gofanco®

18G HDBaseT 8x8 Matrix Switcher

User's Guide

P/N:Matrix88-HDBT

G4-0093A

Thank you for purchasing from gofanco. Our products aim to meet all your connectivity needs wherever you go. For optimum performance and safety, please read the instructions carefully and keep this User's Guide for future reference. If you need more information about our products, please visit www.gofanco.com. For technical support, email us at support@gofanco.com. For drivers or manual download, please go to www.gofanco.com/download.

Important Safety Notices

Please read safety instructions carefully before installation and operation.

- Please pay close attention to all warnings and hints for this device
- Do not expose this unit to rain, heavy moisture, or liquid
- Do not put any items into the device or attempt to modify its operation
- Do not repair the device or open the enclosure without professional guidance to avoid electric shocks. Doing so may void your warranty
- Keep the product in a well-ventilated location to avoid damage from overheating
- Shut off power and make sure environment is safe before installation
- Do not plug the HDMI cables and IR cables in/out when the device is in use to avoid cable damage. Make sure they are plugged into the correct ports
- Use the included power adapter only. Make sure the specification matches if using 3rd-party DC power adapters

Introduction

The 18G HDBaseT 8x8 Matrix allows you to select and switch between any of the 8 HDMI source devices to display on any of the 6 HDBaseT outputs and 2 HDMI outputs.

Features

- Transmits HDMI signals in 1080p up to 70 meters and 4K signals up to 40 meters over high quality CAT cable via HDBaseT technology
- Local HDMI port transmits 4K signals up to 8 meters via HDMI cable for additional HDMI extension
- Supports Power over Cable (PoC) technology, allowing the HDBaseT receivers to be powered by the Matrix over CAT cables
- Supports bidirectional IR remote control to control the source device or display device from long distances
- Smart EDID management allows you to select the output resolution to match the connected displays
- Compliant with HDMI 2.0 and HDCP 2.2 specifications

Installation Requirements

- HDMI source device (DVD player, set top box, PC, etc.)
- HDMI display device (SDTV/Monitor, HDTV/ Monitor, projector, etc.)
- HDMI cables (not included)
- CAT cables (not included)

Package Contents

18G HDBaseT 8x8 Matrix

- 1x 18G HDBaseT 8x8 Matrix
- 2x Mounting ears with 6 screws
- 4x Plastic pads
- 1x IR remote control
- 7x IR receiver cables
- 8x IR emitter cables
- 1x RS232 cable (3-pin to DB-9)
- 1x Power adapter (Output: 12V/10A)
- 1x Power cord
- 1x User manual

HDBaseT Receiver

- 6x HDBaseT Receivers
- 12x Mounting ears with 24 screws
- 24x Plastic pads
- 6x 3-pin Terminal blocks

Product Layout

HDBaseT 8x8 Matrix

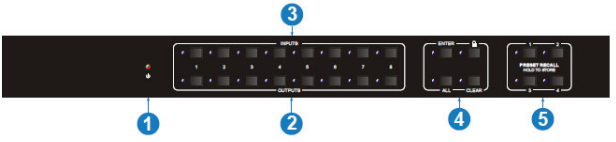


Figure 1: HDBaseT 8x8Matrix Front Panel Layout

No.	Name	Description
1	Power LED	Green: The Matrix is powered on Red: The Matrix is in standby mode
2	Outputs	Eight buttons and eight activity LEDs for output channel selection
3	Inputs	Eight buttons and eight activity LEDs for input source selection
4	Menu Buttons	Enter: Confirm button LOCK: Lock or unlock the front panel buttons ALL: Select all CLEAR: Cancel
5	Preset Recall	Press and hold the desired button (1-4) to save the current Matrix status Press a corresponding button (1-4) to recall the saved preset

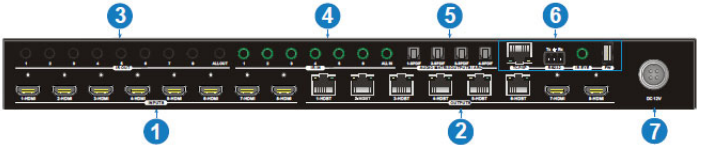


Figure 2: HDBaseT 8x8 Matrix Rear Panel Layout

1-No.	Name	Description
1	HDMI Inputs	Connects to your HDMI source devices
2	Outputs	**HDBT (1-6)**: Connects to the included HDBaseT Receiver(s) using CAT cables **HDMI (7-8)**: Connects to HDMI display(s) using HDMI cables
3	IR OUT	**1-8**: Connects to IR emitter cable(s) to control your source device(s) from a remote HDBaseT receiver **All OUT**: Connects to an IR emitter cable sends IR signal which is received from all HDBaseT receivers
4	IR IN	**1-6**: Connects to IR receiver cable(s). Each IR IN is associated with the IR OUT of the respective HDBaseT receiver
5	Audio Outputs/ARC	Four Toslink outputs to connect speakers or amplifiers for HDMI input audio de-embedding or HDBT/HDMI output audio de-embedding, and ARC audio output from the HDBaseT receivers **Default**: HDBT 1-4 output audio de-embedding
6	Control	**TCP/IP**: Connects to a control device (e.g. PC) to control the Matrix by GUI. **RS232**: Connects to a control device (e.g. PC) to control the Matrix, or connect a third party device controlled by RS232 commands **IR EYE**: Connects to an IR receiver cable to control the Matrix by the included IR remote control **FIRMWARE**: Micro USB port for firmware update
7	Power Jack	Connects to the included power adapter

HDBaseT Receiver

Figure 3: HDBaseT Receiver Layout

No.	Name	Description
1	Power LED	Red when powered on
2	ARC Mode	Press the button with a paper clip or other sharp object to enable ARC mode, the left LED will light up blue. Press it again to exit ARC Mode the LED will go off.
3	ARC Audio In	Toslink connector to connect your ARC audio source device
4	Firmware	Micro USB port for firmware upgrade
5	HDMI Out	Connects to your HDMI display
6	Audio Breakout	Toslink connector transmits HDMI source audio de-embedding. **Note**: This port has no audio output if ARC Mode is On
7	IR In	Connects to IR Receiver cable
8	IR Out	Connects to IR Emitter cable
9	RS232	Connects to RS232 control device (e.g. PC) or a third party device
10	HDBT In	Connects to the Matrix's HDBT Out using a Cat cable
11	Power Jack	Connects to the included power adapter. If the Matrix is powered, this connection is not needed, the Receiver will power on using PoC technology through the Cat cable

Hardware Installation

1. Power off all devices including your HDMI source(s) and HDMI display(s).
2. Connect your HDMI source device(s) to the HDBaseT Matrix HDMI Input connector(s) with an HDMI cable (HDMI cable not included).
3. Connect your CAT cable between the HDBaseT Matrix and HDBaseT Receivers.
4. Connect HDMI display(s) to the HDMI Output(s) of the HDBaseT Matrix using HDMI cable(s) (HDMI cable not included).
5. Connect your HDMI display to the HDBaseT Receiver's HDMI Output port with an HDMI cable.
6. Optional: Connect the IR Receiver cable and the IR Emitter cable to the IR interface port. This connection is needed only if you need to control your HDMI devices from the remote location. See IR Control, on page 9 for proper IR connection.
7. Optional: Connect speakers or AVR amplifier to the Toslink output port(s)
8. Optional: Connect the included RS232 cable between the matrix' RS232 socket and your PC's serial port or a CAT cable between the matrix' ethernet port and router or PC's ethernet port. This connection is needed only if matrix device control using a PC is requred.
9. Plug the included power adapter into the matrix' Power Jack, then plug the power adapter into a reliable power outlet.
10. Power on all connected devices. The Matrix is ready for use.

Connection Diagram

The application diagram shows the most typical input and output devices used with the HDBaseT 8x8 Matrix.

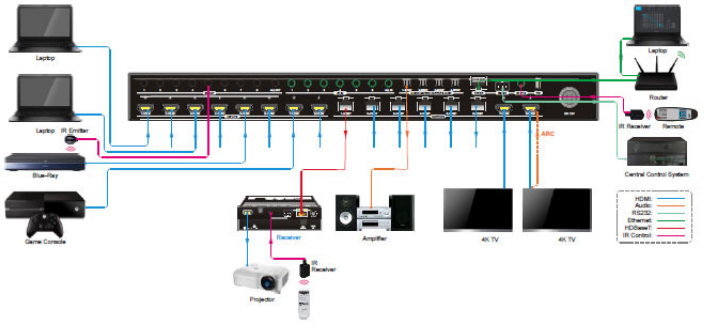


Figure 5: Connection Diagram

IR Control

Provides IR control of the connected devices. The IR feature is bidirectional so either the source device or the display device(s) can be remotely controlled.

IR Remote

Users can control the Matrix Switcher using the included remote. Connect an IR receiver cable to the IR Eye of the Matrix Switcher.

- Press the **STANDBY (1)** button to enter or exit standby mode.
- To switch the selected input for one or more of the outputs, first press the number corresponding to the desired **INPUT (2)**, then press one or more **OUTPUTS (3)** or the **ALL (4)** button, then press the **ENTER (4)** button to execute the change.
- Examples:
  - ✓ To send input 3 to output 2, first press the **INPUTS 3** button, then press the **OUTPUTS 2** button, and finally press the **ENTER** button to execute the change.
  - ✓ To send input 1 to outputs 1 and 4, first press the **INPUTS 1** button, then press both the **OUTPUTS 1** and **4** buttons, and finally press the **ENTER** button to execute the change.
  - ✓ To send input 4 to all outputs, first press the **INPUTS 4** button, then press the **ALL** button, and finally press the **ENTER** button to execute the change.
- To set the EDID for one or more source devices to the EDID capabilities of a specific output, press the **EDID (4)** button, then press the desired **INPUTS (2)** or the **ALL (4)** button, then press the **OUTPUTS (3)** button corresponding to the desired display, finally press the **ENTER (4)** button to execute the operation.
- **CLEAR(4):** Press the **CLEAR** button if want to withdraw an operation before the **ENTER** button comes into effect, meanwhile, the matrix will return to the previous status.

Figure 6: IR Remote Layout

Controlling the Matrix Switcher

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

   Example: Input 1 to Output 3

   → Press INPUTS 1 + OUTPUTS 3 + ENTER

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

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

   Example: Convert Input 2 to Output 3 and 4

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

3) **To convert an input to all outputs:**

   Example: Input 1 to all Outputs

   → Press INPUTS 1 + ALL + ENTER

By using IR & HDBaseT transmission technology, the HDMI HDBaseT 4x4 4K Matrix Kit has the functions as follows:

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

4.1.2 Force Carrier

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

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

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

Controlling the Display Device(s)

1. Connect an IR Receiver cable to the IR In port of the HDBaseT Matrix.
2. Connect an IR Emitter cable to the IR Out port on each HDBaseT Receiver.
3. Point the IR Emitter cable's IR eye in line with the IR receiver on the display device.

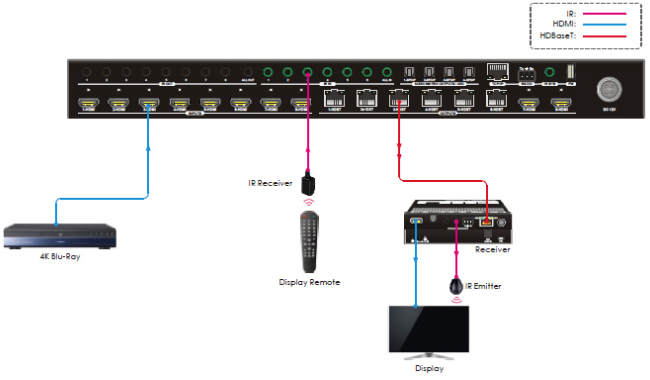


Figure 7a: Single Display Device IR Control Connection Diagram

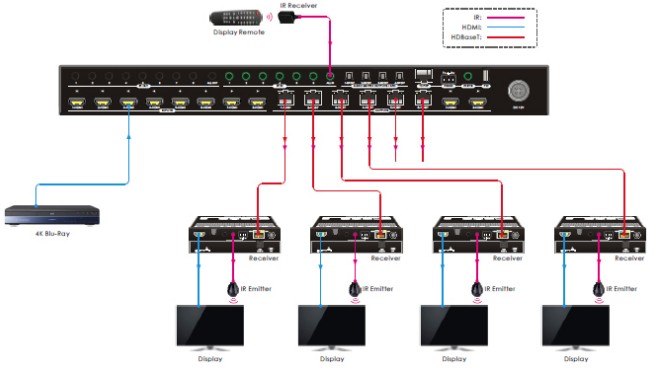


Figure 7b: Multiple Display Device IR Control Connection Diagram

Controlling the Source Device

1. Connect an IR Emitter cable to the IR Out port of the Matrix.
2. Point the IR Emitter cable's IR eye in line with the IR receiver on the source device.
3. Connect an IR Receiver cable to the IR In port on each HDBaseT Receiver.

Single Source Device IR Control

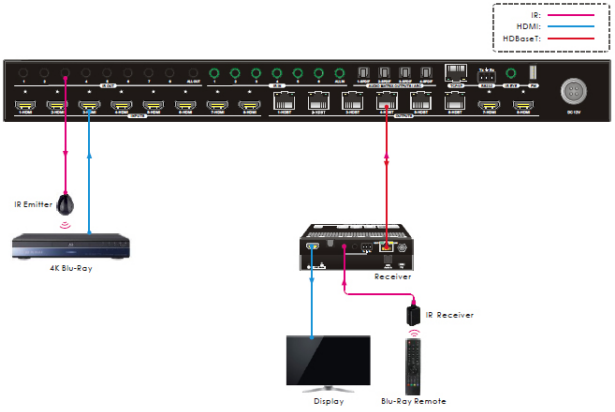


Figure 8: Single Source Device IR Control Connection Diagram

IR All Out Port Source Device Control

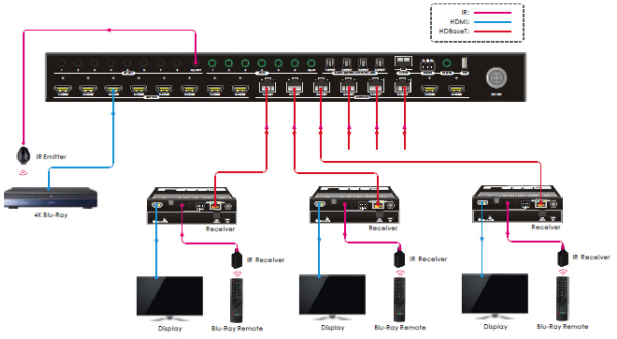


Figure 9: Multiple to Multiple Device IR Control Connection Diagram

RS232

Control Matrix from Local PC

Connect the control PC's RS232 serial port to the Matrix' RS232 port using the included RS232 cable.

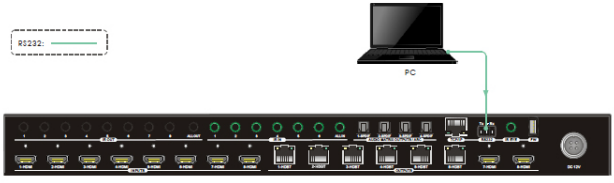


Figure 10: Local PC RS232 Control

Control Matrix from Remote PC

Connect one or more control PC's RS232 serial port to the HDBaseT Receiver's RS232 port using the included RS232 cable.

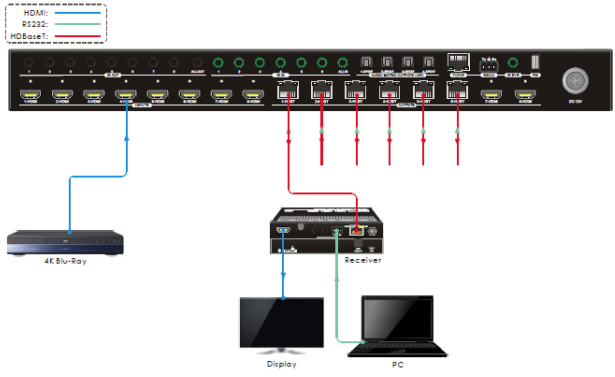


Figure 11: Remote PC RS232 Control

Control Remote Third Party Device from Local PC

Connect the Control PC to the RS232 port of the Matrix with the included RS232 cable, then connect the 3rd party device to the RS232 port of the HDBaseT Receiver.

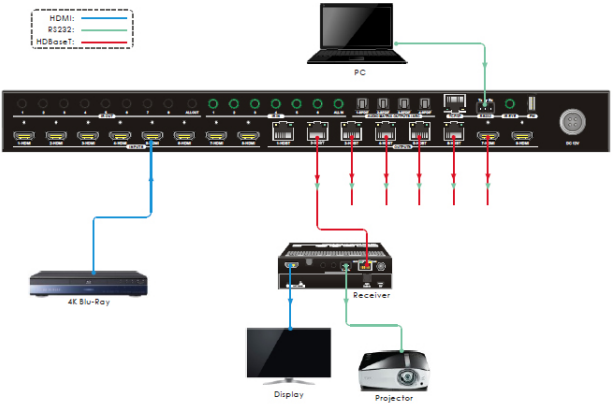


Figure 12: Remote 3rd Party from Local PC RS232 Control

Control Local Third Party Device from Remote PC

Connect the 3rd Party device to the RS232 port of the Matrix with the included RS232 cable, then connect the Control PC to the RS232 port of the HDBaseT Receiver.

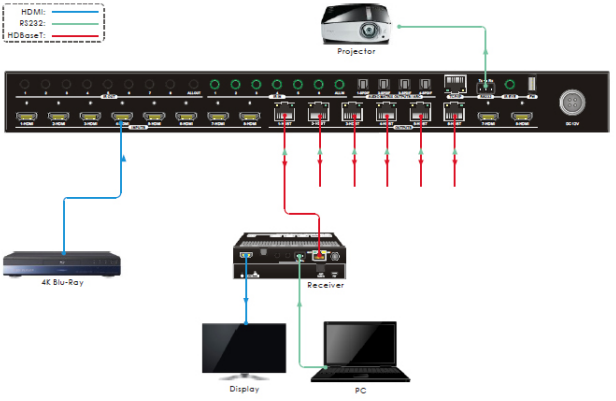


Figure 13: Local 3rd Party from Remote PC RS232 Control

RS232 Control Software

Works with most serial command and monitoring software such as CommWatch.

- Download CommWatch or the serial command software of your choice
- Installation: Copy the control software files and paste them to the hard drive of your PC
- Uninstallation: Delete all control software files from the PC

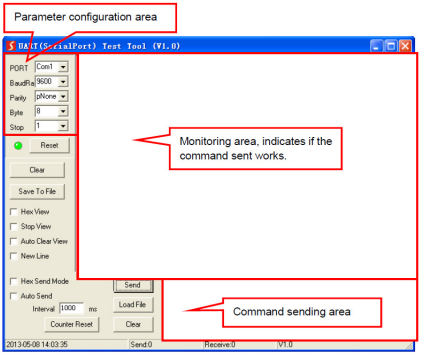
Basic Settings

1. Connect all input and output devices as needed, then connect the PC to the Matrix Switcher.
2. Double click the software icon to run the control software. The icon is shown below.

The examples shown on this page and the following page are from CommWatch serial command software.

Control Software Interface

Set the COM port, Baud rate, data bit, stop bit, and parity. Enter commands into the Command Sending Area.



RS232 Commands

Default settings: Baud rate: 9600, Data bit: 8, Stop bit: 1, Parity bit: none.

Notes:

- In Commands column, "["and"]" are included for easy reading and do not need to be typed in the actual command string
- End the command string with the ending symbols "." or ","
- Type carefully, the commands are case sensitive

System Settings

Command	Description	Command Example and Response
PowerON.	Power on system.	Power ON! HDBT 01 Power ON! HDBT 02 Power ON! HDBT 03 Power ON! HDBT 04 Power ON! HDBT 05 Power ON! HDBT 06 Power ON! Front Panel UnLock!
PowerOFF.	Power off system.	Power OFF!
/*Name.	Report the system name.	MUH88E-H2
/*Type.	Report system model.	HDBaseT Matrix
/*Version.	Report firmware version and video driver version.	V1.0.0 CPLD:V1.0.0 VideoDriverVersion:V1.0.0
RST.	Factory reset.	Factory Default! System Initialization..... HDBaseT Matrix MUH88E-H2 V1.0.0 Power ON! ... ...
Lock.	Lock front panel buttons.	Front Panel Locked!
Unlock.	Unlock front panel buttons.	Front Panel UnLock!
GetGuiIP.	Report GUI IP.	GUI_IP:192.168.0.178!

System Settings Continued

Command	Description	Command Example and Response
SetGuiIP:xxx.xxx.xxx.xxx.	Set GUI IP to xxx.xxx.xxx.xxx.	SetGuiIP:192.168.0.178!
Baudrate115200.	Set the baud rate of switcher to 115200.	Set Local RS232 Baudrate Is 115200!
Baudrate57600.	Set the baud rate of switcher to 57600.	Set Local RS232 Baudrate Is 57600!
Baudrate38400.	Set the baud rate of switcher to 38400.	Set Local RS232 Baudrate Is 38400!
Baudrate19200.	Set the baud rate of switcher to 19200.	Set Local RS232 Baudrate Is 19200!
Baudrate9600.	Set the baud rate of switcher to 9600.	Set Local RS232 Baudrate Is 9600!
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!
PHDBT[XX]:ON	Turn on PoC for HDBT output [XX]. [XX]=00~06. The "[XX]=00" represents all HDBT outputs.	PHDBT00:ON HDBT 01 Power ON! HDBT 02 Power ON! HDBT 03 Power ON! HDBT 04 Power ON! HDBT 05 Power ON! HDBT 06 Power ON!
PHDBT[XX]:OFF.	Turn off PoC for HDBT output [XX]. [XX]=00~06. . The "[XX]=00" represents all HDBT outputs.	HDBT 01 Power OFF! HDBT 01 Power OFF! HDBT 02 Power OFF! HDBT 03 Power OFF! HDBT 04 Power OFF! HDBT 05 Power OFF! HDBT 06 Power OFF!
STA_PHDBT.	Report the PoC status of HDBT outputs.	HDBT Power ON!
RS232RCM[XX]ON.	Enable the RS232 remote-control mode for HDBT output [XX] that the matrix switcher can be controlled from remote PC. [XX]=00~06. 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

System Settings Continued

Command	Description	Command Example and Response
		ON! RS232 Remote 05 Control MCU ON! RS232 Remote 06 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]=00~06. The "[XX]=00" represents all HDBT outputs.	RS232RCM00OFF. RS232 Remote 01 Control MCU OFF! RS232 Remote 02 Control MCU ON! RS232 Remote 03 Control MCU ON! RS232 Remote 04 Control MCU ON! RS232 Remote 05 Control MCU ON! RS232 Remote 06 Control MCU ON
STA_RS232RCM.	Report the RS232 remote-control mode status.	RS232 Remote 01 Control MCU OFF! RS232 Remote 02 Control MCU ON! RS232 Remote 03 Control MCU ON! RS232 Remote 04 Control MCU ON! RS232 Remote 05 Control MCU ON! RS232 Remote 06 Control MCU ON
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]=00~06. The "[XX]=00" represents all HDBT outputs.	IRRCM00ON. IR Remote 01 Control MCU ON! IR Remote 02 Control MCU ON! … … IR Remote 06 Control MCU ON!
IRRCM[XX]OFF.	Disable the IR remote-control mode for HDBT output [XX] that the matrix	IRRCM00OFF. IR Remote 01 Control MCU

System Settings Continued

Command	Description	Command Example and Response
	switcher cannot be controlled by the IR remote at the far-end HDBaseT receivers' position. [XX]=00~06. The "[XX]=00" represents all HDBT outputs.	OFF! IR Remote 02 Control MCU OFF! … … IR Remote 06 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! IR Remote 05 Control MCU ON! IR Remote 06 Control MCU ON!
@OUT[XX].	Turn on output [XX]. [XX]=00~08. The "[XX]=00" represents all outputs.	@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.	$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.	Report all system status.	GUI Or RS232 Query Status: HDBaseT Matrix MUH88E-H2 V1.0.0 Power ON! ……
STA_POUT.	Report the on/off status of all outputs.	Turn ON Output 01! Turn ON Output 02! Turn ON Output 03!

System Settings Continued

Command	Description	Command Example and Response
		Turn ON Output 04! Turn ON Output 05! Turn ON Output 06! Turn ON Output 07! Turn ON Output 08!
STA_IN.	Report the connection status of all HDMI input ports.	IN 1 2 3 4 5 6 7 8 LINK Y Y Y N Y Y Y Y
STA_OUT.	Report the connection status of all HDMI and HDBT outputs.	OUT 1 2 3 4 5 6 7 8 LINK Y N Y Y Y Y Y Y

Signal Switching

Command	Description	Command Example and Response
OUT[XX]:[YY].	Switch video input [YY] to video output [XX]. [XX]=00~08, [YY]=01~08. The "[XX]=00" represents all outputs.	OUT01:03. Output 01 Switch To In 03! Local 03 IR Out Switch To Remote 01 IR IN!
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 04! Output 04 Switch To In 01! Output 05 Switch To In 03! Output 06 Switch To In 06! Output 07 Switch To In 04! Output 08 Switch To In 07!
IR[XX]:[YY].	Switch far-end IR IN [YY] to local IR OUT [XX]. [XX]=01~08, [YY]=00~06. 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 OFF! Local 01 IR Out Switch To Remote 01 IR IN! Local 01 IR Out Switch To Remote 02 IR IN! Local 01 IR Out Switch To Remote 03 IR IN! Local 01 IR Out Switch To Remote 04 IR IN!

Signal Switching Continued

Command	Description	Command Example and Response
		Local 01 IR Out Switch To Remote 05 IR IN! Local 01 IR Out Switch To Remote 06 IR IN!
PresetSave[XX].	Store the current switching status to present [XX]. XX=01~09.	PresetSave09. Preset 09 Save Success! Preset 09 Sta: Out 01 In 01! Out 02 In 04! Out 03 In 05! Out 04 In 04! Out 05 In 06! Out 06 In 03! Out 07 In 06! Out 08 In 08!
PresetRecall[XX].	Recall present [XX]. [XX]=01~09.	PresetRecall09. Preset 09 Recall: Output 01 Switch To In 01! Output 02 Switch To In 04! Output 03 Switch To In 05! Output 04 Switch To In 04! SPDIF Out 03 Switch To Video Out 04! Output 05 Switch To In 06! Output 06 Switch To In 03! Output 07 Switch To In 06! Output 08 Switch To In 08!
PresetSta[XX].	Report the preset [XX]. [XX]=01~09.	PresetSta06. Preset 06 Sta: Out 01 In 01! Out 02 In 01! Out 03 In 03! Out 04 In 04! Out 05 In 03! Out 06 In 03! Out 07 In 06! Out 08 In 05!

Audio Settings

Command	Description	Command Example and Response
SPDIF[XX]:[YY].	Select audio source [YY] for SPDIF audio output [XX]. [XX]=00~08, The "[XX]=00" represents all SPDIF audio outputs. [YY]=01~22. [YY]=01~08, Audio on Input 1~8. [YY]=09~16, Audio on Output 1~8. [YY]=17~22, ARC on Output 1~6.	SPDIF01:04. SPDIF Out 01 Switch To Video In 04!
STA_SPDIF.	Report SPDIF audio status.	SPDIF Out 01 Switch To Video In 01! SPDIF Out 02 Switch To ARC 03! SPDIF Out 03 Switch To Video Out 04! SPDIF Out 04 Switch To ARC 06!

EDID Management

Command	Description	Command Example and Response
EDIDMInit.	Reset factory default EDID to all input ports.	All Input EDID Set Default!
EDIDUpgrade[XX].	Upgrade the EDID data of the input port [XX]. [XX]=00~08, U. [XX]=00, represents all inputs. [XX]=01~08, represents HDMI input 1~8. [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 sucoessfully.	EDIDUpgrade01. EDIDUpgradeU. 256 9600bps Input XX/User Define EDID Upgrade OK By RS232 Or GUI!
EDID/[XX]/[YY].	The input [XX] recall the embedded EDID	EDID/03/01.

EDID Management Continued

<table>
<tr><th>Command</th><th>Description</th><th>Command Example and Response</th></tr>
<tr><td></td><td>[YY]. [XX]=00~08. The "00" represents all inputs. [YY]=01~09.
<table>
<tr><td>[YY]</td><td>EDID</td></tr>
<tr><td>01</td><td>1920x1080@60 8bit Stereo</td></tr>
<tr><td>02</td><td>1920x1080@60 8bit High Definition Audio</td></tr>
<tr><td>03</td><td>3840x2160@30Hz 8bit Stereo Audio</td></tr>
<tr><td>04</td><td>3840x2160@30Hz Deep Color High Definition Audio</td></tr>
<tr><td>05</td><td>3840x2160@60Hz 4:2:0 Deep Color Stereo Audio</td></tr>
<tr><td>06</td><td>3840x2160@60Hz Deep Color Stereo Audio</td></tr>
<tr><td>07</td><td>3840x2160@60Hz Deep Color High Definition Audio</td></tr>
<tr><td>08</td><td>3840x2160@60Hz Deep Color HDR LPCM 6CH</td></tr>
<tr><td>09</td><td>User-defined EDID</td></tr>
</table></td><td>Input 03 EDID Upgrade OK By 01 Internal EDID!</td></tr>
<tr><td>EDIDGOUT[XX].</td><td>Report the EDID data from output [XX]. [XX]=01~08.</td><td>EDIDGOUT04.
.....</td></tr>
<tr><td>EDIDM[XX]B[YY].</td><td>Copy the EDID data of output [XX] to input [YY]. [XX]=01~08, [YY]=00~08. [YY]=00, represents all inputs.</td><td>EDIDM04B01.
Input 01 EDID Upgrade OK By 04 EXT EDID!</td></tr>
<tr><td>EDIDSTA[XX].</td><td>Report the EDID status of input [XX]. [XX]=00~08. The "[XX]=00" represents all inputs.</td><td>EDIDSTA00.
Input 01 EDID From 01 Internal EDID!
Input 02 EDID From 02 Internal EDID!
… …
Input 07 EDID From 06 Internal EDID!
Input 08 EDID From User Define EDID!</td></tr>
</table>

HDCP Setting

Command	Description	Command Example and Response
HDCP[XX]MAT.	The HDCP content of output [XX] follows the HDCP version of display device. [XX]=00~08. The "[XX]=00" represents all outputs.	HDCP00MAT. OUT 01 HDCP MAT Display! OUT 02 HDCP MAT Display! OUT 01 HDCP MAT Display! OUT 02 HDCP MAT Display! OUT 03 HDCP MAT Display! OUT 04 HDCP MAT Display! OUT 05 HDCP MAT Display! OUT 06 HDCP MAT Display! OUT 07 HDCP MAT Display! OUT 08 HDCP MAT Display!
HDCP[XX]PAS.	Set the HDCP mode of output [XX] to **Passive**. The HDCP content of output [XX] automatically follows the HDCP version of source device. [XX]=00~08. The "[XX]=00" represents all outputs.	HDCP00pAS. OUT 01 HDCP PASSIVE! OUT 02 HDCP PASSIVE! OUT 03 HDCP PASSIVE! OUT 04 HDCP PASSIVE! OUT 05 HDCP PASSIVE! OUT 06 HDCP PASSIVE! OUT 07 HDCP PASSIVE! OUT 08 HDCP PASSIVE!
HDCP[XX]BYP.	Set the HDCP mode of output [XX] to **Active**. If the input video has HDCP content, the HDCP version of HDMI output is HDCP 1.4 for broader video solution. If the input video has no HDCP content, the HDMI output has no HDCP too. [XX]=00~08. The "[XX]=00" represents all outputs.	HDCP00BYP. OUT 01 HDCP BYPASSS! OUT 02 HDCP BYPASSS! OUT 03 HDCP BYPASSS! OUT 04 HDCP BYPASSS! OUT 05 HDCP BYPASSS! OUT 06 HDCP BYPASSS! OUT 07 HDCP BYPASSS! OUT 08 HDCP BYPASSS!
STA_HDCP.	Report the HDCP mode of all outputs.	OUT 01 HDCP PASSIVE! OUT 02 HDCP PASSIVE!
Command	**Description**	**Command Example and Response**
		OUT 03 HDCP MAT DISPLAY! OUT 04 HDCP BYPASS! OUT 05 HDCP PASSIVE! OUT 06 HDCP PASSIVE! OUT 07 HDCP PASSIVE! OUT 08 HDCP PASSIVE!

3rd Party Device Control

Command	Function	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]=01~06" represents the HDBT output 1~6.	/+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.
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]=01~06" represents the HDBT output 1~6.	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-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]=01~06" represents the HDBT output 1~6.	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.

CEC Control

When input source(s), HDBaseT and HDMI output devices supports CEC, they can be controlled by RS232 commands.

Command Line

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

- **[I/O] "I"** represents the input port. **"O"** represents the output port
- **[AA]** represents the port number. HDMI inputs are 01-08. HDBaseT outputs are 01-06. Local HDMI outputs are 07-08. "**FF**" sends the command to all inputs or outputs
- **[BB]** represents device type (e.g. TV: 40/20/80; BluRay DVD: 04/08)
- **[CC]** represents function type (e.g. Remote control: 44)
- **[DD]** represents specific commands from tables below

Control 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!

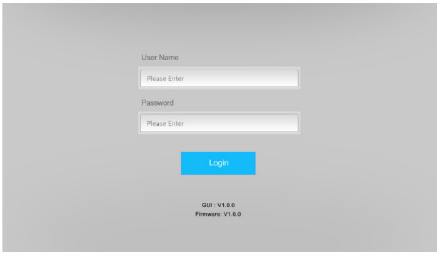
CEC Control Continued

Control 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!
CECO[AA][BB]36.	Input source selection	CECO05804434

GUI Control

The Matrix comes with built-in GUI for convenient TCP/IP control. Open the GUI by typing 192.168.0.178 in your browser and the login interface, as shown below, will open. Type in the username: admin and password: admin, then click Login to enter the GUI.



Switching Tab

Use the 8x8 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 1 column, directs input 1 to output 1.

Use the 6 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.

Audio Tab

- There are twenty-two audio sources can be selected for four digital SPDIF output ports.

Audio Output Ports	Audio Sources		
	Input Breakout	Output Breakout	ARC
SPDIF 1	Audio on Input 1 Audio on Input 2	Audio on Output 1 Audio on Output 2	ARC on Output 1
SPDIF 2	Audio on Input 3 Audio on Input 4	Audio on Output 3 Audio on Output 4	ARC on Output 2 ARC on Output 3
SPDIF 3	Audio on Input 5 Audio on Input 6	Audio on Output 5 Audio on Output 6	ARC on Output 4 ARC on Output 5
SPDIF 4	Audio on Input 7 Audio on Input 8	Audio on Output 7 Audio on Output 8	ARC on Output 6

Configuration Tab

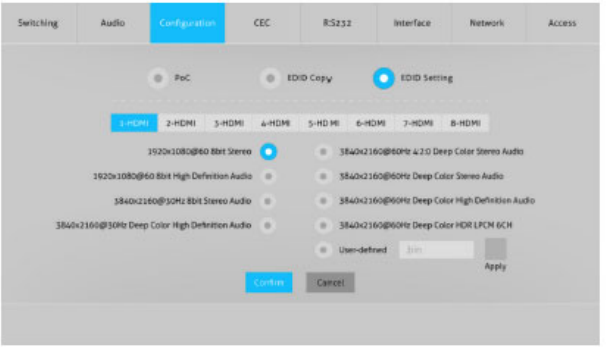
PoC Setting

- Turns on or off PoC for 1-HDBT to 6-HDBT output port

EDID Copy

- Copy the EDID of the selected output device to one or more source device(s)

EDID Setting



- Select the compatible built-in EDID for the selected input source.
- Upload user-defined EDID by the below steps:

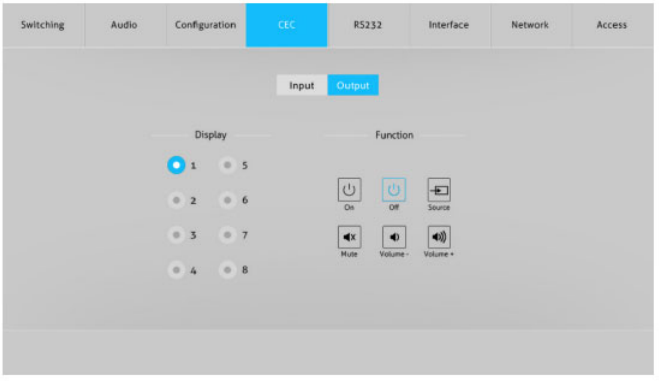
1) Prepare the EDID file (.bin) on the control PC.
2) Select the **User-defined**.
3) Click the box .bin, and then select the EDID file (.bin) according the tooltip.
4) Click **Apply** to upload the user-defined EDID, and then click **Confirm** to save setting.

CEC Tab

Input Device Control

- Select the input device to control, then press function button. **Note**: Two or more inputs can not be controlled simultaneously.

Display Device Control



- Select the display device to control, then press function button. **Note**: Two or more displays can not be controlled simultaneously.

RS232 Tab

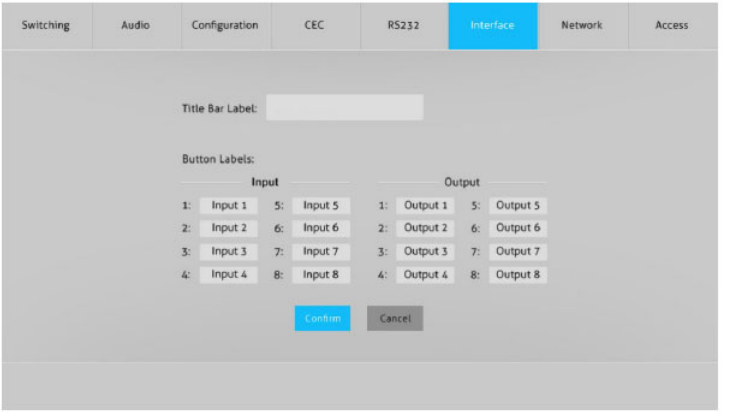
Local

- **Local:** The RS232 port of matrix switcher.
- **Baud Rate:** 9600
- **Command Ending:** NULL, CR, LF or CR+LF can be chosen.
- **Command:** Type the command in this box to control the third-party device which is connected to the RS232 port of the matrix switcher. If click the **HEX**, the RS232 commands can be typed with hexadecimal value.

HDBT

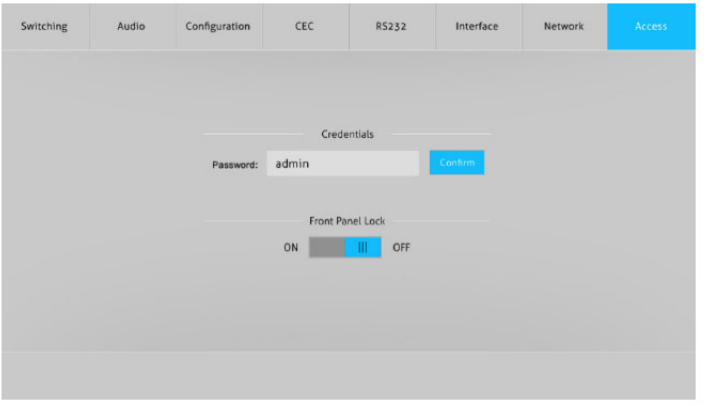
- **HDBT:** The RS232 port of far-end HDBaseT receiver.
- **Port:** Select one of HDBT ports which is conencted to HDBaseT receiver which must have third-party device attached.
- **Baud Rate:** Supports 2400, 4800, 9600, 19200, 38400, 57600 or 115200.
- **Command Ending:** NULL, CR, LF or CR+LF can be chosen.
- **Command:** 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.

Interface Tab



- Modify the title bar
- Modify the button labels

Access Tab



- Modify the login password
- Lock or unlock the front panel buttons

FAQ & Troubleshooting

Problems	Potential Causes	Solutions
Color losing or no video signal output	The connecting cables may not be connected correctly or it may be broken.	Check whether the cables are connected correctly and in working condition.
	Fail or loose connection.	Make sure the connection is good
No output image when switching	No signal at the input / output end.	Check with oscilloscope or multimeter if there is any signal at the input/ output end.
	Fail or loose connection.	Make sure the connection is good.
	Input source is with HDCP while the HDCP compliance is switched off.	Send command /%[Y]/[X]:1. or change HDCP compliance status in GUI.
	The display doesn't support the input resolution.	Switch for another input source or enable the display to learn the EDID data of the input.
Cannot control the device via front panel buttons	Front panel buttons are locked.	Send command /%Unlock; or select unlock in GUI interface to unlock.
Cannot control the device via IR remote	The battery has run off.	Change for new battery.
	The IR remote is broken.	Send it to authorized dealer for repairing.
	Beyond the effective range of the IR signal or not pointing at the IR receiver.	Adjust the distance and angle and point right at the IR receiver.
	The IR receiver connected to IR IN port is not with carrier.	Change for an IR receiver with carrier.
Power Indicator remains off when powered on	Fail or loose power connection.	Check whether the cables are connected correctly.

FAQ & Troubleshooting

EDID management does not work normally	The HDMI cable is broken at the output end.	Change for another HDMI cable which is in good working condition.
There is a blank screen on the display when switching	The display does not support the resolution of the video source.	Switch again.
		Manage the EDID data manually to make the resolution of the video source automatically compliant with the output resolution.
Cannot control the device by control device (e.g. a PC) through RS232 port	Wrong connection.	Check to ensure the connection between the control device and the unit
	Wrong RS232 communication parameters.	Type in correct RS232 communication parameters: Baud rate:9600; Data bit: 8; Stop bit: 1; Parity bit: none
	Broken RS232 port.	Send it to authorized dealer for checking.

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

Specifications

Matrix Switcher

Video Input	
Input	(8) HDMI
Input Connector	(8) Type-A female HDMI
HDMI Input Resolution	Up to 4K@60Hz 4:4:4, HDR
Video Output	
Output	(6) HDBT, (2) HDMI
Output Connector	(6) RJ45, (2) Type-A female HDMI
HDMI Output Resolution	Up to 4K@60Hz 4:4:4, HDR
HDBaseT Output Resolution	Up to 4K@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) Digital SPDIF audio
Output Connector	(4) Toslink connectors
Digital SPDIF Audio Format	Supports PCM, Dolby Digital, DTS, DTS-HD
Frequency Response	20Hz – 20kHz, ± 1dB
Max Output Level	± 0.05dBFS
THD+N	< 0.05%, 20Hz – 20kHz bandwidth, 1kHz sine at 0dBFS level (or max level)
SNR	> 90dB, 20Hz-20kHz bandwidth
Crosstalk Isolation	< -70dB, 10kHz sine at 0dBFS level (or max level before clipping)
Noise Level	-90dB
Control Part	
Control port	(1) FIRWARE, (6) IR IN, (1) IR ALL IN, (8) IR OUT, (1) IR ALL OUT, (1) IR EYE, (1) RS232, (1) TCP/IP
Control Connector	(1) Micro-USB, (17) 3.5mm jacks, (1) 3-pin terminal block, (1) RJ45
General	
Transmission Mode	HDBaseT
Transmission Distance	1080p ≤ 230 feet (70 meters), 4K@60Hz ≤ 131 feet (40 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	92W (Max)
Dimension (W*H*D)	436.4mm x 44mm x 385mm
Net Weight	4.87kg

HDBaseT Receiver

Video	
Input	(1) HDBT
Input Connector	(1) RJ45
Input Resolution	Up to 4K@60Hz 4:2:0
Output	(1) HDMI
Output Connector	(1) Type-A female HDMI
Output Resolution	Up to 4K@60Hz 4:4:4 8bit HDR10
Audio	
Input	(1) ARC Audio In
Input Connector	(1) Toslink Connector
Output	(1) Audio Breakout
Output Connector	(1) Toslink connector
Audio Format	Supports PCM, Dolby Digital, Dolby True-HD, DTS and DTS-HD.
Frequency Response	20Hz – 20kHz, ±3dB
Max Output Level	2.0Vrms ± 0.5dB. 2V = 16dB headroom above -10dBV (316mV) nominal consumer line level signal
THD+N	< 0.05% (-80dB), 20Hz – 20kHz bandwidth, 1kHz sine at 0dBFS level (or max level)
SNR	> 85dB, 20Hz-20 kHz bandwidth
Crosstalk Isolation	> 70dB, 10kHz sine at 0dBFS level (or max level before clipping)
L-R Level Deviation	< 0.3dB, 1kHz sine at 0dBFS level (or max level before clipping)
Frequency Response Deviation	< ± 0.5dB 20Hz - 20kHz
Output Load Capability	1KΩ and higher (Supports 10x paralleled 10KΩ loads)
Stereo Channel Separation	>70dB@1kHz
Control	
Control Part	(1) ARC Mode button, (1) FW, (1) IR In, (1) IR Out, (1) RS232
Control Connector	(1) Micro-USB port, (2) 3.5mm jacks, (1) 3-pin terminal block
General	
Bandwidth	18Gbps
HDMI Standard	2.0
HDCP Version	2.2, 1.4 compliant
CEC	Pass-through
Bidirectional PoC	Supported
HDMI 2.0 Cable Length	4K@60Hz 4:4:4 ≤ 5m, 4K@60Hz 4:2:0 ≤ 15m, 1080p ≤ 20m
Transmission Standard	HDBaseT
Transmission Distance	1080p@60Hz ≤ 230 feet (70 meters), 4K@60Hz ≤ 131 feet (40 meters)
Operation Temperature	-5℃ ~ +55℃
Storage Temperature	-25℃ ~ +70℃
Relative Humidity	10%-90%
Power Supply	Input:100V~240V AC; Output:12V DC 10A
Power Consumption	12W (Max)
Dimension (W*H*D)	40mm x 19.5mm x 84mm
Net Weight	290g

Disclaimer

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