponds to input 1.

5.1.4. Clear Operation

When you accidently switch an output channel, learn EDID data, or set EDID data, press the **Clear** button to cancel the operation before you press "**ENTER**". When you press it, the matrix will return to the previous state.

5.2. IR Control

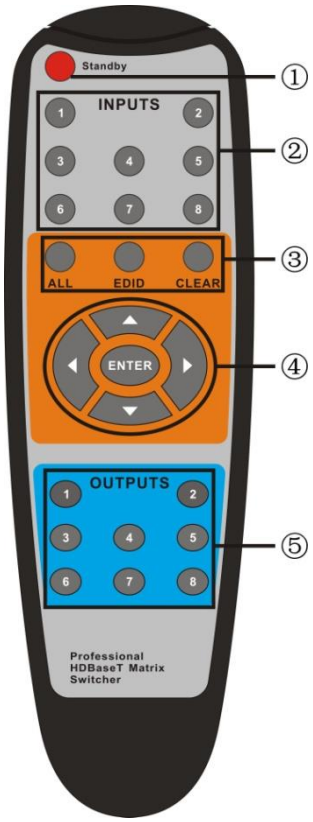
By using IR & HDBaseT transmission technology, the AVG-UHMS44PRO has the following functions:

1. Control a far-end output device from the local matrix location.

2. Control a local input/output device from a remote location.

3. Control the AVG-UHMS44PRO locally/remotely.

5.2.1. Usage of the IR Remote



1. Standby button, press it to enter/exit standby mode
2. Input channels, range from 1~4 (buttons 5~8 are not available), corresponding IR signal switched synchronously when switching input channels.
3. Menu buttons, **ALL**, **EDID** and **CLEAR**, have the same functions as the front panel buttons. Please refer to *4.1 Front Panel Button Control* for details.
4. ▲▼◄►: Navigation buttons.
    - ENTER: Confirm button.
5. OUTPUTS (buttons 5~8 are not available)
    - In normal mode: output channel selection buttons, each channel has 1 IR IN, 1 HDBaseT, 1 RS232, and 1 AUDIO outputs, and channel 1~4 have HDMI outputs.
    - In EDID programming mode: press button 1/2 to switch among the 5 embedded EDID data

Note: With this IR remote, the AVG-UHMS44PRO can be controlled by the built-in IR, the extended IR receiver connected to the "IR EYE"/"IR ALL IN" and the IR receiver on the far-end receiver.

5.2.2. IR Carrier Forcing

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.

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

If the IR receiver connected with the 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 the IR signal can be transferred to the IR OUT port.

5.2.3 Controlling a Far-end Device from the Matrix

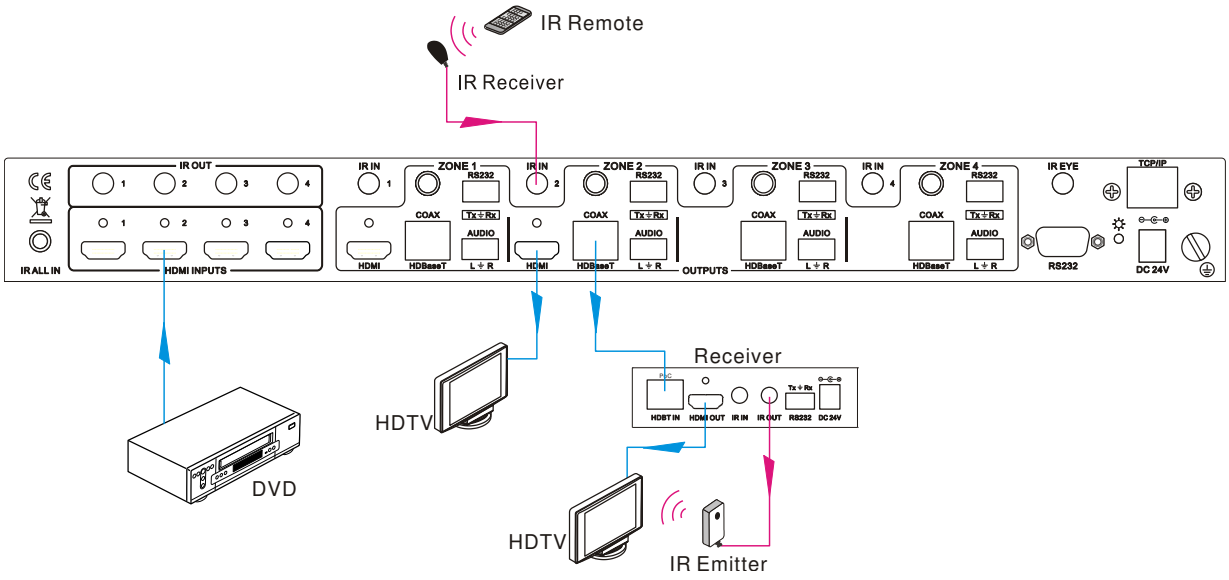
Connect an IR receiver to the IR IN/IR ALL IN port on the switcher, and use the IR Remote of the far-end device to control the device locally.

- 1 to 1: (through IR IN)

Connect an IR receiver with IR carrier to the IR IN port of the 4K HDBaseT 4x4 Matrix Switcher, users can control a far-end output display via its IR remote from the Matrix location.

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

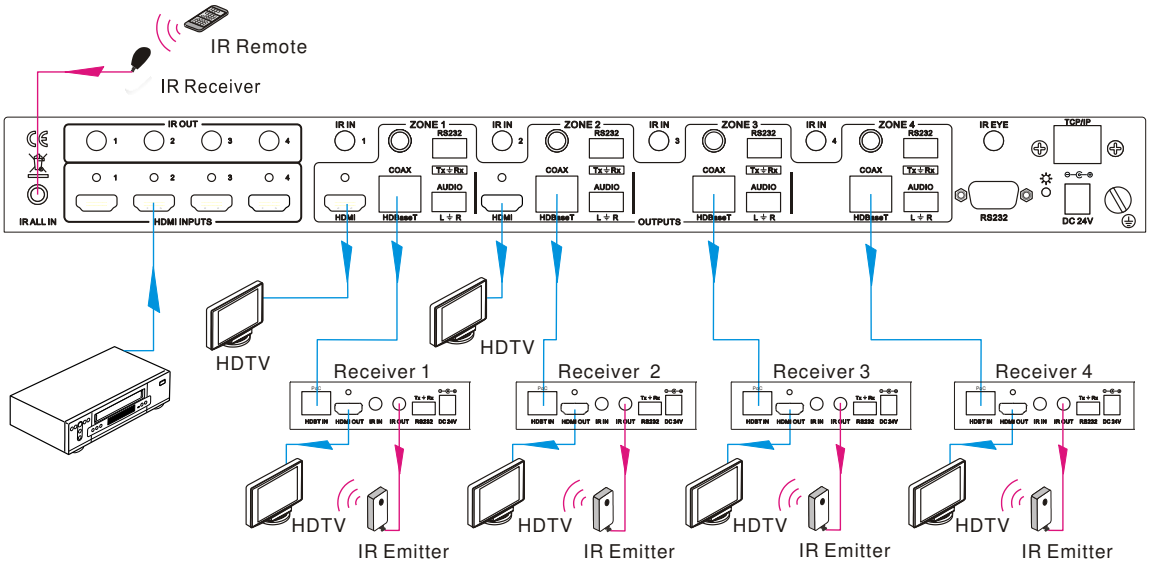
See the figure below:



Note: The IR receiver connected to **IR IN** must contain IR carrier

- 1 to All: (through IR ALL IN)

Connect an IR receiver to the IR ALL IN port of the 4K HDBaseT 4x4 Matrix Switcher, the IR signal received from the IR ALL IN port will be transmitted to all the 4 connected far-end HDBT receivers. See as below:



Controlling a far-end device through the IR ALL IN port

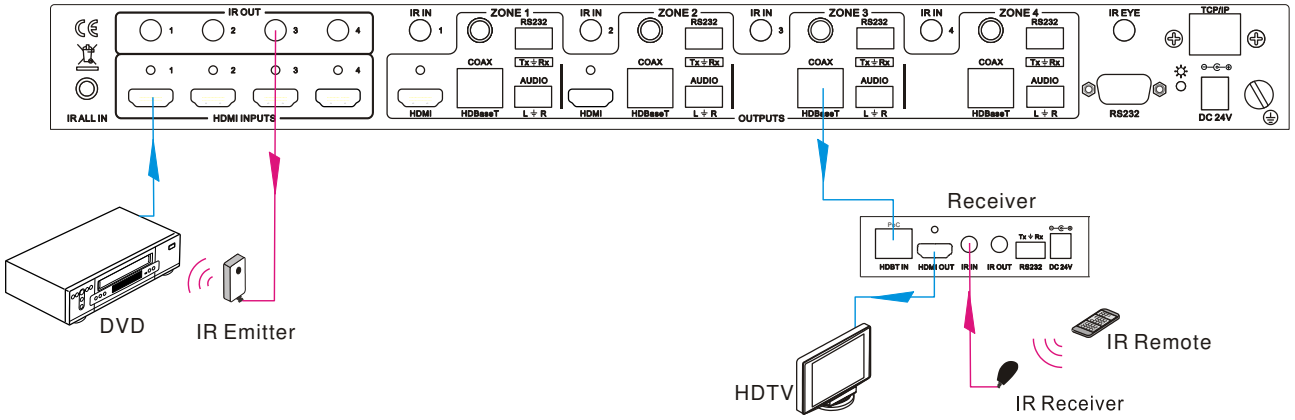
Note: Send command “%0901.” to enter infrared carrier enforcing mode if the IR Receiver connected to the IR ALL IN port is not with carrier.

5.2.4 Controlling a 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:

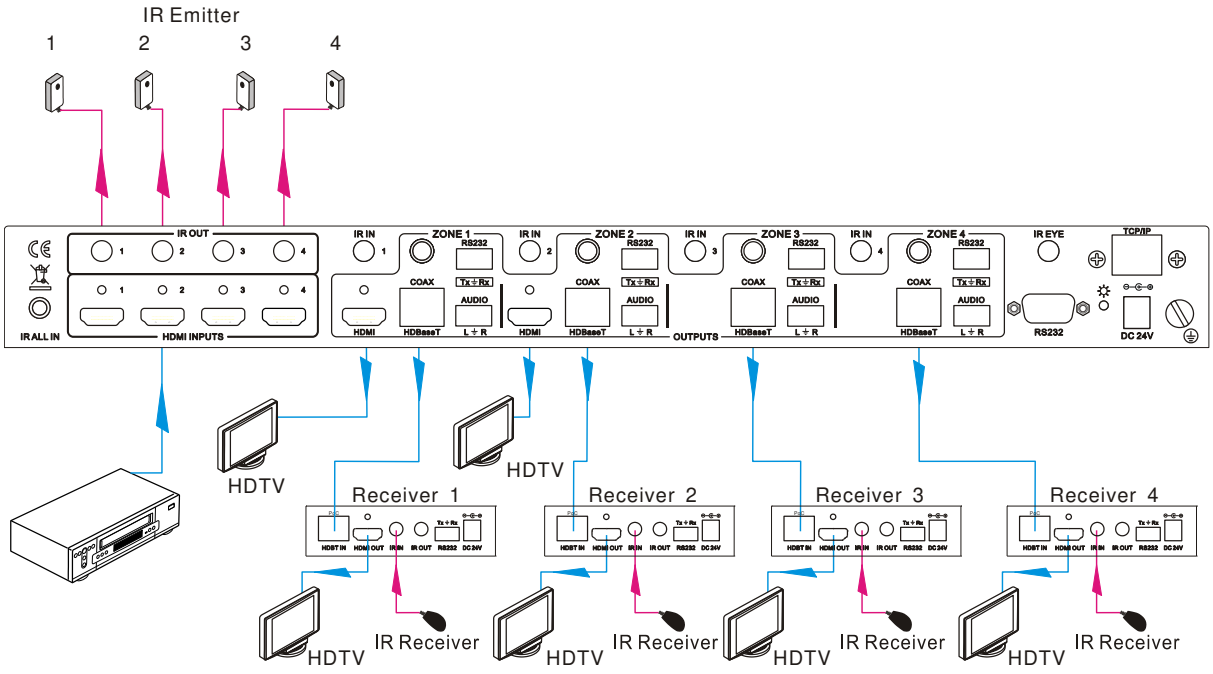


Controlling a local device remotely

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 4 “IR OUT” ports and the 4 “IR IN” ports on the far-end receivers make up an 4x4IR matrix. See as below:



IR Matrix

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

Switching Operation: (4 IR IN ports correspond with 4 HDMI input ports separately in default mode.)

a) **Sending command (reference to *4.3 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 4K HDBaseT 4x4 Matrix Switcher itself.

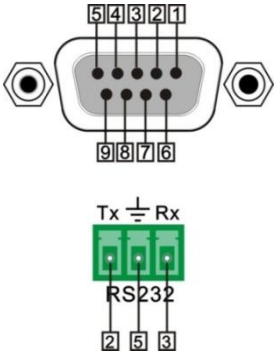
x2: Corresponding to the zone (receive IR signal from HDBaseT receiver with IR IN port connects with IR receiver) number of 4K HDBaseT 4x4 Matrix Switcher.

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

5.3. RS232 Control

5.3.1. Connection with the RS232 Communication Port

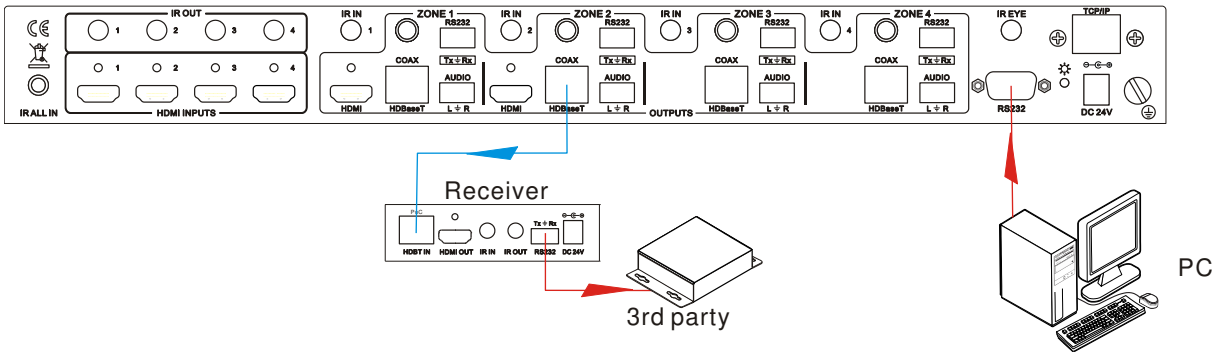
As well as the front control panel, the AVG-UHMS44PRO can be controlled by a far-end control system through the RS232 communication port. This RS232 communication port is a female 9-pin D connector. The definition of its pins is listed in the table below.



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

5.3.2. Control the 9-pin RS232 port

Connect a control device to the 9-pin RS232 port of the switcher; users are able to control the switcher& far-end device. See the figure below:



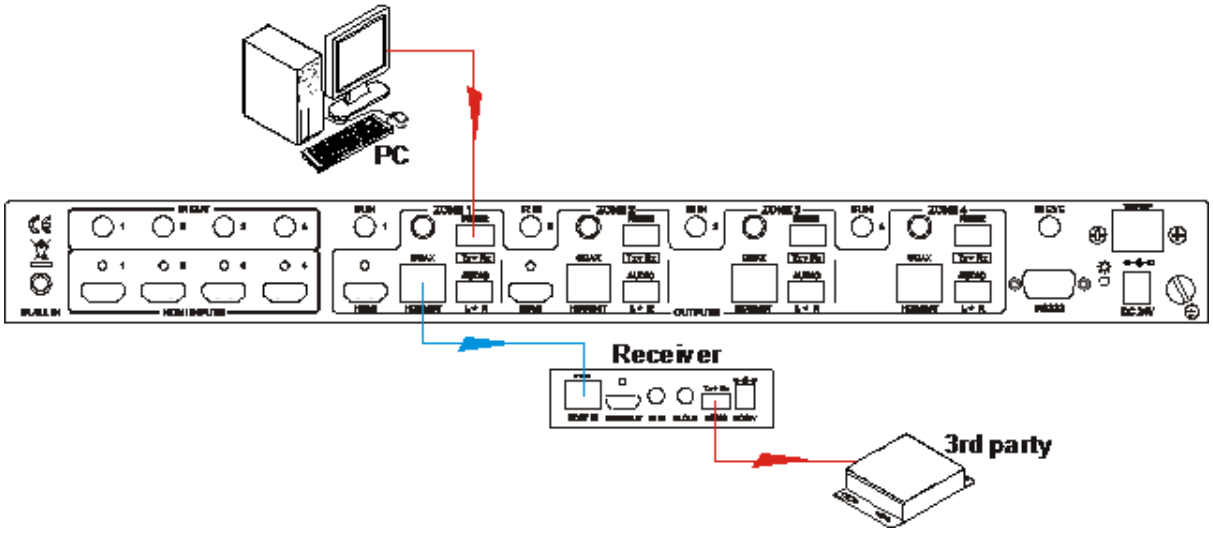
Control the switcher & 3rd-party Device through the 9 pin female RS232 port

- Control the switcher: send RS232 commands directly
- Control 3rd party: send command: "/**+[Y]/[X]:******.**" (Refer to for detailed information.)

5.3.3. Control through the 3-pin RS232 port

- **Control 3rd party device from local**

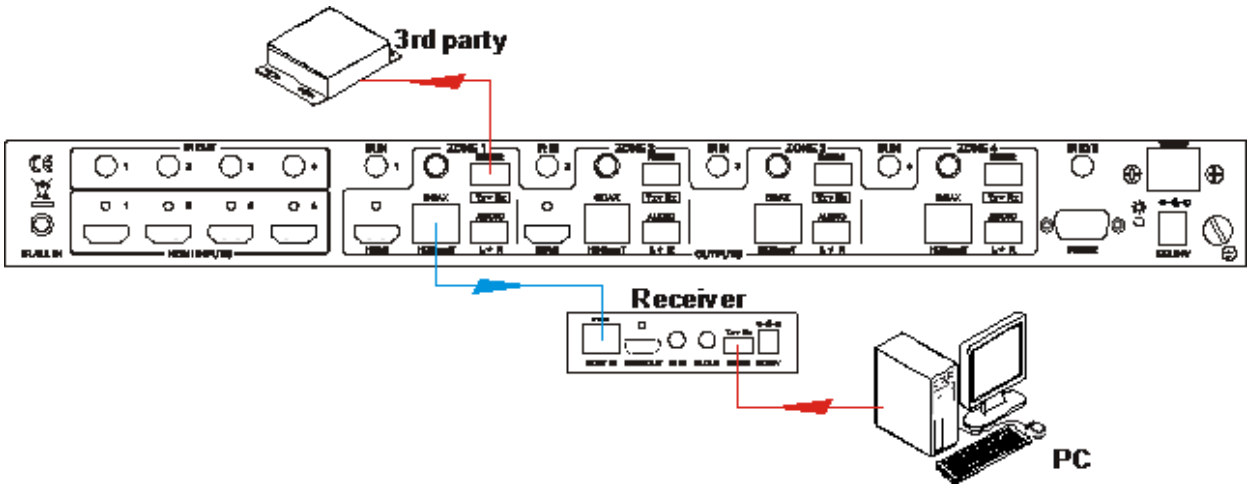
Connect the RS232 (3-pin pluggable terminal block) port in any zone to PC, and connect the controlled RS232 device (3rd party device) to the corresponding (same zone as PC) receiver, see below:



Controlling a 3rd party device from matrix

- Control 3rd party device from remote

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



Controlling a 3rd party device remotely

5.3.4. Installation/Removal of RS232 Control Software

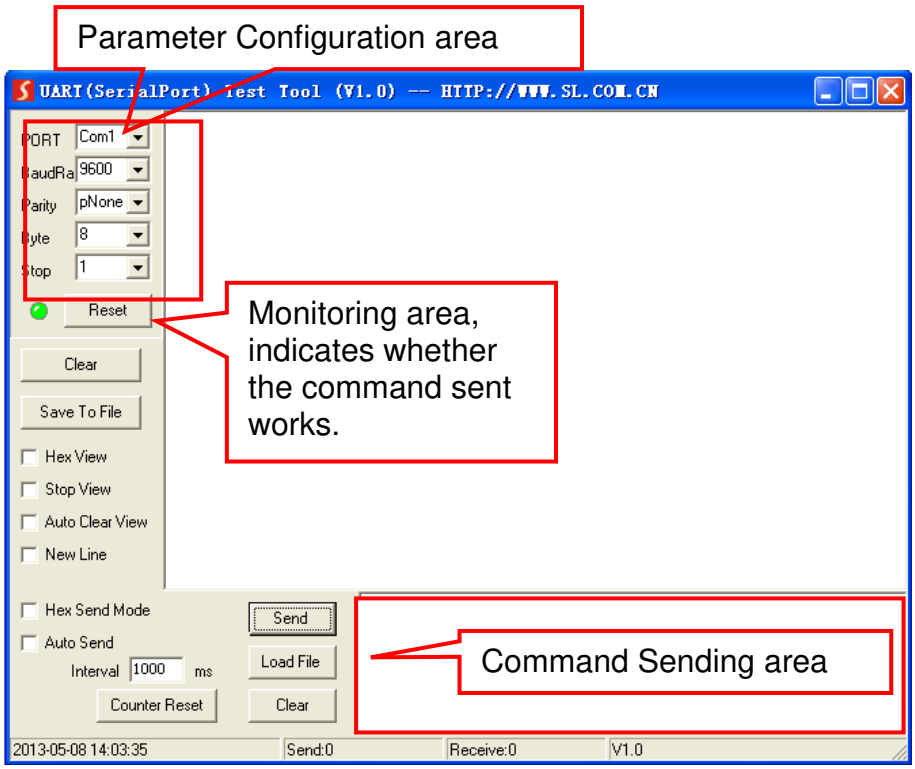
- **Installation** Copy the control software file to the computer connected with the switcher.
- **Removal** Delete all the control software files in corresponding file path.

5.3.5. Basic Settings

Firstly, connect the switcher with an input device and an output device. Then, connect it with a computer which is installed with the 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:

The interface of the control software is showed as below:



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.

5.3.6 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;	Queries the models information.	UHBT44R2-N
/%Lock;	Lock the front panel buttons on the Matrix.	System Locked!
/%Unlock;	Unlock the front panel buttons on the Matrix.	System Unlock!
/^Version;	Query 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:04->04 IR:04->04 ……
Undo.	To cancel the previous operation.	Undo Ok! Out 01 02 03 04 In 01 01 01 01
Operation Commands		
[x]All.	Transfer signals from the input channel [x] to all output channels	X To All. (X=01~04)
All#.	Transfer all input signals to the corresponding output channels respectively like 1->1, 2->2…	All Through.
All$.	Switch off all the output channels.	All Closed.
[x]#.	Transfer signals from the input channel [x] to the output channel [x].	X Through. (X=01~04)
[x]$.	Switch off the output channel [x].	X Closed. (X=01~04)
[x]@.	Switch on the output channel [x].	X Open. (X=01~04)
All@.	Switch on all output channels.	All Open.

Command	Function	Feedback Example
[x1]V[x2].	Transfer the AV signal from the input channel [x1] to one or several output channels ([x2], separate output channels with comma).	AV: X1-> X2 (X1/X2=01~04)
[x1]B[x2].	Transfer the AV and IR signal from input channel [x1] to one or several output channels ([x2], separate output channels with comma).	AV: X1-> X2 (X1/X2=01~04)
[x1] R[x2].	Transfer the IR signal from output [x1] to input [x2].	IR: X1-> X2(X1、X2=01~04)
Status[x].	Check the I/O connection status of output [x]	AV: Y-> X (X=01~04, Y=01~04)
Status.	Query the input channel to the output channels one by one.	AV: 01->01 …… AV: 04->04 IR: 01->01 …… IR: 04->04
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 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].	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].	Enable HDMI audio output of port x. ▪ X=1, 2, 3, 4, enable this port. ▪ X=5, enable all the 4 ports.	DigitAudio ON with [x]
DigitAudioOFF[x].	Disable HDMI audio output of port x. ▪ X=1, 2, 3, 4, disable this port. ▪ X=5, disable all the 4 ports.	DigitAudio OFF with [x]

Command	Function	Feedback Example
/+[Y]/[X]:******.	Set communication between PC and HDBaseT receiver. ① Y is for RS232 port (connect with RS232 port of HDBaseT receiver) Y= 1~5 or A~H, The value of Y is defined into the following meanings (in a given baud rate depended by the value of X): **a.** Y = 1~4, 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 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)	******
EDIDH[x]B[y].	Input port [y] learns the EDID from output port [x]. If the EDID data is available and the audio section supports not only PCM mode, then force-set it to support PCM mode only. If the EDID data is not available, then set it to initial EDID data.	EDIDH[x]B[y]
EDIDPCM[x].	Set the audio section of input port [x] to PCM format in EDID database.	EDIDPCM[x]
EDIDG[x].	Get EDID data from output [x] and display the output port number.	Hexadecimal EDID data and carriage return character
EDIDMInit.	Restore the factory default EDID data of every input.	EDIDMInit.

Command	Function	Feedback Example
EDIDM[X]B[Y].	Manual EDID switching. Enable input[Y] to learn the EDID data of output[X]. If the EDID data is not available, then set it to initial EDID data.	EDIDM[X]B[Y]
EDIDUpgrade[x].	Upgrade EDID data via the RS232 port. [x] is the input port, when the value of X is 9, it means upgrade all input ports. When the switcher receives the command, it will show a message to prompt you to send the EDID file (.bin file). Operations will be canceled after 10 seconds. Please disconnect all connections for 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]=1~5, correspond to the 5 embedded EDID data separately	EDID/[x]/[y]
UpgradeIntEDID[x].	Upgrade one of the 5 embedded EDID datas, 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) When the switcher gets the command, it will show a message to send EDID file (.bin file). Operations will be invalid after 10 seconds.	Please send the EDID file
GetIntEDID[x].	Return the embedded EDID data ranked x, [x]=1~5	
GetInPortEDID[X].	Return the EDID data of input [x], [x]=1~4	
%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.	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

Command	Function	Feedback Example
%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 1 when PWOFF.	Port 1:data when PWOFF
%9956.	Check the command sent by port 2 when PWOFF.	Port 2:data when PWOFF
%9957.	Check the command sent by port 3 when PWOFF.	Port 3:data when PWOFF
%9958.	Check the command sent by port 4 when PWOFF.	Port 4:data when PWOFF
%9961.	Check the system lock status.	System Locked/ Unlock!
%9962.	Check the power status	STANDBY/PWOFF/ PWON
%9963.	Check the current mode of the 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
%9972.	Check the connection status of the outputs.	Out 01 02 03 04 Connect Y Y Y Y
%9973.	Check the HDCP status of the inputs.	In 1 2 3 4 HDCP N N N N
%9974.	Check the HDCP status of the outputs.	Out 1 2 3 4 HDCP N N N N
%9975.	Check the I/O connection status.	Out 01 02 03 04 In 04 04 04 04
%9976.	Check the output resolution.	Out 1 1920x1080 Out 2 1920x1080 Out 3 1920x1080 Out 4 1920x1080
%9977.	Check the status of digital audio of output channels.	Out 1 2 3 4 Audio Y Y Y Y
%9978.	Check the HDCP compliant status of the inputs.	In 01 02 03 04 HDCPEN Y Y Y Y

5.4. TCP/IP Control

The AVG-UHMS44PRO 4K HDBaseT 4x4 Matrix Switcher boasts an optional TCP/IP port for IP control.

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

IP & gateway settings can be changed as needed, the Port cannot be changed.

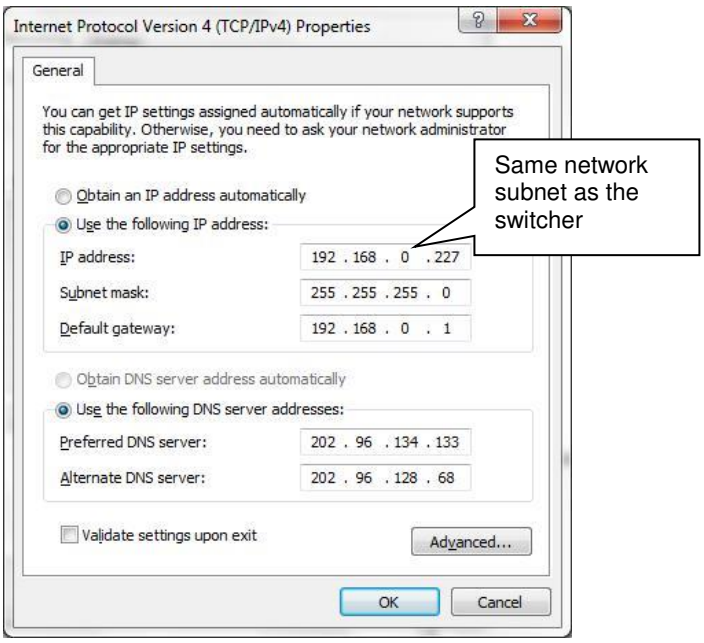
Connect the Ethernet port of the control device and TCP/IP port of the 4K HDBaseT 4x4 Matrix Switcher, and set the same network subnet for the 2 devices, users are then able to control the device via the web-based GUI or TCP/IP communication software.

5.4.1. Control Modes

The AVH-UHMS44PRO 4K HDBaseT 4x4 Matrix Switcher can be controlled by a PC without Ethernet access or PC(s) within a LAN.

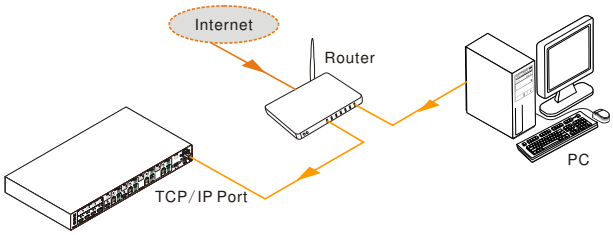
- Controlled by PC

Connect a computer to the TCP/IP port of the 4K HDBaseT 4x4 Matrix Switcher, and set its network subnet to the same as the 4K HDBaseT 4x4 Matrix Switcher's (Default: 192.168.0.178).



- Controlled by PC(s) in LAN

Connect the 4K HDBaseT 4x4 Matrix Switcher, a router and several PCs to setup a LAN (as shown in the following figure). Set the network subnet of 4K HDBaseT 4x4 Matrix Switcher to the same as the router's, then PCs within the LAN are able to control the 4K HDBaseT 4x4 Matrix Switcher.



Follow these steps to connect the devices:

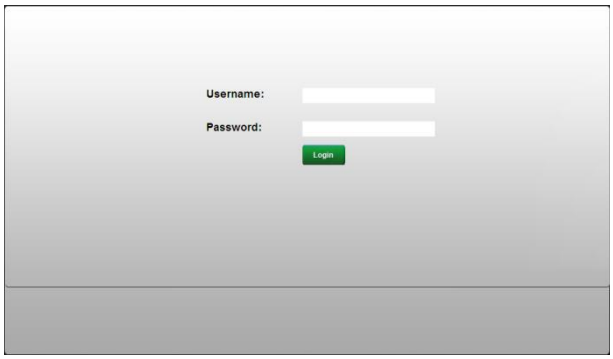
Step1. Connect the TCP/IP port of 4K HDBaseT 4x4 Matrix Switcher to Ethernet port of PC with twisted pair.
Step2. Set the PC's network subnet to the same as 4K HDBaseT 4x4 Matrix Switcher's. Remember the PC's original network subnet.
Step3. Set the 4K HDBaseT 4x4 Matrix Switcher's network subnet to the same as the router.
Step4. Set the PC's network subnet back to the original one.
Step5. Connect the 4K HDBaseT 4x4 Matrix Switcher and PC(s) to the router. PC(s) within the LAN are then able to control the 4K HDBaseT 4x4 Matrix Switcher asynchronously.

Control is now able via device GUI.

5.4.2. GUI for TCP/IP control

The AVG-UHMS44PRO provides a built-in GUI for convenient TCP/IP control. The GUI allows users to interact with AVG-UHMS44PRO through graphical icons and visual indicators.

Type 192.168.0.178 into your browser to access the log-in interface as shown as below:



There are 2 selectable usernames – admin (default password: admin) and user (default password: user). Logging in as admin allows access to more configuration interfaces than the user login. Enter username and the 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 select the connections by clicking the corresponding buttons.

Buttons 1~9 at the right-bottom corner enables quick saving and recall for overall connection 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 go back.

Interface: Set title bar label, LCD readout, and button labels, press Save to save the settings

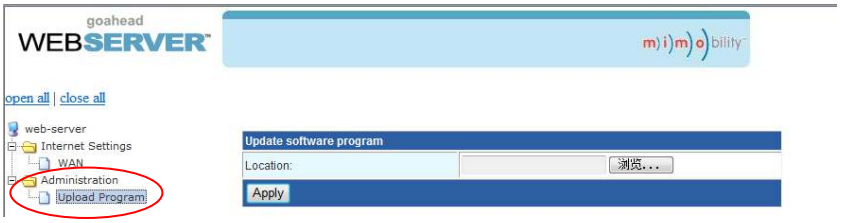
Configuration: Set the HDCP Cmpliance status for every input, and manage EDID. See the screenshot below:

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

Note: Logging in as a user accesses the main interface only.

5.4.3. GUI Update

The GUI for the 4K HDBaseT 4x4 Matrix Switcher supports online updates at http://192.168.0.178:100. Type the username and password (the same as the GUI log-in settings, the modified password will be available only after rebooting) to log into the configuration interface. Next, click **Administration** within the source menu to get to **Upload Program** as shown below:

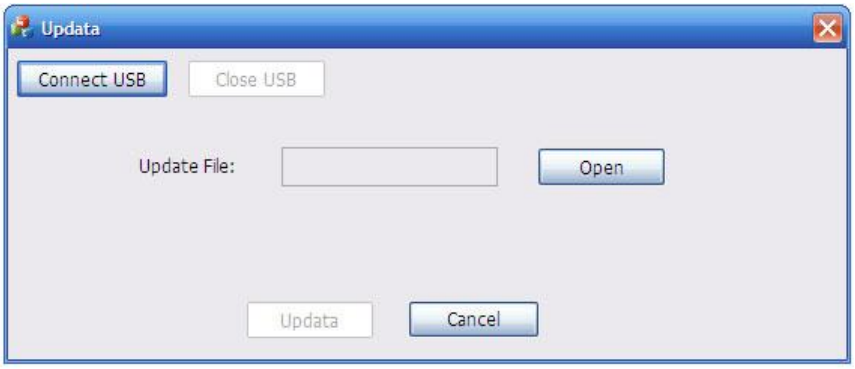


Select the desired update file and press Apply, it will then start updating.

5.5. Firmware Update via USB

To meet the needs of different users or further additional functions, the firmware of the AVG-UHMS44PRO 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 control and double click 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 then ready to upgrade.



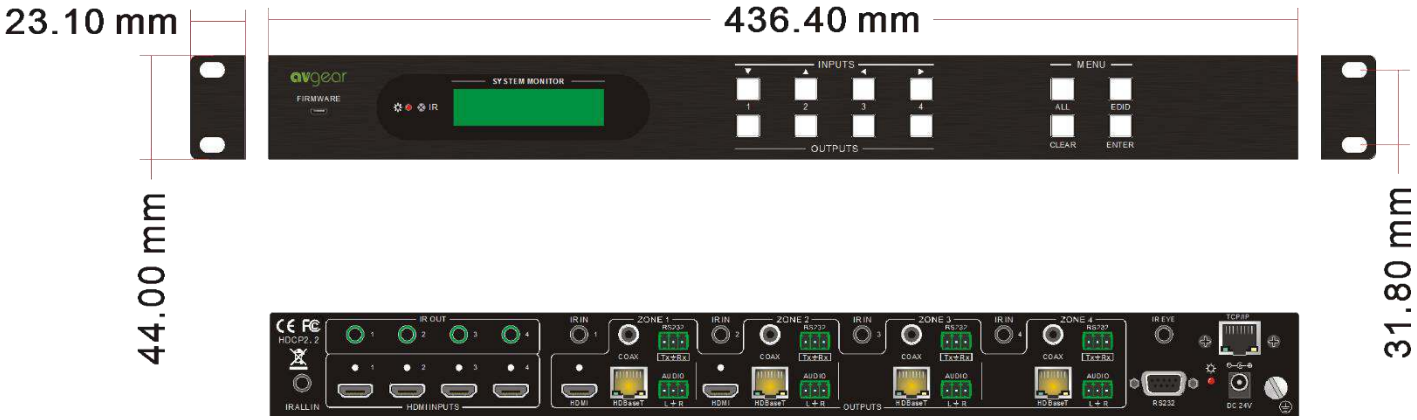
When updates all are done, it will appear with a window showing the message **Update success**.

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

6. Specifications

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	10.2Gbit/s
Video Signal	HDMI (or DVI-D)	Resolution Range	Up to 4Kx2K@60Hz
Transmission Distance	1080P@60Hz ≤70m 4Kx2K@30Hz ≤40m	Switching Speed	200ns (Max.)
EDID Management	In-built EDID data and manual EDID management		
HDCP	Supports HDCP 2.2, auto and manual HDCP management.		
Audio General			
Output Signal	Stereo audio Digital audio	Output Connector	4 3-pin pluggable terminal blocks 4 Coax (RCA)
Stereo Output	Earphone output: distortion 0.1% 32Ω/70mW@1KHz, 0.1% 16Ω/105mW @1KHz, support PCM		
Coax Output	Supports PCM, Dolby Digital, DTS, DTS-HD		
Frequency Response	20Hz~20KHz		
Control			
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 (3-pin pluggable terminal blocks)		
Panel Control	Front panel buttons	RS232 Control	9-pin female RS232 connector
IR	Built-in IR sensor Extended IR receiver	TCP/IP Control	Web-based GUI
General			
Power Supply	DC 24V 2.5A	Power Consumption	48W (Max)
Temperature	0 ~ 50℃	Reference Humidity	10% ~ 90%
Dimension (W*H*D)	437 x 44 x 235 mm (1U high, full rack wide)	Weight	2.0Kg

7. Panel Drawing



8. Troubleshooting & Maintenance

Problems	Causes	Solutions
Color loss or no video signal output	The connecting cables may not be connected correctly or faulty.	Check whether the cables are connected correctly and are in good working condition.
	Failed or loose connection.	Make sure the connection is secure.
No output image when switching	No signal at the input /output connectors.	Check with oscilloscope or multimeter if there is any signal at the input/ output end.
	Failed or loose connection.	Make sure the connection is secure.
	Input source contains HDCP whilst the HDCP compliance is switched off.	Send command /%[Y]/[X]:1. or change the HDCP compliance status in the GUI.
	The display doesn't support the input resolution.	Switch to 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 out.	Change battery.
	The IR remote is faulty.	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/ IR ALL IN port is not with carrier	Change to an IR receiver with carrier.
Power Indicator remains off when powered on	Failed or loose power connection	Check whether the cables are connected correctly
EDID management does not work normally	The HDMI cable is faulty at the output end.	Change to 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 with the control device (e.g. a PC) through the RS232 port	Wrong connection	Check to ensure the connection between the control device and the unit is wired correctly.
	Wrong RS232 communication parameters	Type in correct RS232 communication parameters: Baud rate:9600; Data bit: 8; Stop bit: 1; Parity bit: none
	Faulty RS232 port	Send it to an authorized dealer for checking.
Static becomes stronger when connecting the video connectors	Poor 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 a previous fault.	Send it to an authorized dealer for repair.

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