User Manual

4x4 HDBaseT and HDMI Matrix

Model PT-MA-HD44HDBT

Designed in Germany

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User Manual

PT-MA-HD44HDBT

PureTools

Preface

Read this user manual carefully before using this product. Pictures shown in this manual are for reference only. Different model layouts and specifications are subject to the physical product.

This manual is for operation instructions only, not for any maintenance usage.

In the constant effort to improve our product, we reserve the right to make changes in functions or parameters without prior notice or obligation.

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.

REACH | 1907/2006/EU

ROHS | 2011/65/EU

PureLink hereby declares that this product **PureTools PT-MA-HD44HDBT** complies with Directives 1907/2006/EU und 2011/65/EU.

EMC / LVD (Electro Magnetic Compatibility / Low Voltage Directive)

PureLink GmbH hereby declares that this product **PureTools PT-MA-HD44HDBT** complies with Directives 2014/30/EU and 2014/35/EU. The full text of the EU Declaration of Conformity is available at the following Internet address:

http://www.purelink.de/ce/4251364735008_CE.pdf

SAFETY PRECAUTIONS

To ensure 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 protrusion.
- Do not remove the housing of the device as opening or removing the housing may expose you to dangerous voltage or other hazards.
- Install the device in a place with sufficient 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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1. Product Introduction

Thank you for choosing the PT-MA-HD44HDBT matrix. It is an 18G 4x4 HDBaseT matrix with HDMI loopout , audio matrix and ARC. It supports HDCP 2.2 and up to 4K/UHD@60Hz. It can transmit 4K video up to 70 meters and 1080p video up to 100 meters over a single CATx Ethernet cable.

The product provides performance in control and transmission, which could be used in a number of different installation scenarios, such as monitoring purposes, Home Cinema, conference systems, television education, bank security etc.

1.1 Features

- 4x4 HDBaseT matrix switcher with audio matrix.
- Fully compliant with the HDMI 2.0 and HDCP 2.2.
- Supports HDMI resolution up to 4K@60Hz 4:4:4, HDR10.
- Features four mirrored HDMI outputs for four HDBaseT outputs, and the four HDMI outputs support 4K to 1080p auto-downscaling.
- The four HDBaseT outputs support 24V PoC, allowing the receivers to draw their power from the matrix switcher over the Catx cable.
- Transmits 4K signal up to 70 meters and 1080p signal up to 100 meters over a single CATx cable.
- Supports audio matrix. Provides four digital SPDIF audio outputs and four analog L+R audio outputs for HDMI input audio de-embedding and HDBaseT output audio de-embedding. Moreover, the four digital SPDIF audio outputs supports ARC audio output from the receivers.
- Volume adjustment for analog L+R audio outputs.
- Supports comprehensive EDID management.
- Controllable via front panel buttons, RS232 local and pass-through, IR local and pass-through, CEC, and TCP/IP (built-in GUI)..

1.2 Package List

- 1x PT-MA-HD44HDBT 4x4 HDMI 2.0 HDBaseT matrix switcher
- 2x Mounting Ears with 6 Screws
- 4x Plastic Cushions with 4 Screws
- 1x IR Receiver
- 1x IR Remote
- 8x 3-pin Terminal Blocks
- 1x Power Cord
- 1x User Manual

Note: *Please contact your distributor immediately if any damage or defect in the components is found.*

2. Specification

2.1 Matrix Specification

Video Input	
Input	(4) HDMI
Input Connector	(4) Type-A female HDMI
HDMI Input Resolution	Up to 4Kx2K@60Hz 4:4:4, HDR10,1080p 3D
Video Output	
Output	(4) HDBaseT, (4) HDMI
Output Connector	(4) RJ45, (1) Type-A female HDMI
HDMI Output Resolution	Up to 4Kx2K@60Hz 4:4:4, HDR10, 1080p 3D. Supports 4K to 1080p auto-downscaling.
HDBaseT Output Resolution	Up to 4Kx2K@60Hz 4:2:0
HDMI Audio Signal	LPCM 7.1 audio, Dolby Atmos®, Dolby® TrueHD, Dolby Digital® Plus, DTS:X™, and DTS-HD® Master Audio™ pass-through.
Audio Output	
Output	(4) Stereo analog L+R audio, (4) Digital SPDIF audio
Output Connector	(4) 3-pin terminal blocks, (4) Toslink connectors
Analog L+R Audio Format	Supports PCM
Digital SPDIF Audio Format	Supports PCM, Dolby Digital, DTS, DTS-HD
Local Audio Sampling Rate	Supports 44.1KHz, 48KHz, 96KHz
ARC Audio Sampling Rate	Supports 48KHz, 96KHz
Frequency Response	20Hz – 20KHz, ±3dB
Audio Output Impedance	70Ohms
Max Input Level	**L+R:** 2.0Vrms ± 0.5dB. 2V = 16dB headroom above -10dBV (316mV) nominal consumer line level signal. **SPDIF:**±0.05dBFS.
THD+N	< 0.05% (-80dB), 20Hz – 20KHz bandwidth, 1KHz sine at 0dBFS level (or max level).
SNR	**L+R:** > 80dB, 20Hz - 20KHz bandwidth.

	SPDIF: > 90dB, 20Hz-20 kHz bandwidth.
Crosstalk Isolation	**SPDIF:** < -70 dB, 10KHz sine at 0dBFS level (or max level before clipping). **L+R:** < -80 dB, 10KHz sine at 0dBFS level (or max level before clipping).
L-R Level Deviation	**L+R:** < 0.3dB, 1KHz sine at 0dBFS level (or max level before clipping).
Frequency Response Deviation	< ± 0.5dB 20Hz - 20KHz.
Output Load Capability	**L+R:** 1KΩ and higher (Supports 10x paralleled 10KΩ loads).
Stereo Channel Separation	>70dB@1KHz.
Noise Level	**L+R:** -80dB; **SPDIF:** -90dB
Control Part	
Control port	(4) IR IN, (1) IR ALL IN, (4) IR OUT, (1) IR ALL OUT, (1) IR EYE, (5) RS232, (1) FIRWARE, (1) TCP/IP
Control Connector	(11) 3.5mm jacks, (5) 3-pin terminal blocks, (1) Type-A USB, (1) RJ45
General	
Transmission Mode	HDBaseT
Transmission Distance	1080p ≤ 100 meters, 4K@60Hz ≤70 meters
Bandwidth	18Gbps
Operation Temperature	-5℃ ~ +55℃
Storage Temperature	-25℃ ~ +70℃
Relative Humidity	10% ~ 90%
External Power Supply	100V~240V AC, 50/60Hz
Power Consumption	65W (Max)
Dimension (W*H*D)	436.4mm x 44mm x 356.6mm
Net Weight	3.3kg

2.2 Receivers compatibility chart

The recommended matchable receiver for this matrix is PT-HDBT-230-RX, and here below is the compatibility chart of the other HDBaseT receivers from our product line.

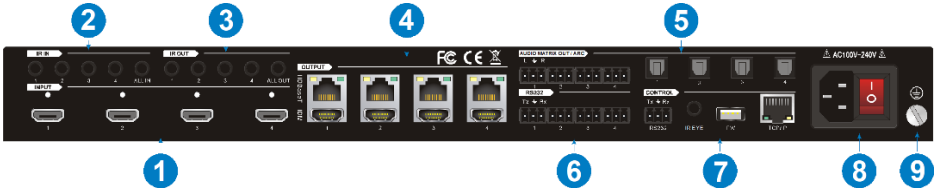
Receiver Compatibility Chart					
NO.	Part#	Signal(video, audio, control)	Power	Distance	Maximum Resolution
1	PT-HDBT-230-RX	Yes	Yes	4K at 70m, 1080p at 100m	4K60Hz 4:4:4
2	PT-HDBT-210-RX	Yes	Yes	4K at 40m, 1080p at 70m	4K60Hz 4:2:0
3	PT-HDBT-702-RX	Yes	Yes	4K at 40m, 1080p at 70m	4K60Hz 4:2:0
4	PT-HDBT-100-RX	Yes	Yes	4K at 40m, 1080p at 70m	4K60Hz 4:2:0
5	PT-HDBT-200-RX	No	No	N/A	N/A

3. Panel Description

3.1 Front Panel

No.	Name	Description
①	LCD Screen:	Presents real-time operation status.
②	Power LED:	Illuminates RED when the device is in standby mode, illuminates GREEN when device is powered on.
③	IR Sensor and its LED	Illuminates RED when the IR sensor receives an IR signal from the IR remote to control the matrix switcher. The IR sensor is on the right side of the LED.
④	INPUT:	Four buttons for input source selection.
⑤	OUTPUT:	Four buttons for output channel selection.
⑥	Menu Buttons:	• LOCK: Lock or unlock the front panel buttons. • PRESET: Preset setting. • MENU/↲: Menu or confirm button. • BACK: Go back to the previous operation. • UP: Page up. • DOWN: Page down.

3.2 Rear Panel



No.	Name	Description
①	INPUT:	Four type-A female HDMI input ports to connect HDMI sources.
②	• IR IN	• 1~4: Four 3.5mm jacks to connect four IR receivers. Each IR input is associated with the respective HDBaseT output and cannot be switched separately. It makes up a bi-directional IR transmission with the IR OUT on the corresponding HDBaseT receiver. • ALL IN: 3.5mm jack to connect the IR receiver to transmit the IR signal from the ALL IN port to all HDBaseT receivers.
③	IR OUT	• 1~4: Four 3.5mm jacks to connect four IR emitters to send the IR signal received from the corresponding HDBaseT receivers. • ALL OUT: 3.5mm jack to connect the IR emitter to send the IR signal received from all HDBaseT receivers.
④	OUTPUT	Four HDBaseT RJ45 outputs to connect the four HDBaseT receivers, and four local HDMI ports to connect local displays.

⑤	AUDIO MATRIX OUT/ARC	Four 3-pin terminal blocks and four Toslink connectors to connect speakers or amplifiers for HDMI input audio de-embedding or HDBaseT output audio de-embedding, and the four Toslink connectors can also be used for ARC audio output from HDBaseT receivers. They can make up an audio matrix to be set by front panel buttons, GUI or RS232 commands.
⑥	RS232	Four 3-pin terminal blocks to control the third-party devices base on RS232 pass-through feature. There is a one-to-one correspondence between the four RS232 ports and the four RS232 ports of four HDBaseT receivers.
⑦	CONTROL	• RS232: 3-pin terminal block to connect the control device (e.g. PC) to control the matrix switcher by RS232 commands. • IR EYE: 3.5mm jack to connect IR receiver to control the matrix switcher by the IR remote. • FW: Type-A USB port for firmware upgrade. • TCP/IP: RJ45 port to connect the control device (e.g. PC) to control the matrix switcher by GUI.
⑧	AC100V-240V	Power port to connect an AC 100V~240V power by the power cord.
⑨	GROUND	Power port to connect an AC 100V~240V power by the power cord.

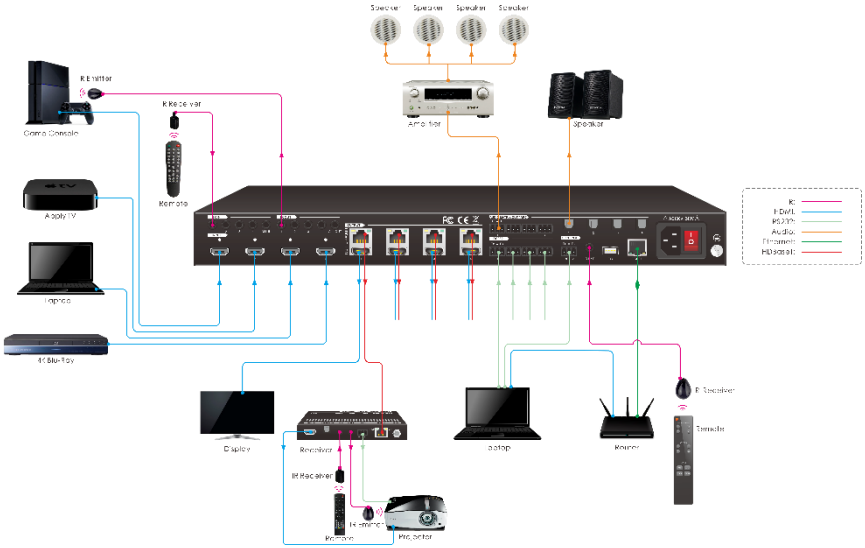
4. System Connection

4.1 Usage Precaution

- Make sure all components and accessories are included before installation.
- The system should be installed in a clean environment with appropriate temperature and humidity.
- All of the power switches, plugs, sockets, and power cords should be insulated and safe.
- All devices should be connected before power on.

4.2 System Diagram

The following diagram illustrates typical input and output connections that can be utilized with this matrix switcher:



5. Button Control

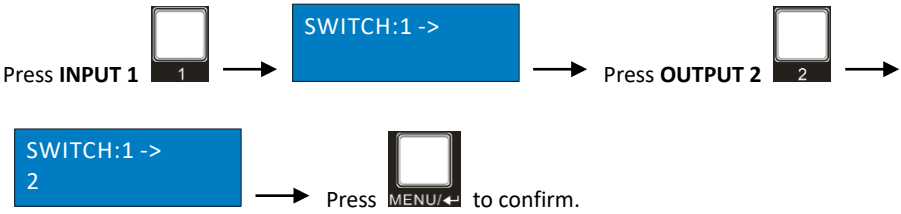
The matrix switcher can be controlled by using the buttons on the front panel. Whenever a command is accepted, the indicators of all the buttons pressed will blink three times then they will go off. If the command fails, the indicators will go off immediately without blinking.

5.1 Signal Switching

- **Switch an input to an output**

Operation: INPUT# + OUTPUT# + MENU/↵

Example: Switch Input 1 to Output 2:

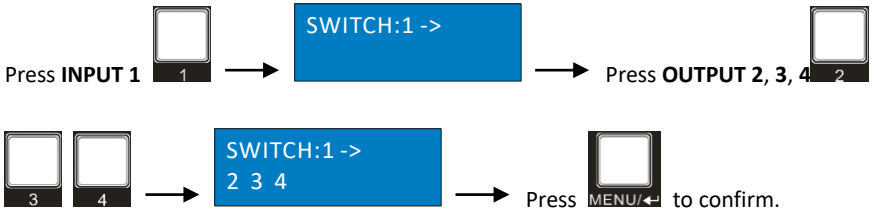


Note: *In default status, 4 IR OUT ports correspond with 4 HDMI INPUTS. When you switch an HDMI input, the corresponding IR OUT will be switched synchronously.*

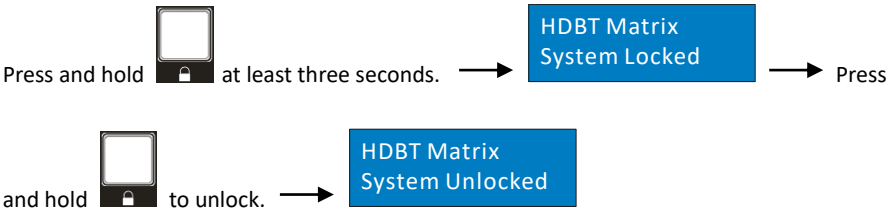
- **Switch an input to several outputs**

Operation: INPUT# + OUTPUT# + OUTPUT# +… + MENU/↵

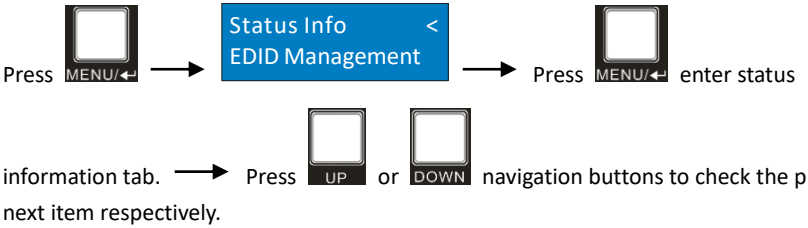
Example: Switch Input 1 to Output 2, 3, and 4.



5.2 Panel Button Locking/Unlocking



5.3 Status Information Inquiry



LCD Screen	Description
IN 1 1 1 1 OUT 1 2 3 4	Report the signal switching status.
IN 1 2 3 4 LINK Y Y Y Y	Report the connection status of all HDMI input ports. Y means the corresponding input port is connected to a source device, N means there is no connection between the input port and source device.
OUT 1 2 3 4 LINK Y Y Y Y 1~4=HDBaseT output 1~4.	Report the connection status of all HDBT output ports. Y means the corresponding output port is connected to an HDBaseT receiver, N means there is no connection between the output port and HDBaseT receiver.

OUT 5 6 7 8 LINK Y Y Y Y 5~8=HDMI loop output 1~4.	Report the connection status of all HDMI loop output ports. Y means the corresponding output port is connected to a display device, N means there is no connection between the output port and display device.

5.4 EDID Management

The Extended Display Identification Data (EDID) is used by the source device to match its video resolution with the connected display. By default, the four source devices use the fifth built-in EDID: 4K@60Hz HDR 2CH.

- **Enter EDID management tab:**

Press

→ Press

to select **EDID Management**. →

→ Press

enter EDID management tab. → Press

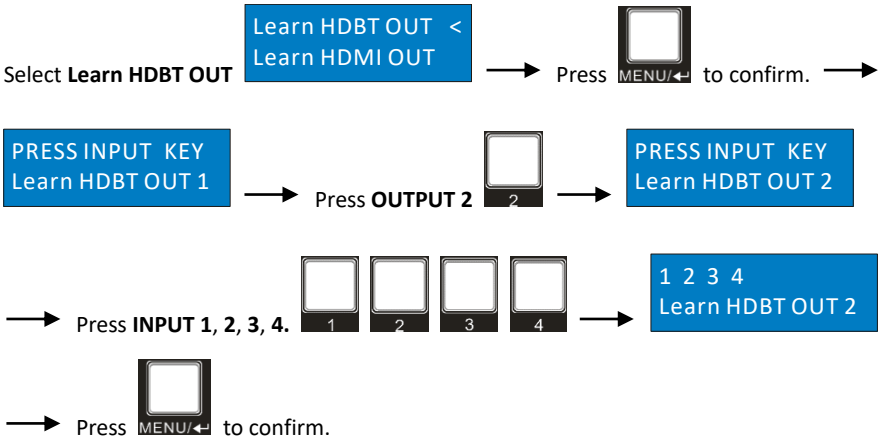
or

navigation buttons to select the below items:

- ✓ Learn HDBT OUT
- ✓ Learn HDMI OUT
- ✓ Built-in EDID

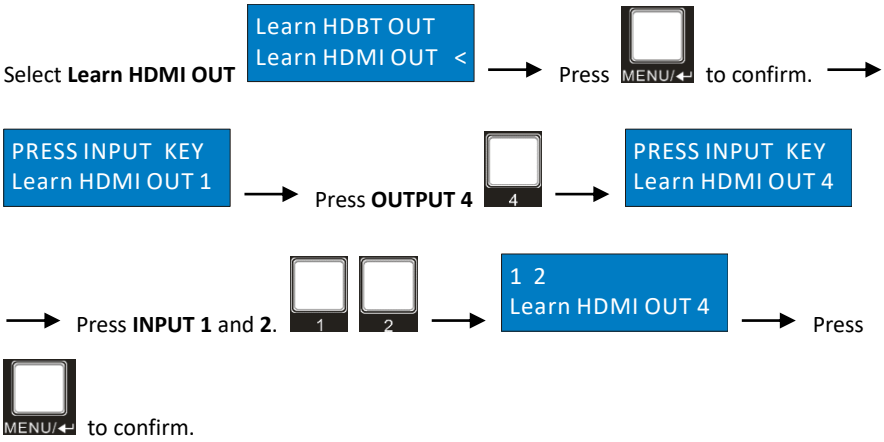
- **To copy the EDID data from one HDBT output to one or several inputs:**

Example: Input 1, 2, 3 and 4 learn the EDID data of HDBT output 2.



- **To copy the EDID data from one HDMI output to one or several inputs:**

Example: Input 1 and 2 learn the EDID data of HDMI output 4.

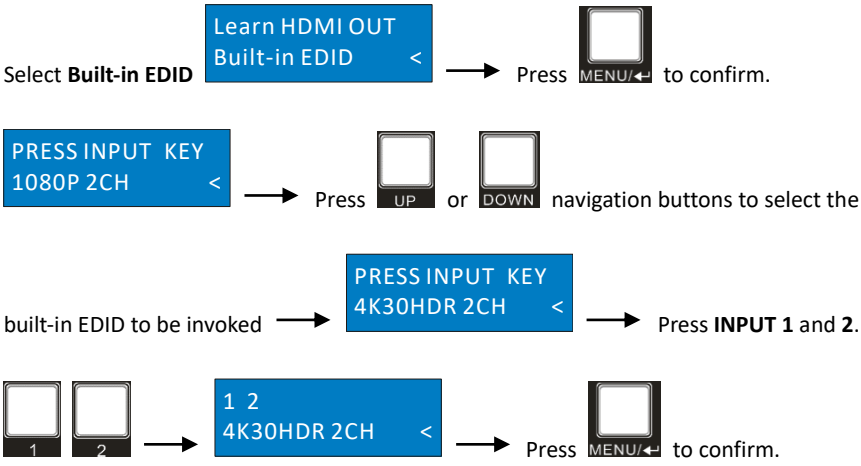


- **To using the built-in EDID settings:**

There are six types of built-in EDID data which can be utilized, as shown as below:

No.	EDID	
	Video	Audio
1	1080p	2CH
2	1080p HDR	MultiCH
3	4K@30Hz HDR	2CH
4	4K@30Hz HDR	MultiCH
5 (Default)	4K@60Hz HDR	2CH
6	4K@60Hz HDR	MultiCH
	User Custom	

Example: Input 1 and 2 using the built-in EDID data: 4K@30Hz HDR 2CH.



5.5 Audio Setting

The matrix switcher provides four analog L+R audio output ports and four digital SPDIF

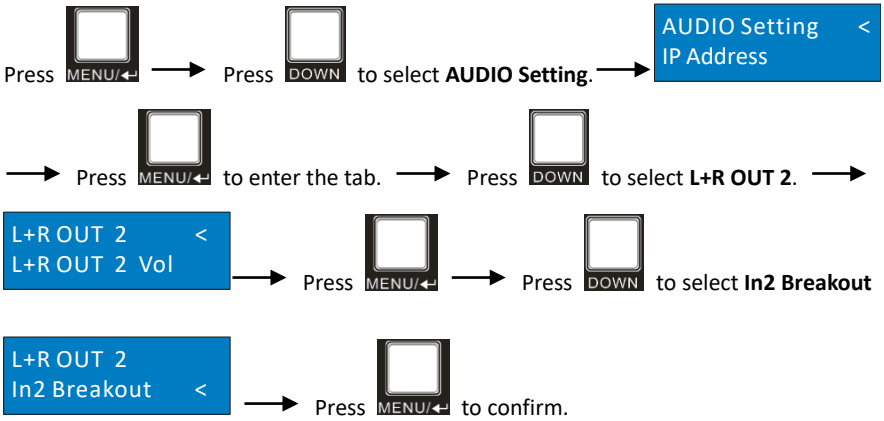
output ports for audio de-embedding. The audio source selection of these eight audio output ports, and the L+R audio volume can be controlled by the front panel buttons.

- **Audio Source Selection**

There are eight audio sources which can be selected for any analog L+R audio output port, and twelve audio sources which can be selected for any SPDIF audio output port.

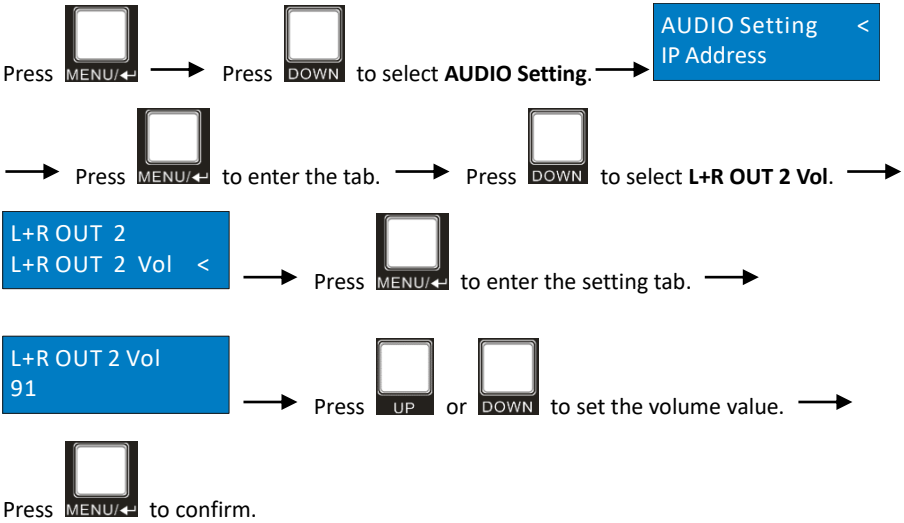
Audio Output Ports	Audio Sources		
	Input Breakout	Output Breakout	ARC
L+R OUT 1	In1 Breakout	Out1 Breakout	/
L+R OUT 2	In2 Breakout	Out2 Breakout	
L+R OUT 3	In3 Breakout	Out3 Breakout	
L+R OUT 4	In4 Breakout	Out4 Breakout	
SPDIF OUT 1	In1 Breakout	Out1 Breakout	Out1 ARC
SPDIF OUT 2	In2 Breakout	Out2 Breakout	Out2 ARC
SPDIF OUT 3	In3 Breakout	Out3 Breakout	Out3 ARC
SPDIF OUT 4	In4 Breakout	Out4 Breakout	Out4 ARC

Example: Select the HDMI input 2 audio source for the analog L+R output 2.



- **L+R Output Audio Volume Control**

Example: Set the audio volume of L+R OUT 2 port.



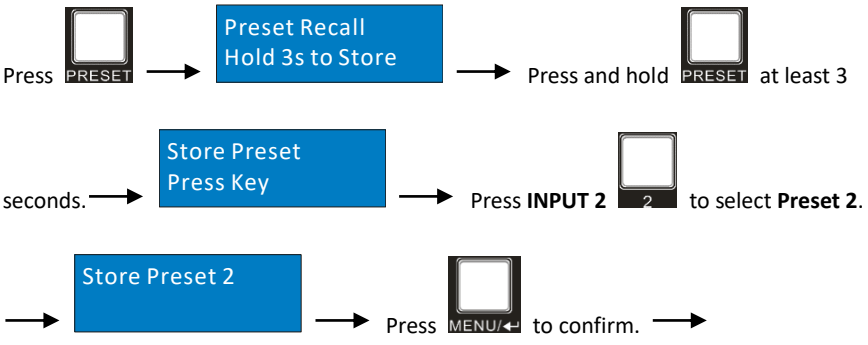
5.6 Preset Setting

Pressing the PRESET button saves the current switch routing or loads the saved preset layout.

Note: *The matrix switcher supports nine presets, but only preset 1~4 can be saved and recalled by button control. Please manage other preset by GUI control or RS232 control.*

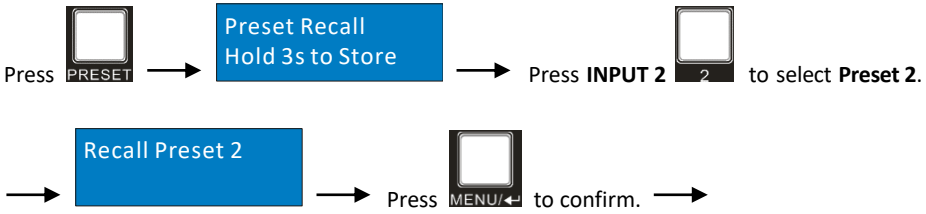
- **Save the current switching routing to a preset**

Example: Save the current switching routing to preset 2.



- **Recall a saved preset**

Example: Recall the saved preset 2.



5.7 IP Address Inquiry

6. GUI Control

The matrix can be controlled via TCP/IP. The default IP settings are:

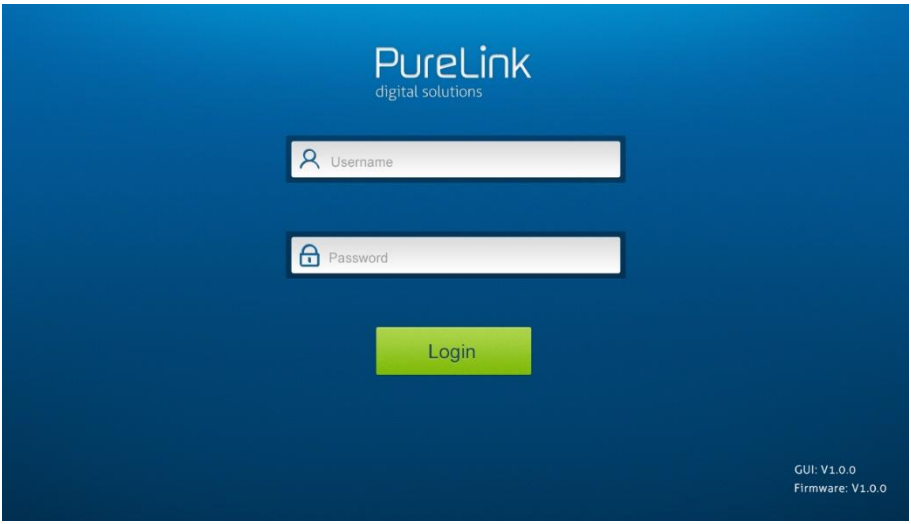
IP Address: 192.168.0.178

Subnet Mask: 255.255.255.0

TCP/IP port: 4001

TCP/IP Commands are same as RS232

Type ***192.168.0.178*** in the internet browser, it will enter the below log-in webpage:



There are three selectable usernames:

Username	Password	Access Tab
admin	admin	All tabs
User2	User2	configurable
User3	User3	configurable

The username and password can be changed via **Access** tab.

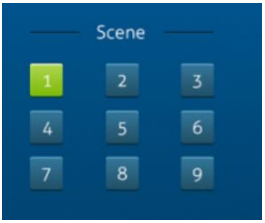
Here we login as “admin” as an example to introduce each GUI tab.

6.1 Signal Switching

Use the 4x4 button grid on the page to set which inputs are directed to which outputs. For example, clicking the button on the Input 1 row and Output 2 column, directs input 1 to output 2.

Use the 9 numbered buttons under scene area to save and load layout presets.

- To save a given layout, first click one of the numbered buttons, then click the **Save** button.
- To load a previously saved layout, first click one of the numbered buttons, then click the **Recall** button.



6.2 Audio Setting

- **Audio Source Selection**

- There are eight audio sources can be selected for four analog L+R audio output ports, and twelve audio sources can be selected for four digital SPDIF output ports.

- **L+R Output Audio Volume Control**

- Adjust L+R output audio volume by the volume bar and the three buttons on the right side.

6.3 Configuration Tab

6.3.1 Auto-downscaling

Enable/disable video resolution auto-downscaling function of HDMI output 1~4 ports.

When enable auto-downscaling, the 4K input can be automatically degraded to 1080p output for compatibility with 1080p display which is connected to the HDMI output port.

6.3.2 EDID Copy

- Copy the EDID data from a single output port to one or several input ports.

Operation:

1) Select one output port.
2) Select one or several input ports. Press **ALL** to select all input ports.
3) Click **Confirm** to save any changes or click **Cancel** to cancel any changes that have been made.

6.3.3 EDID Setting

Click **EDID Setting** to enter the below section to set a predefined EDID for input ports.

- Select a built-in EDID for one or several input ports.

Operation:

1) Select a built-in EDID.
2) Select one or several input ports. Press **ALL** to select all input ports.
3) Click **Confirm** to save setting.

- Upload user-defined EDID by the below steps:

1) Prepare the EDID file (.bin) on the control PC.
2) Select the **User-defined**.
3) Click the box .bin, and then select the EDID file (.bin) according the tooltip.
4) Click **Apply** to upload the user-defined EDID, and then click **Confirm** to save setting.

6.4 CEC Tab

If the input source devices, HDBaseT output devices and local HDMI output devices support CEC, they can be controlled via the following CEC interface.

6.4.1 Input Source Device Control

- Select one or several HDMI input source devices to be controlled, and then press function buttons.

6.4.2 HDBT Output Device Control

- Select one or several HDBaseT output devices to be controlled, and then press function buttons.

6.4.3 HDMI Output Device Control

Select one or several HDMI output devices to be controlled, and then press function buttons.

.

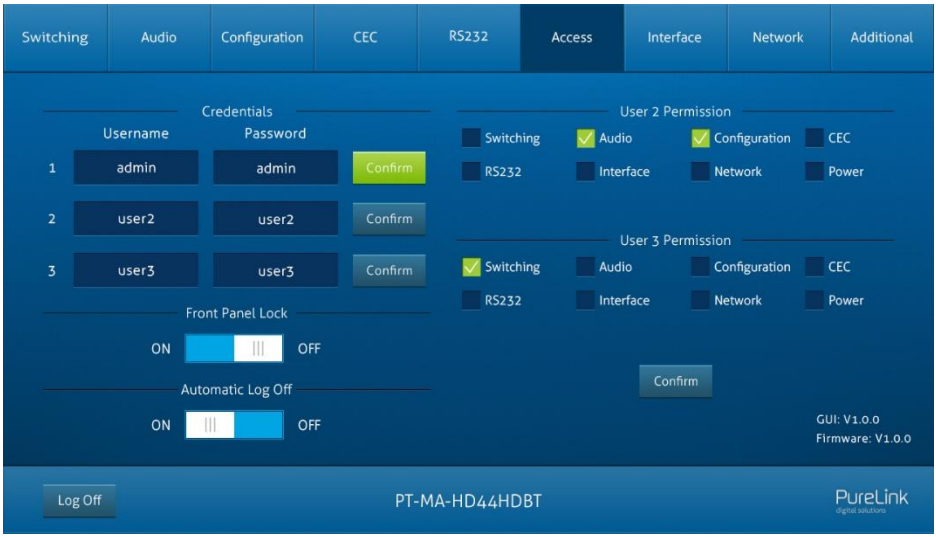
6.5 RS232 Tab

- Send RS232 commands to control third-party devices which are connected to the far-end HDBaseT receivers.

Operation:

1) Select the HDBaseT port which is connected to HDBaseT receiver which must have third-party device attached.
2) Set the baud rate.
3) Typing the commands in the box to control the selected remote third-party device which is connected to HDBaseT receiver. If click the **Hex**, the RS232 commands can be typed with hexadecimal value.
4) Click **Send** to transmit RS232 command to the selected HDBaseT port.

6.6 Access Tab



- Modify username and password.
- Lock or unlock the front panel buttons.
- Enable or disable automatic log-off mode.
- Configure accounts user2 and user3

6.7 Interface Setting

- Modify title bar label, LCD readout and button labels.

Click **Confirm** to save any changes or click **Cancel** to cancel any changes that have been made.

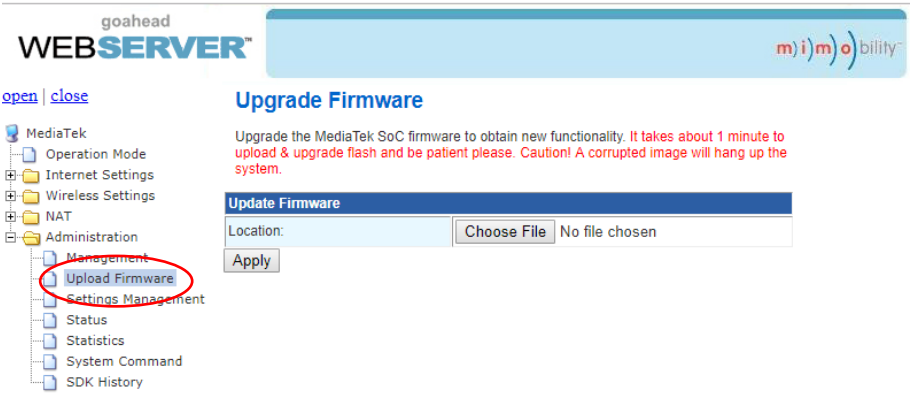
6.8 Network Setting

- Static IP or Dynamic Host Configuration Protocol (DHCP).
- Modify the static IP Address, Subnet Mask, and Gateway.

6.9 GUI Upgrade

Please visit at http://192.168.0.178:100 for GUI online upgrade.

Type the username and password (the same as the GUI log-in setting, modified password will be available only after rebooting) to login the configuration interface. After that, click **Administration** in the source menu to get to **Upload Firmware** as shown below:



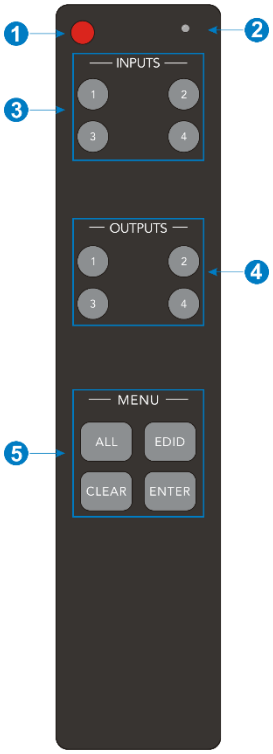
Select the update file and click **Apply** button, and then it will start upgrade process.

7. IR Control

7.1 IR Remote Control

The matrix switcher has a built-in IR sensor on the front panel for receiving IR control signal from IR remote. In addition, it also provides IR EYE port on the rear panel to connect an external IR receiver for IR local control.

The matrix switcher can be controlled by the below IR Remote:



① Enter/exit standby mode.

② Blinking red when a button is pressed.

③ Video source selection buttons.

④ Output channel selection buttons.

⑤ Menu buttons:

- ALL: Select all inputs or all outputs.
- EDID: Enable one or several input sources to manually capture and learn the EDID data of output device.
- CLEAR: Cancel the current operation, if ENTER has not been pressed.
- ENTER: Confirm the desired operation.

Note: *The IR receivers which are connected to HDBaseT receivers also can receive the IR signal of the IR remote, so the matrix switcher also can be controlled by the IR remote at the far-end HDBaseT receivers' position. The IR remote-control mode can be enabled or disabled by sending RS232 command "IRRCM[XX]ON."/ "IRRCM[xx]OFF." ([XX]=00~04). Please refer to the 8.3.1 System Control for more details.*

7.2 IR Pass-through Control

The matrix switcher supports bi-directional IR pass-through, allowing the devices to be controlled by both source and destination ends. This section provides connection and switching examples to illustrate possible configurations.

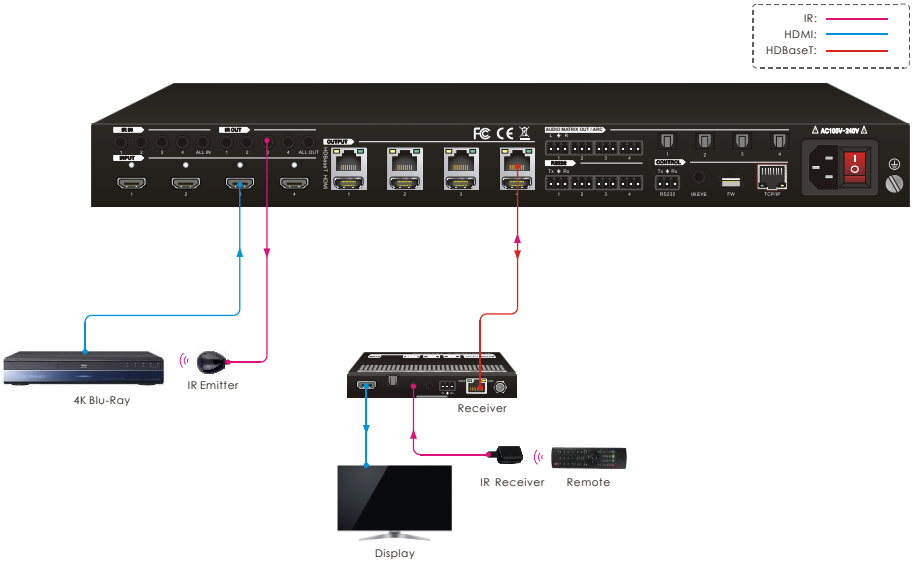
7.2.1 Control Local Input Device from Remote

The same basic principle applies when controlling the local input device from the remote location.

- **Control local input device through IR OUT port**

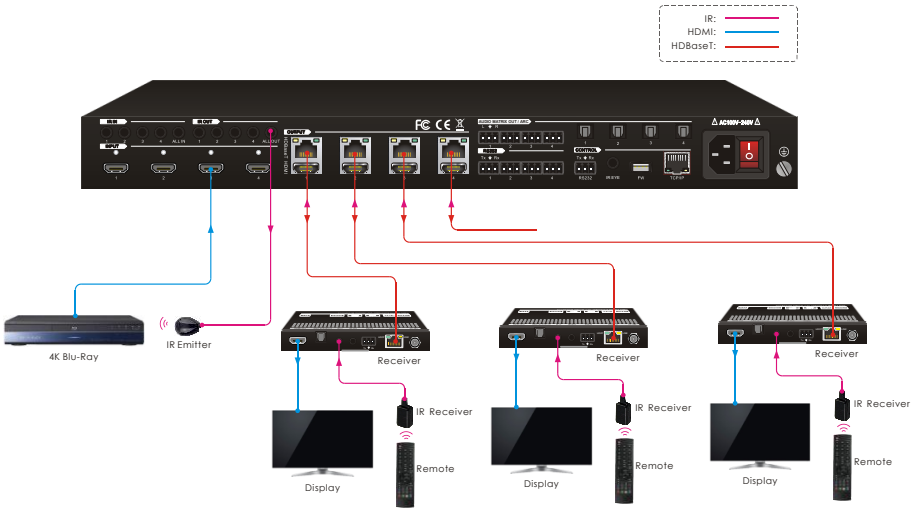
Example: Switch HDMI input 3 to HDBaseT output 4.

Connect an IR receiver to **IR IN** port on the receiver, then connect an IR emitter to the **IR OUT 3** on the matrix switcher. The third input source can be controlled through its corresponding IR output port. The connection diagram shown as below:



- **Control local input device through IR ALL OUT port**

The emitter can be connected to the **IR ALL OUT** port on matrix switcher to control all local input devices. In this case, the IR receiver must be connected to the **IR IN** port on each connected HDBaseT receiver, as shown in the diagram below:



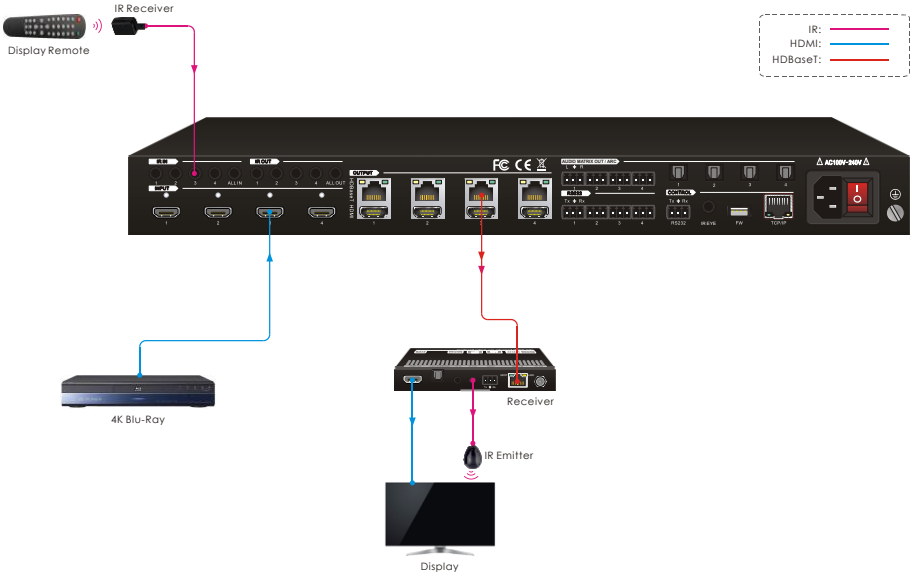
7.2.2 Control Remote Output Device from Local

The remote displays can be controlled from the local matrix switcher location.

- **Control remote device through IR IN port**

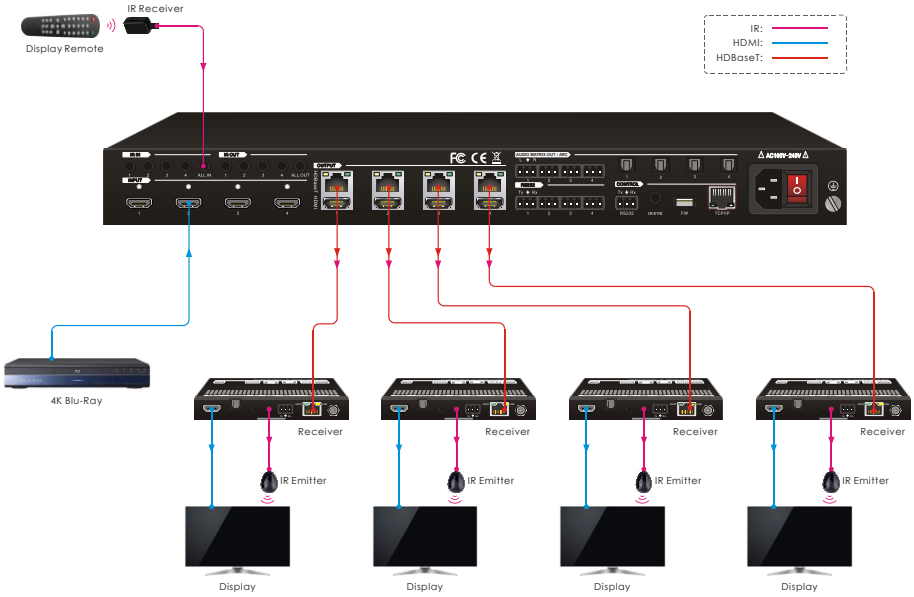
Example: Switch HDMI input 3 to HDBaseT output 3.

Connect an IR receiver to **IR IN 3** port on the matrix switcher, then connect an IR emitter to the **IR OUT** on the receiver, as shown in the diagram below:


IR Receiver
Display Remote
IR:
HDMI:
HDBaseT:
4K Blu-Ray
Receiver
IR Emitter
Display

- **Control remote device through IR ALL IN port**

The receiver can be connected to the **IR ALL IN** port on matrix switcher to control all remote output devices. In this case, the IR emitter must be connected to the **IR OUT** port on each connected HDBaseT receiver, as shown in the diagram below:

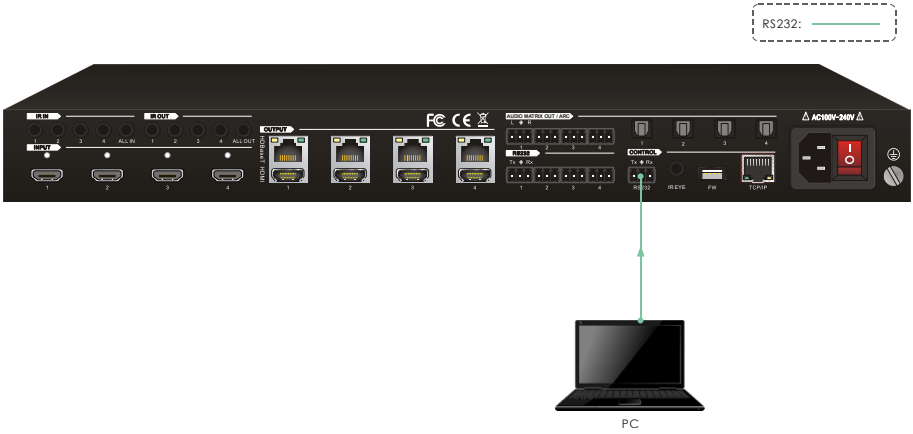


8. RS232 Control

8.1 RS232 Control Connection

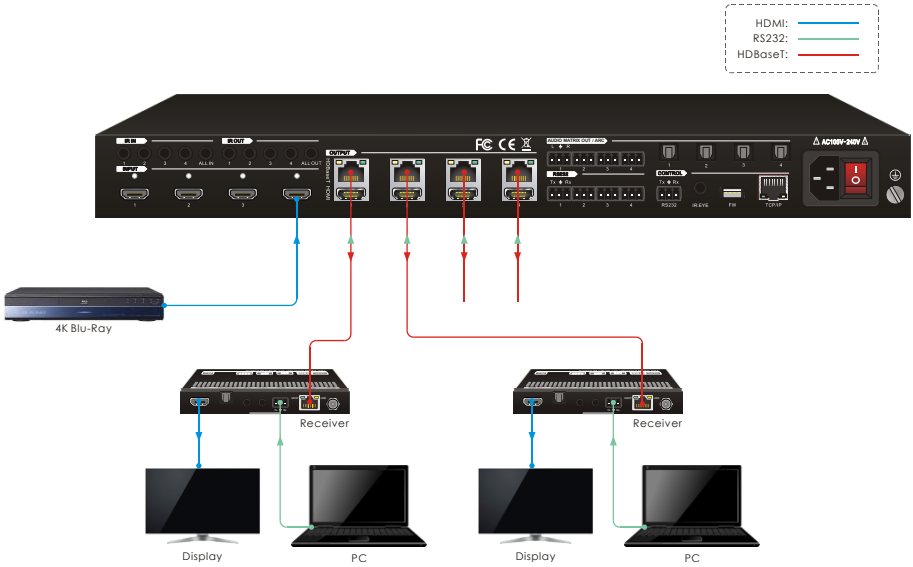
8.1.1 Control the Matrix Switcher from Local

To control the matrix switcher from a local PC, the **3-pin to DB9 RS232 Cable** is used to connect between the matrix and PC. The connection diagram is shown as below:



8.1.2 Control the Matrix Switcher from Remote

To control the matrix switcher from remote location, please connect one or more PCs to the **RS232** ports of HDBaseT receivers with the **3-pin to DB9 RS232 Cables**. The matrix switcher can be controlled by any one of PCs, the connection diagram is shown as below:

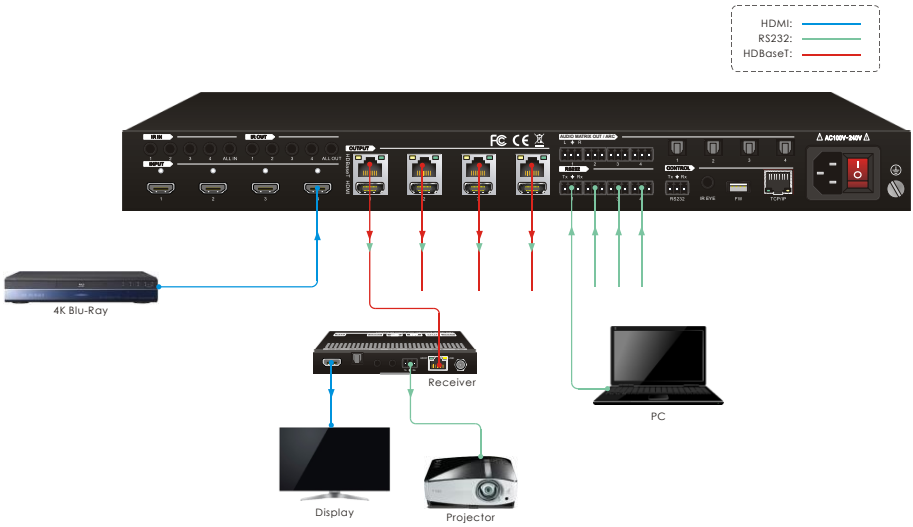


Note: *The command "**RS232RCM[XX]ON.**" (**[XX]=00~04**) needs to be sent to enable or disable this control mode. For example, send the command "**RS232RCM00ON.**" to enable the remote-control mode for all HDBaseT outputs, and send the command "**RS232RCM00OFF.**" to disable the remote-control mode for all HDBaseT outputs. Please refer to the 8.3.1 System Control for more details.*

8.1.3 Control the Remote Third-party Device from Local

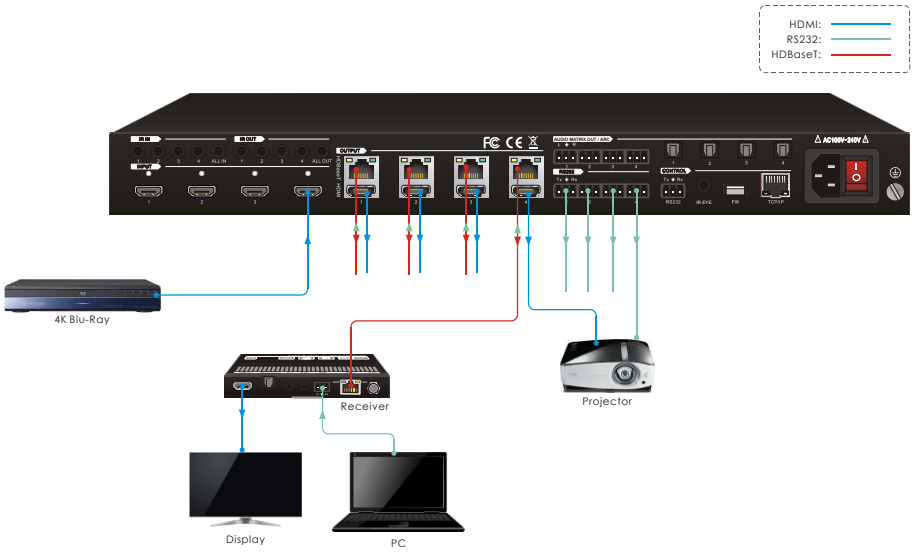
To control a third-party device from local, first determine which HDBaseT receiver is

connected to (1 in the diagram below). Next, connect a PC to the corresponding **RS232** port of matrix switcher with **3-pin to DB9 RS232 Cable**, then connect a third-party device (e.g. projector) to the **RS232** port of the determined HDBaseT receiver. The remote third-party device can be controlled by the local PC, the connection diagram is shown as below:



8.1.4 Control the Local Third-party Device from Remote

To control a third-party device from remote, first determine which HDBaseT receiver is connected to (1 in the diagram below). Next, connect a PC to the **RS232** port of HDBaseT receiver with **3-pin to DB9 RS232 Cable**, then connect a third-party device (e.g. projector) to the **RS232** port of matrix switcher. The local third-party device can be controlled by the remote PC, the connection diagram is shown as below:



8.2 RS232 Control Software

Connect the RS232 port to control device (e.g. PC) with RS232 cable. The switcher can be controlled by sending RS232 commands.

Here take the software **docklight** as an example.

- **Installation**

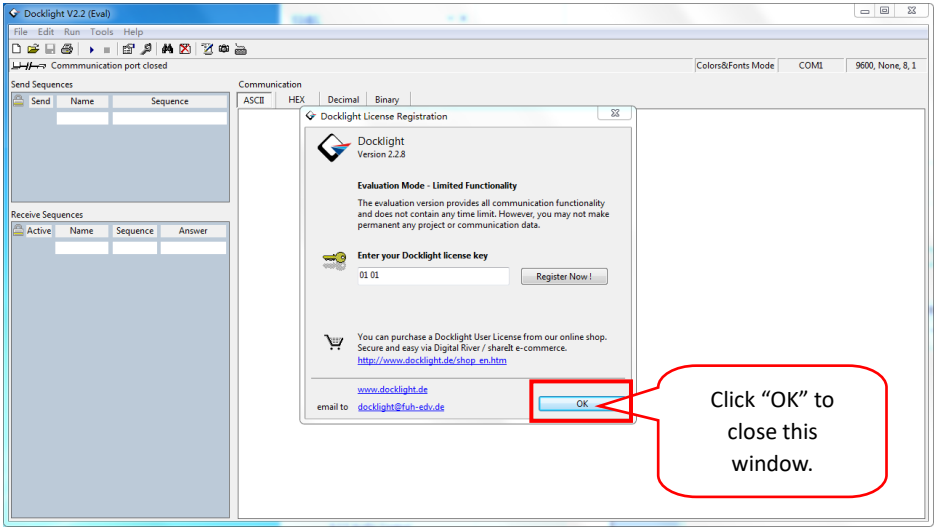
Please download the latest Software Version from the link below:

https://docklight.de/download/Docklight.zip

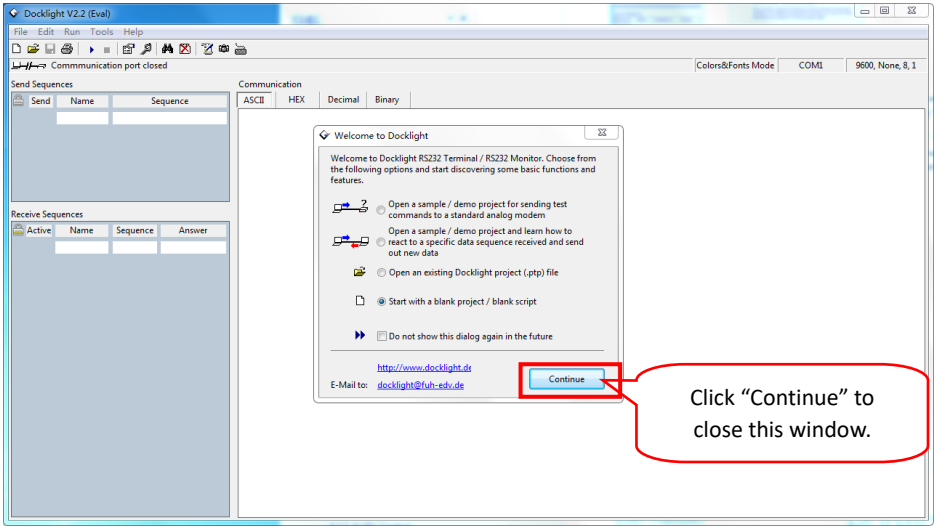
Then follow the installation wizard for installation on Windows 7 and 10.

After the installation, Docklight can be run for the first time and should look like the below screen shot:

Registration is not necessary unless you wish to save settings on exit, so unless you wish to register click on "OK" to close the window.

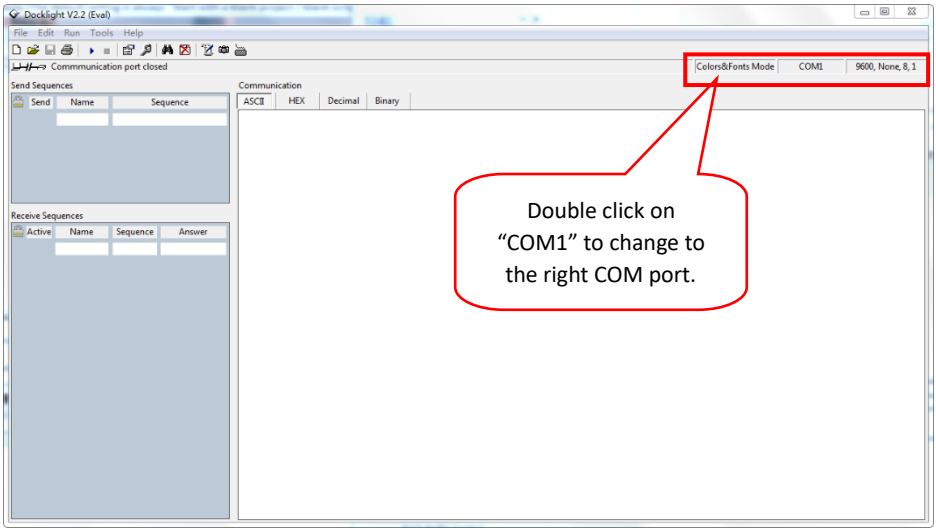


The next pop-up window can also be closed with "Continue". An empty project is enough to send and receive commands easily (The default setting is always “Start with a blank project / blank script “)



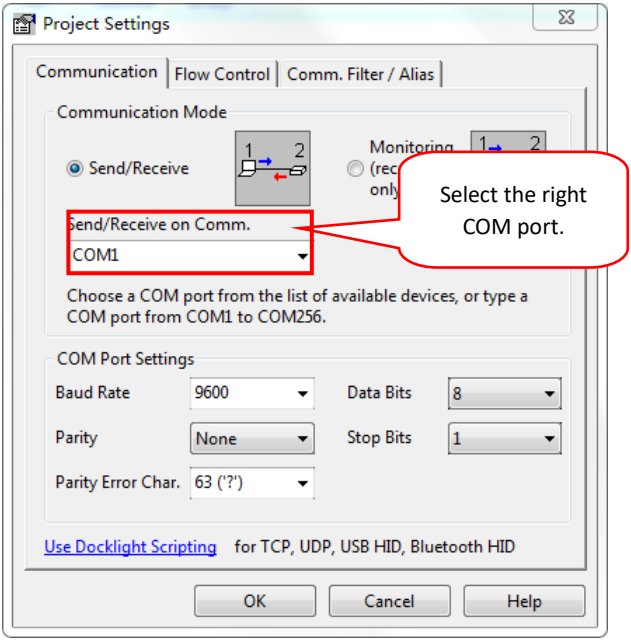
Now you are in the main view, where commands are sent and feedback is received.

The next step is to select the correct COM port of the PC. To do this, double-click on "COM1" in the corresponding setup window.



In the following window, select the drop-down menu labeled "Send / Receive on Comm Channel", select the appropriate COM port and then click on "OK" at the bottom right corner.

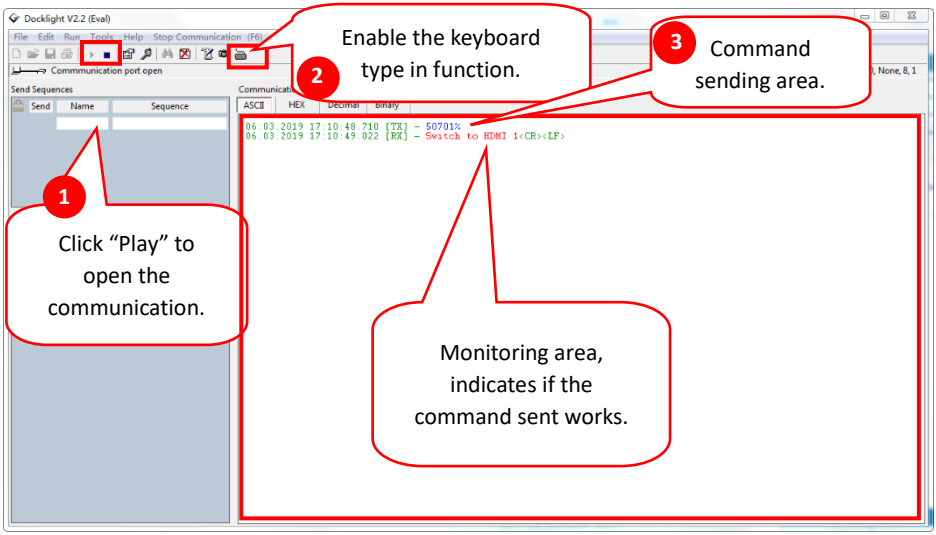
All other settings can be left at default for most applications, but refer to device RS232 settings to be sure.



In order to be able to send commands, open communication with the device by clicking on "Play". **(1)**

Then the keyboard function must be activated, so that commands can be written in the "communication window". **(2)**

Finally enter the command, for example "50701%". This is then confirmed by pressing "Enter" to send. Any response from the connected device will appear in red. **(3)**


Docklight V2.2 (Eval)
Communication port open
Send Sequences
Send
Name
Sequence
ASCII
HEX
Decimal
Binary
06.03.2019 17:10:48.710 [TX] - 50701%
06.03.2019 17:10:49.022 [RX] - Switch to HDMI 1<CR><LF>
1
Click “Play” to open the communication.
2
Enable the keyboard type in function.
3
Command sending area.
Monitoring area, indicates if the command sent works.

8.3 RS232 Communication Commands

When controlling the matrix, the serial port settings for all RS232 commands is:

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

The matrix switcher can be controlled by sending the following RS232 commands:

Note:

- *Please remember to end the commands with the ending symbols "." or ";".*
- *Type the command carefully, it is case-sensitive.*
- All commands ended without "<CR><LF>".

8.3.1 System Setting

Command	Description	Command Example and Feedback
PowerON.	Power on the system.	Power ON!
PowerOFF.	Power off the system.	Power OFF!
/*Name.	Report product name.	MUH44T-H2
/*Type.	Report product model.	HDBaseT Matrix
/^Version.	Report software version.	V1.0.0 CPLD:V1.0.0 VideoDriverVersion:V1.0.0
RST.	Reset to factory default.	Factory Default!
Lock.	Lock front panel buttons.	Front Panel Locked!
Unlock.	Unlock front panel buttons.	Front Panel UnLock!
GetGuiIP.	Report the GUI IP.	GUI_IP:192.168.0.178!
SetGuiIP:xxx.xxx.xxx.xxx.	Set the GUI IP to xxx.xxx.xxx.xxx.	SetGuiIP:192.168.0.176. SetGuiIP:192.168.0.176!
Baudrate115200.	Set the serial baud rate of matrix switcher to 115200.	Set Local RS232 Baudrate Is 115200!
Baudrate57600.	Set the serial baud rate of matrix switcher to 57600.	Set Local RS232 Baudrate Is 57600!
Baudrate38400.	Set the serial baud rate of matrix switcher to 38400.	Set Local RS232 Baudrate Is 38400!
Baudrate19200.	Set the serial baud rate of	Set Local RS232 Baudrate Is 19200!

Command	Description	Command Example and Feedback
	matrix switcher to 19200	
Baudrate9600.	Set the serial baud rate of matrix switcher to 9600.	Set Local RS232 Baudrate Is 9600!
PHDBTON.	Enable PoC of HDBT outputs for powering HDBaseT receivers.	HDBT Power ON!
PHDBTOFF.	Disable PoC of HDBT outputs.	HDBT Power OFF!
STA_PHDBT.	Report the PoC status of HDBT outputs.	HDBT Power ON!
DS[XX]ON.	Enable the video resolution auto-downscaling function of HDMI output [XX]. [XX]=00~04. The "[XX]=00" represents all HDMI outputs.	DS00ON. HDMI OUT 01 Down Scale ON! HDMI OUT 02 Down Scale ON! HDMI OUT 03 Down Scale ON! HDMI OUT 04 Down Scale ON!
DS[XX]OFF.	Disable the video resolution auto-downscaling function of HDMI output [XX]. [XX]=00~04. The "[XX]=00" represents all HDMI outputs.	DS00OFF. HDMI OUT 01 Down Scale OFF! HDMI OUT 02 Down Scale OFF! HDMI OUT 03 Down Scale OFF! HDMI OUT 04 Down Scale OFF!
STA_DS.	Report the auto-downscaling function of HDMI outputs.	HDMI OUT 01 Down Scale OFF! HDMI OUT 02 Down Scale OFF! HDMI OUT 03 Down Scale OFF!

Command	Description	Command Example and Feedback
		HDMI OUT 04 Down Scale OFF!
RS232RCM[XX]ON.	Enable the RS232 remote-control mode for HDBT output [XX] that the matrix switcher can be controlled from remote PC. [XX]=00~04. The "[XX]=00" represents all HDBT outputs.	RS232RCM00ON. RS232 Remote 01 Control MCU ON! RS232 Remote 02 Control MCU ON! RS232 Remote 03 Control MCU ON! RS232 Remote 04 Control MCU ON!
RS232RCM[XX]OFF.	Disable the RS232 remote-control mode for HDBT output [XX] that the matrix switcher cannot be controlled from remote PC. [XX]=00~04. The "[XX]=00" represents all HDBT outputs.	RS232RCM00OFF. RS232 Remote 01 Control MCU OFF! RS232 Remote 02 Control MCU OFF! RS232 Remote 03 Control MCU OFF! RS232 Remote 04 Control MCU OFF!
STA_RS232RCM.	Report the RS232 remote-control mode status.	RS232 Remote 01 Control MCU OFF! RS232 Remote 02 Control MCU OFF! RS232 Remote 03 Control MCU OFF! RS232 Remote 04 Control MCU OFF!
IRRCM[XX]ON.	Enable the IR remote-control mode for HDBT output [XX] that the matrix switcher can be controlled by the IR remote at the far-end HDBaseT receivers' position. [XX]=00~04. The "[XX]=00" represents all HDBT outputs.	IRRCM00ON. IR Remote 01 Control MCU ON! IR Remote 02 Control MCU ON! IR Remote 03 Control MCU ON! IR Remote 04 Control MCU ON!

Command	Description	Command Example and Feedback
IRRCM[XX]OFF.	Disable the IR remote-control mode for HDBT output [XX] that the matrix switcher cannot be controlled by the IR remote at the far-end HDBaseT receivers' position. [XX]=00~04. The "[XX]=00" represents all HDBT outputs.	IRRCM00OFF. IR Remote 01 Control MCU OFF! IR Remote 02 Control MCU OFF! IR Remote 03 Control MCU OFF! IR Remote 04 Control MCU OFF!
STA_IRRCM.	Report the IR remote-control mode status.	IR Remote 01 Control MCU ON! IR Remote 02 Control MCU ON! IR Remote 03 Control MCU ON! IR Remote 04 Control MCU ON!
@OUT[XX].	Turn on output [XX]. [XX]=00~08. The "[XX]=00" represents all outputs. [XX]=01~04, represents HDBT output 1~4. [XX]=05~08, represents HDMI output 1~4.	@OUT00. Turn ON Output 01! Turn ON Output 02! Turn ON Output 03! Turn ON Output 04! Turn ON Output 05! Turn ON Output 06! Turn ON Output 07! Turn ON Output 08!
$OUT[XX].	Turn off output [XX]. [XX]=00~08. The "[XX]=00" represents all outputs. [XX]=01~04, represents HDBT output 1~4. [XX]=05~08, represents HDMI output 1~4.	$OUT00. Turn OFF Output 01! Turn OFF Output 02! Turn OFF Output 03! Turn OFF Output 04! Turn OFF Output 05! Turn OFF Output 06! Turn OFF Output 07! Turn OFF Output 08!
STA_POUT.	Report the on/off status of all	Turn ON Output 01!

Command	Description	Command Example and Feedback
	outputs.	Turn ON Output 02! Turn ON Output 03! Turn ON Output 04! Turn ON Output 05! Turn ON Output 06! Turn ON Output 07! Turn ON Output 08!
STA.	Report all system status.	GUI Or RS232 Query Status: HDBaseT Matrix MUH44T-H2 V1.0.0 Power ON! HDBT Power ON! Front Panel UnLock! Local RS232 Baudrate Is 9600! GUI_IP:192.168.0.178! Output 01 Switch To In 01!
STA_IN.	Report the connection status of all HDMI input ports.	IN 1 2 3 4 LINK N N N Y
STA_OUT.	Report the connection status of all HDMI and HDBT outputs.	OUT 1 2 3 4 5 6 7 8 LINK N N N Y N N N N

8.3.2 Signal Switching

Command	Description	Command Example and Response
IRFVON.	Enable the IR switching to follow the video switching.	IR Follow Video ON!
IRFVOFF.	Disable the IR switching to follow the video switching.	IR Follow Video OFF!

Command	Description	Command Example and Response
OUT[XX]:[YY].	Switch video input [YY] to video output [XX]. [XX]=00~04, [YY]=01~04. The "[XX]=00" represents all outputs.	OUT01:04. Output 01 Switch To In 04!
STA_VIDEO.	Report the input channel for all outputs.	Output 01 Switch To In 01! Output 02 Switch To In 02! Output 03 Switch To In 03! Output 04 Switch To In 04!
IR[XX]:[YY].	Switch far-end IR IN [YY] to local IR OUT [XX]. [XX]=01~04, [YY]=00~04. The "[YY]=00" represents all far-end IR IN ports.	IR01:03. Local 01 IR Out Switch To Remote 03 IR IN!
STA_IR.	Report IR switching status.	IR Follow Video ON! Local 01 IR Out Switch To Remote 01 IR IN! Local 02 IR Out Switch To Remote 02 IR IN! Local 03 IR Out Switch To Remote 03 IR IN! Local 04 IR Out Switch To Remote 04 IR IN!
	Store the current switching status to present [XX]. XX=01~09.	PresetSave01. Preset 01 Save Success! Preset 01 Sta: Out 01 In 01!

Command	Description	Command Example and Response
PresetSave[XX].		Out 02 In 02! Out 03 In 03! Out 04 In 04!
PresetRecall[XX].	Recall present [XX]. [XX]=01~09.	PresetRecall02. Preset 02 Recall: Output 01 Switch To In 02! Local 02 IR Out Switch To Remote 01 IR IN! Output 02 Switch To In 02! Local 02 IR Out Switch To Remote 02 IR IN! Output 03 Switch To In 02! Local 02 IR Out Switch To Remote 03 IR IN!

Command	Description	Command Example and Response
		Output 04 Switch To In 02! Local 02 IR Out Switch To Remote 04 IR IN!
PresetSta[XX].	Report the preset [XX]. [XX]=01~09.	PresetSta01.
		Preset 01 Sta: Out 01 In 01! Out 02 In 01! Out 03 In 01! Out 04 In 01!

8.3.3 Audio Setting

<table>
<tr><th>Command</th><th>Description</th><th>Command Example and Response</th></tr>
<tr><td rowspan="2">SPDIF[XX]:[YY].</td><td rowspan="2">Select audio source [YY] for SPDIF audio output [XX]. [XX]=00~04, The “[XX]=00” represents all SPDIF audio outputs. [YY]=01~12.
<table>
<tr><th>[YY]</th><th>Audio Source</th><th>[YY]</th><th>Audio Source</th></tr>
<tr><td>01</td><td>In1 Breakout</td><td>07</td><td>Out3 Breakout</td></tr>
<tr><td>02</td><td>In2 Breakout</td><td>08</td><td>Out4 Breakout</td></tr>
<tr><td>03</td><td>In3 Breakout</td><td>09</td><td>Out1 ARC</td></tr>
<tr><td>04</td><td>In4 Breakout</td><td>10</td><td>Out2 ARC</td></tr>
<tr><td>05</td><td>Out1 Breakout</td><td>11</td><td>Out3 ARC</td></tr>
<tr><td>06</td><td>Out2 Breakout</td><td>12</td><td>Out4 ARC</td></tr>
</table></td><td>SPDIF01:04.</td></tr>
<tr><td>SPDIF Out 01 Switch To Video In 04!</td></tr>
<tr><td>STA_SPDIF.</td><td>Report SPDIF audio status.</td><td>SPDIF Out 01 Switch To Video In 01!
SPDIF Out 02 Switch To Video In 02!
SPDIF Out 03 Switch To Video In 03!
SPDIF Out 04 Switch To Video In 04!</td></tr>
</table>

<table>
<tr><th>Command</th><th>Description</th><th>Command Example and Response</th></tr>
<tr><td rowspan="2">AVOLUME[XX]:[YY].</td><td rowspan="2">Set the volume of analog L+R audio output [XX] to [YY]. [XX]=00~04, The “[XX]=00” represents all L+R audio outputs.
<table><tr><td>[YY]</td><td>Description</td></tr><tr><td>V+</td><td>Volume Up</td></tr><tr><td>V-</td><td>Volume down</td></tr><tr><td>MU</td><td>Mute</td></tr><tr><td>UM</td><td>Unmute</td></tr><tr><td>00~100</td><td>Volume value</td></tr></table></td><td>AVOLUME00:V+.
AVOLUME00:V-.
AVOLUME01:MU.
AVOLUME01:UM.
AVOLUME01:05.
AVOLUME01:100.</td></tr>
<tr><td>Analog Out 01 Volume 61!
Analog Out 02 Volume 61!
Analog Out 03 Volume 61!
Analog Out 04 Volume 61!
Analog Out 01 Volume Mute!
Analog Out 02 Volume Mute!
Analog Out 03 Volume Mute!
Analog Out 04 Volume Mute!
Analog Out 01 Volume UnMute!
Analog Out 02 Volume UnMute!
Analog Out 03 Volume UnMute!
Analog Out 04 Volume UnMute!</td></tr>
</table>

<table>
<tr><th>Command</th><th>Description</th><th>Command Example and Response</th></tr>
<tr><td rowspan="2">ANALOG[XX]:[YY].</td><td rowspan="2">Select audio source [YY] for analog L+R audio output [XX]. [XX]=00~04, The “[XX]=00” represents all L+R audio outputs. [YY]=01~08.
<table>
<tr><th>[YY]</th><th>Audio Source</th><th>[YY]</th><th>Audio Source</th></tr>
<tr><td>01</td><td>In1 Breakout</td><td>05</td><td>Out1 Breakout</td></tr>
<tr><td>02</td><td>In2 Breakout</td><td>06</td><td>Out2 Breakout</td></tr>
<tr><td>03</td><td>In3 Breakout</td><td>07</td><td>Out3 Breakout</td></tr>
<tr><td>04</td><td>In4 Breakout</td><td>08</td><td>Out4 Breakout</td></tr>
</table></td><td>ANALOG01:04.

Analog Out 01 Switch To Video In 04!</td></tr>
</table>

Command	Description	Command Example and Response
STA_ANALOG.	Report analog L+R audio status.	Analog Out 01 Switch To Video In 01! Analog Out 01 Volume UnMute! Analog Out 01 Volume 60! Analog Out 02 Switch To Video In 02! Analog Out 02 Volume UnMute! Analog Out 02 Volume 60! Analog Out 03 Switch To Video In 03! Analog Out 03 Volume UnMute! Analog Out 03 Volume 60! Analog Out 04 Switch To Video In 04! Analog Out 04 Volume UnMute! Analog Out 04 Volume 60!

8.3.4 EDID Setting

<table>
<tr><th>Command</th><th>Description</th><th>Command Example and Response</th></tr>
<tr><td>EDIDMInit.</td><td>Reset factory default EDID to all input ports.</td><td>All Input EDID Set Default!</td></tr>
<tr><td rowspan="3">EDIDUpgrade[XX].</td><td rowspan="3">Upgrade the EDID data of the input port [XX].
[XX]=00~04, U.
[XX]=00, represents all inputs.
[XX]=01~04, represents HDMI input 1~4.
[XX]=U, upload a user-defined EDID. The EDID can be saved for invoking at any time.
When the command applied, system prompts to upload the EDID file (.bin). Operation will be cancelled in 10 seconds. Please disconnect HDBT connection before sending command to ensure the data can be received successfully.</td><td>EDIDUpgrade01.</td></tr>
<tr><td>EDIDUpgradeU.</td></tr>
<tr><td>256
9600bps
Input XX/User Define EDID Upgrade OK By RS232 Or GUI!</td></tr>
<tr><td rowspan="2">EDID/[XX]/[YY].</td><td>The input [XX] recall the embedded EDID [YY]. [XX]=00~04. The “00” represents all inputs.
[YY]=01~07.
<table>
<tr><th>[YY]</th><th>EDID</th></tr>
<tr><td>01</td><td>1080p 2CH</td></tr>
<tr><td>02</td><td>1080p MultiCH</td></tr>
<tr><td>03</td><td>4K@30Hz HDR 2CH</td></tr>
<tr><td>04</td><td>4K@30Hz HDR MultiCH</td></tr>
<tr><td>05</td><td>4K@60Hz HDR 2CH</td></tr>
<tr><td>06</td><td>4K@60Hz HDR MultiCH</td></tr>
<tr><td>07</td><td>User-defined EDID</td></tr>
</table></td><td>EDID/03/01.</td></tr>
<tr><td>Input 03 EDID Upgrade OK By 01 Internal EDID!</td></tr>
<tr><td rowspan="2">EDIDGOUT[XX].</td><td rowspan="2">Report the EDID data from output [XX].
[XX]=01~08.
[XX]=01~04, represents HDBT output 1~4.</td><td>EDIDGOUT04.</td></tr>
<tr><td>EDIDOUT04:
……</td></tr>
</table>

Command	Description	Command Example and Response
	[XX]=05~08, represents HDMI output 1~4.	
EDIDM[XX]B[YY].	Copy the EDID data of output [XX] to input [YY]. [XX]=01~08, [YY]=00~04. [XX]=01~04, represents HDBT output 1~4. [XX]=05~08, represents HDMI output 1~4. [YY]=00, represents all inputs. [YY]=01~04, represents HDMI input 1~4.	EDIDM04B01. Input 01 EDID Upgrade OK By 04 EXT EDID!
EDIDSTA[XX].	Report the EDID status of input [XX]. [XX]=00~04. [XX]=00, represents all inputs. [XX]=01~04, represents HDMI input 1~4.	EDIDSTA00. Input 01 EDID From 01 Internal EDID! Input 02 EDID From 01 Internal EDID! Input 03 EDID From 01 Internal EDID! Input 04 EDID From 01 Internal EDID!

8.3.5 Third-party Device Control

Command	Description	Command Example
/+[X]/[YY]:xxx.	Send the ASCII command “xxx” to control the far-end third-party device. ● xxx: ASCII string. ● The “[X]=1~7” represents the baud rate of third-party device. [X]=1, the baud rate is 2400 [X]=2, the baud rate is 4800 [X]=3, the baud rate is 9600 [X]=4, the baud rate is 19200 [X]=5, the baud rate is 38400 [X]=6, the baud rate is 57600 [X]=7, the baud rate is 115200 ● The “[YY]=00” represents all HDBT outputs. ● The “[YY]=01~04” represents the HDBT output 1~4.	/+3/01:123456. Send the ASCII command “123456.” to the far-end third-party device whose baud rate is 9600. The third-party device is connected to the far-end HDBaseT receiver of connecting the HDBT output 1 port.

Command	Description	Command Example
CMDON/+[X]/[YY]:xxx.	When power on the matrix switcher, automatically send ASCII command “xxx” to power on far-end third-party device. ● xxx: ASCII string. ● The “[X]=1~7” represents the baud rate of third-party device. [X]=1, the baud rate is 2400 [X]=2, the baud rate is 4800 [X]=3, the baud rate is 9600 [X]=4, the baud rate is 19200 [X]=5, the baud rate is 38400 [X]=6, the baud rate is 57600 [X]=7, the baud rate is 115200 ● The “[YY]=00” represents all HDBT outputs. ● The “[YY]=01~04” represents the HDBT output 1~4.	CMDON/+3/01:123456. When power on the matrix switcher, automatically send ASCII command “123456” to the far-end third-party device. The third-party device is connected to the far-end HDBaseT receiver of connecting the HDBT output 1 port.
CMDOFF/+[X]/[YY]:xxx.	When power off the matrix switcher, automatically send ASCII command “xxx” to power off far-endthird-party device. ● xxx: ASCII string. ● The “[X]=1~7” represents the baud rate of third-party device. [X]=1, the baud rate is 2400 [X]=2, the baud rate is 4800 [X]=3, the baud rate is 9600 [X]=4, the baud rate is 19200 [X]=5, the baud rate is 38400 [X]=6, the baud rate is 57600 [X]=7, the baud rate is 115200 ● The “[YY]=00” represents all HDBT outputs. ● The “[YY]=01~04” represents the HDBT output 1~4.	CMDOFF/+3/01:123456. When power off the matrix switcher, automatically send ASCII command “123456” to the far-end third-party device. The third-party device is connected to the far-end HDBaseT receiver of connecting the HDBT output 1 port.

8.3.6 CEC Control

If the input sources, HDBaseT output devices and local HDMI output devices are supports CEC, they can be controlled by sending the following command instead of IR remote.

CEC[I/O][AA][BB][CC][DD].

- The "**[I]**" represents the input port. The "**[O]**" represents the output port.
- The "**[AA]**" represents the port number. The HDMI input ports are 01~04. The HDBaseT output ports are 01~04 and the local HDMI output ports are 05~08.
- The "**[AA]**" is "**FF**" for sending command to all input or output ports.
- The "**[BB]**" represents the device type (e.g. TV: 40/20/80; Blu-ray DVD: 04/08).
- The "**[CC]**" represents the function type (e.g. "44": Remote control).
- The "**[DD]**" represents the specific command from the table below.

✓ **Control the input source:**

Command	Description	Command Example and Response
CECI[AA][BB][CC]00.	Confirm operation (Enter).	CECI02044400
		CEC Input 02 Send Success!
CECI[AA][BB][CC]01.	UP direction.	CECI01044401.
		CEC Input 01 Send Success!
CECI[AA][BB][CC]02.	DOWN direction.	CECI01044402.
		CEC Input 01 Send Success!
CECI[AA][BB][CC]03.	LEFT direction.	CECI03044403.
		CEC Input 03 Send Success!
CECI[AA][BB][CC]04.	RIGHT direction.	CECI03044404.
		CEC Input 03 Send Success!
CECI[AA][BB][CC]09.	Back to submenu.	CECI03044409.
		CEC Input 03 Send Success!
CECI[AA][BB][CC]0A.	Enter main menu.	CECI0304440A.
		CEC Input 03 Send Success!
CECI[AA][BB][CC]0D.	Exit menu.	CECI0204440D.

		CEC Input 02 Send Success!
CECI[AA][BB][CC]6D.	Power on.	CECI0204446D.
		CEC Input 02 Send Success!
CECI[AA][BB][CC]6C.	Power off.	CECI0204446C.
		CEC Input 02 Send Success!

✓ **Control the output display device:**

Command	Description	Command Example and Response
CECO[AA][BB][CC]41.	Volume up.	CECO05404441.
		CEC Output 05 Send Success!
CECO[AA][BB][CC]42.	Volume down.	CECO05404442.
		CEC Output 05 Send Success!
CECO[AA][BB][CC]43.	Mute	CECO05404443.
		CEC Output 05 Send Success!
CECO[AA][BB]04.	Power on.	CECO038004.
		CEC Output 03 Send Success!
CECO[AA][BB]36.	Power off.	CECO038036.
		CEC Output 03 Send Success!

9. Firmware Upgrade

Please follow the steps as below to upgrade firmware by the **FW** port on the rear panel:

1) Prepare the latest two upgrade files and rename them as “08010000.APP” and “08010000.APS” on PC.

2) Power off the switcher, and connect the **FW** port of switcher to the PC with USB cable.

3) Power on the switcher, and then the PC will automatically detect a U-disk named of "BOOTDISK".

4) Double-click the U-disk, a file named of "READY.TXT" would be showed.

5) Directly copy one of two upgrade files (e.g. "08010000.APP") to the "BOOTDISK" U-disk.

6) Reopen the U-disk to check the filename "READY.TXT" whether automatically becomes "SUCCESS.TXT", if yes, the firmware was updated successfully, otherwise, the firmware updating is fail, the name of upgrade file should be confirm again, and then follow the above steps to update again.

7) Repeat step 5~6 to copy the other upgrade file ("08010000.APS") to the "BOOTDISK" U-disk.

8) Remove the USB cable after firmware upgrade.

9) After firmware upgrade, the switcher should be restored to factory default by sending command.

10. Troubleshooting and Maintenance

Problems	Potential Causes	Solutions
Output image with snowflake.	Bad quality of the connecting cable.	Try another high-quality cable.
	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 product is broken.	Send it to authorized dealer for repairing.
POWER indicator doesn't work or no respond to any operation.	Fail connection of power cord.	Make sure the power cord connection is good.
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.
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 control device (e.g. a	Wrong RS232 communication	Type in correct RS232 communication parameters.

PC) through RS232 port.	parameters.	
	Broken RS232 port.	Send it to authorized dealer for checking.
Cannot control the device by front panel buttons while can control it through RS232 port	The front panel buttons are locked.	Send command **/%Unlock;** to unlock the front panel buttons.

Note: *If your problem persists after following the above troubleshooting steps, seek further help from authorized dealer or our technical support.*

11. After-Sales Service

If problems occur while operating the product, please use the troubleshooting and maintenance information in this manual to deal with these problems. Any transport costs are borne by the user during the warranty period.

1) **Product Limited Warranty:** The product will be free from defects in materials and workmanship for **three years** (purchase invoice date shall prevail).
   A proof of purchase is the evidence that the unit is within the warranty period. A bill of sale or receipted invoice must be presented to obtain warranty service.

2) **What the warranty does not cover (servicing available for a fee):**
   - Warranty has expired
   - The factory applied serial number has been altered or removed from the product.
   - Damage, deterioration or malfunction caused by:
     - Normal wear and tear.
     - Use of accessories, supplies or parts, not meeting our specifications.
     - No bill of delivery or invoice as proof of warranty.
     - The product model displayed on the warranty card does not match the product model for repairing or it has been altered.
     - Damage caused by force majeure.
     - Servicing, not authorized by distributor.
     - Any other cause not related to a product defect.
   - Delivery, installation or labor charges for product installation and/or product setup.

3) **Technical Support:** For any questions or problem troubleshooting inquiries, contact your distributor or reseller. Please provide the respective product name and version, a detailed description of the failure situation as well as how the failure occurred.

User Manual

PT-MA-HD44HDBT

PureTools

Asking for Assistance

Technical Support:

Phone: +49 5971 800299 -0

Fax: +49 5971 800299 -99

Technical Support Hours:

8:30 AM to 5:00 PM Monday thru Thursday

8:30 AM to 4:00 PM Friday

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