

MS-HBT44B70
4×4 HDMI 18Gbps Over
HDBaseT Matrix

SEADA
Showing the World

User Manual

VER 1.1

Thank you for purchasing this product

For optimum performance and safety, please read these instructions carefully before connecting, operating or adjusting this product. Please keep this manual for future reference.

Surge protection device recommended

This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, lightning strikes, etc. Use of surge protection systems is highly recommended in order to protect and extend the life of your equipment.

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1. Introduction

The 4x4 HDBaseT Matrix supports the transmission of video (up to 4K2K@60Hz, 18Gbps, HDCP 2.2) and multi-channel digital audio from 4 HDMI sources to 3 HDBaseT-Lite outputs and 1 independent HDMI 2.0 output. It supports audio de-embedding from any one of 4 outputs (configurable). Any source can be selected it via on-panel button, IR remote control, RS-232, LAN or Web GUI.

2. Features

- ☆ HDMI 2.0b, HDCP 2.2 and HDCP 1.4 compliant.
- ☆ Up to 4K2K@60Hz (4:4:4) on all HDMI and HDBaseT ports.
- ☆ Supports pass-through audio up to 7.1 channels of High Definition audio (LPCM, Dolby TrueHD, and DTS-HD Master Audio).
- ☆ Digital and analog audio de-embedding from any one of 4 outputs (configurable).
- ☆ HDR and smart EDID management supported.
- ☆ 24V POC on all HDBaseT ports.
- ☆ Control is via on-panel Button, IR, RS-232, LAN and Web UI.
- ☆ Transmission distance: ※Over CAT6 cable
70 meters: 1080P @60Hz36bit;
40 meters: 1080P @60Hz@48bit; 1080P @120Hz@24bit;
4K2K@50/60Hz (YUV420), 4K2K@50/60Hz (YUV444).

3. Package Contents

- ① 1× 4×4 HDMI 18Gbps over HDBaseT Matrix
- ② 3× HDBaseT receivers
- ③ 2× Mounting Ears (Matrix)
- ④ 6× Mounting Ears (Receiver)
- ⑤ 4× Phoenix terminals (male)
- ⑥ 8× Wideband IR Receiver cables
- ⑦ 8× Wideband IR Blaster cables
- ⑧ 1× 24V/2.7A Locking Power Adaptor
- ⑨ 1× IR Remote control
- ⑩ 1× User Manual

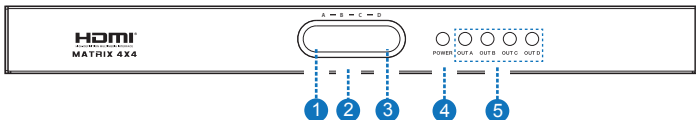
4. Specifications

Technical	
HDMI Compliance	HDMI 2.0b
HDCP Compliance	HDCP 2.2 and HDCP 1.4
Video Bandwidth	Up to 18Gbps
Video Resolution	Up to 4K2K@50/60Hz(YUV4:4:4), 4K2K@30Hz, 1080P@120Hz and 1080P 3D@60Hz
Color Space	RGB, YCbCr 4:4:4, YCbCr 4:2:2
Color Depth	10-bit, 12-bit
HDMI Audio Formats (Pass-through)	LPCM2/5.1/7.1CH, Dolby Digital, DTS 5.1, Dolby Digital+, Dolby TrueHD, DTS-HD Master Audio, Dolby Atmos, DTS:X
ESD Protection	Human-body Model: $\pm 8kV$ (Air-gap discharge) , $\pm 4kV$ (Contact discharge)
Connections	
Transmitter	Input Ports: 4×HDMI Type A (19-pin female) 6×IR IN (3.5mm Stereo Mini-jack) 1×RS-232 (Phoenix jack) 1×LAN (RJ45) Output Ports: 1×HDMI Type A (19-pin female) 3×HDBaseT (RJ45) 1×SPDIF (Optical) 1×L/R (3.5mm Stereo Mini-jack) 5×IR OUT (3.5mm Stereo Mini-jack)
Receiver	Input ports: 1×HDBaseT In [RJ45] 1×IR In [3.5mm Stereo Mini-jack] Output ports: 1×HDMI Type A [19-pin female] 1×IR Out [3.5mm Stereo Mini-jack] 1×RS-232 [Phoenix connector]
Mechanical	
Chassis Material	Metal
Silkscreen Color	Black
Dimensions	TX: 360mm (W)×160mm (D)×35mm (H) RX: 115mm(W)×65mm(D)×17mm(H)
Weight	TX: 1.9kg, RX: 206g
Power Supply	DC 24V/2.7A
Power Consumption	35W(max) / 1W (Standby)

Operating Temperature	0°C ~ 40°C / 32°F ~ 104°F
Storage Temperature	-20°C ~ 60°C / -4°F ~ 140°F
Relative Humidity	20~90% RH (non-condensing)

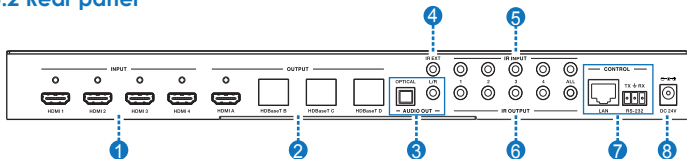
5. Operation Controls and Functions

5.1 Front panel



Number	Name	Function description
1	LED	When device is in standby mode, the LED light in red. LED is blanking when device is working normally.
2	Nixie tube	Displaying output port corresponding input source.
3	IR	IR receive window.
4	POWER button	Power on/off button.
5	OUTPUT button	A/B/C/D output channel button.

5.2 Rear panel



Number	Name	Function description	
1	HDMI INPUT	Connect to the HDMI source device, such as DVD player or Set top box.	
2	OUTPUT	HDMI	Connect to the HDMI display devices, such as TVs or Monitors.
		HDBaseT	Connect to HDBaseT receiver comes from the same package. Don't connect to a projector directly that built-in HDBaseT input port since 24V POC may destroy this projector.

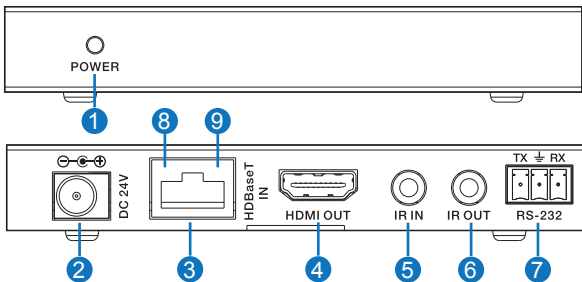
3	AUDIO OUTPUT	OPTICAL	Digital audio de-embedding output.
		L/R	Analog L/R audio de-embedding output.
4	IR EXT		If the front IR sensor of unit is obstructed or the unit is installed in a closed area out of infrared line of sight, the IR receiver included can be inserted into the IR EXT port at the rear to extend the IR sensor range and enable local of the matrix.
5	IR INPUT		IR receiver port, connect an IR receiver cable.
6	IR OUTPUT		IR blaster port, connect an IR blaster cable.
7	CONTROL	LAN	Connect to an active Ethernet link with an RJ45 terminated cable.
		RS-232	Connect to an PC or control system for control via a Phoenix terminal to transmit command.
8	Power port		Plug the 12V DC power supply into the unit and connect the adapter to AC wall outlet.

Notice : The following is the EDID schema table.

EDID mode	EDID description
1	720p, Stereo Audio 2.0
2	1080p, Stereo Audio 2.0
3	1080p, Dolby/DTS 5.1
4	1080p, HD Audio 7.1
5	1080i, Stereo Audio 2.0
6	1080i, Dolby/DTS 5.1
7	1080i, HD Audio 7.1
8	3D, Stereo Audio 2.0
9	3D, Dolby/DTS 5.1
10	3D, HD Audio 7.1
11	4K2K30_444, Stereo Audio 2.0
12	4K2K30_444, Dolby/DTS 5.1
13	4K2K30_444, HD Audio 7.1
14	4K2K60_420, Stereo Audio 2.0
15	4K2K60_420, Dolby/DTS 5.1

16	4K2K60_420,HD Audio 7.1
17	4K2K60_444,Stereo Audio 2.0
18	4K2K60_444,Dolby/DTS 5.1
19	4K2K60_444,HD Audio 7.1

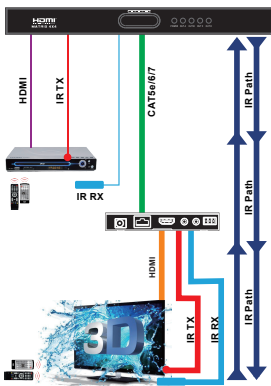
6. HDBaseT Receiver Panel



Number	Name	Function description
1	POWER	This LED illuminates when the device is connected with power supply.
2	DC 24V	Plug the 24V DC power supply into the unit. (If the device connect to the matrix, the receiver doesn't need local power supply due to POC from the matrix.)
3	HDBaseT IN	Standard HDBaseT signal input port. Connect to Matrix HDBaseT output with a UTP cable.
4	HDMI OUT	HDMI output port. This slot is where you connect the HDTV or monitor with HDMI cable.
5	IR IN	Channel 1 IR Receiver. Connect with Wideband IR Rx.
6	IR OUT	Channel 2 IR Transmitter. Connect with Wideband IR Tx.
7	RS-232	Connect to a PC or control system with phoenix jack for transmission of RS-232 commands.

8	Connection Signal Indicator Lamp	<ul style="list-style-type: none"> ※ Illuminate: The Transmitter and Receiver are in good connection status. ※ Flashing: The Transmitter and Receiver are in poor connection status. ※ Dark: The Transmitter and Receiver are not connected.
9	Data Signal Indicator Lamp	<ul style="list-style-type: none"> ※ Illuminate: The HDMI signal with HDCP. ※ Flashing: The HDMI signal without HDCP. ※ Dark: No HDMI signal.

7. IR Control system (IR Call-back of Matrix and Source Devices)

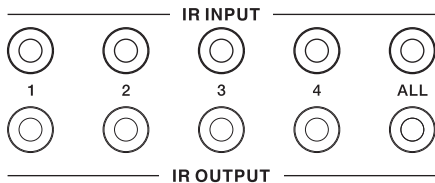


The matrix is not only a switcher and extender of multiple HDMI signals to multiple HDMI receivers located remotely, it also passes IR control signals through the IR call-back system to the matrix and HDMI sources for full, independent control of all connected inputs from output locations.

Two-way IR Call-back Between matrix, Sources and displays from multiple locations.

A key feature on the matrix is discrete IR control of the matrix, sources and displays from any location – so inputs at the matrix end can be controlled at a display location and displays can

be controlled at the matrix location. This is accomplished by placing a series of IR Emitters on devices to control and IR Receivers at all locations you wish to control from to enable the IR signal to travel both ways via the single Cat5e/6/7 cable.



IR control is divided into two kind of control ways as below.

Insert the 3.5mm IR receiver cable into IR INPUT ports at the rear of the matrix. At the same time, insert the 3.5mm IR blaster cable into IR OUTPUT ports at the rear of the matrix. At the display, the user connect HDBT Receiver device at the matrix HDBaseT ports. Afterwards, insert the 3.5mm IR receiver cable and IR blaster cable to the HDBT Receiver device.

① At Matrix end: When the user control the output device by remote control. The matrix IR INPUT and the HDBT IR output is match. The way of IR control is following video switch to change. The mean is that the HDMI source is switched to the HDBT receiver display device output, the IR control will switch to following output select corresponding input source.

② At display end: The matrix has one location HDMI output and three HDBT outputs. The location HDMI output has not IR control function. The three HDBT outputs connect HDBT receiver. The HDBT IR INPUT and the matrix IR OUTPUT is match. The way of IR control is following video switch to change. The mean is that the output select corresponding input source, the IR control will switch to following output select corresponding input source.

Attention: The matrix has one location HDMI output. If the HDMI input source is switched to the one location HDMI output, the HDMI output end has not control the matrix through IR.

The function of the IR "ALL" port is control about one to all port.

IR Pin Definition

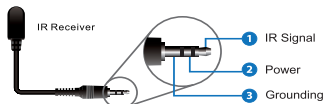
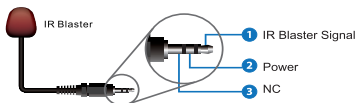
IR Receiver and Blaster pin's definition as below:



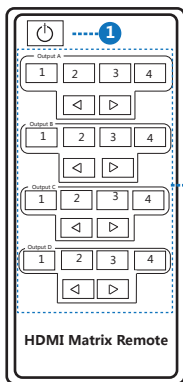
IR RECEIVER



IR BLASTER



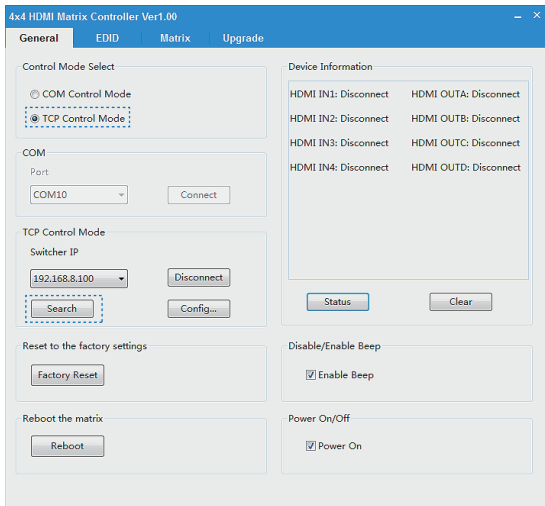
8. Remote control



- ① Press this button to open the power of the matrix or set it as a standby status.
- ② Press these keys to select the output A, output B, output C or output D for output corresponding 1, 2, 3 or 4 input source.

9. Web GUI User Guide

The Matrix can be controlled via Web GUI through LAN port. You must know current Matrix IP address. The static IP address is 192.168.1.100. You can connect PC Web GUI through dynamic IP address. In this unit, you can get the IP address via PC Controller. Firstly, opening Matrix PC Controller software, as following page:



Then select the “TCP Control Mode” port, click the “Search” button. At this moment, you can get current IP address. You can set the IP address to your PC/laptop/mobile Internet Explorer and click “Search” to enter Web GUI page. The Web GUI likes below:

General page

The screenshot shows the 'General' tab of a control interface. It features a 'Connection Status' section with two tables: 'Input' and 'Output'. Each table has four columns labeled 1, 2, 3, and 4. The 'Input' table shows 'Yes' for columns 1 and 2, and 'No' for columns 3 and 4. The 'Output' table shows 'Yes' for columns 1 and 2, and 'No' for columns 3 and 4. To the right of these tables are two toggle switches: 'Power' (turned on) and 'Beep' (turned on). Below the switches are two red buttons: 'Reboot' and 'Factory Reset'. Numbered callouts 1 through 5 point to the connection status tables, the Power switch, the Beep switch, the Reboot button, and the Factory Reset button, respectively.

Connection Status				
	1	2	3	4
Input	Yes	Yes	No	No
Output	Yes	Yes	No	No

Power

Beep

Reboot

Factory Reset

- ① Display currently the Matrix input and output port status. The “yes” have connected input or output source and “no” represent not connection.
- ② Power switch. The Matrix will work when open this switch, otherwise, the Matrix will standby.
- ③ Beep switch. Open this switch, press the Matrix on-panel button will have voice. Close this switch, it will mute.
- ④ Click this button will reboot device.
- ⑤ Click this button will set to factory reset.

Control page

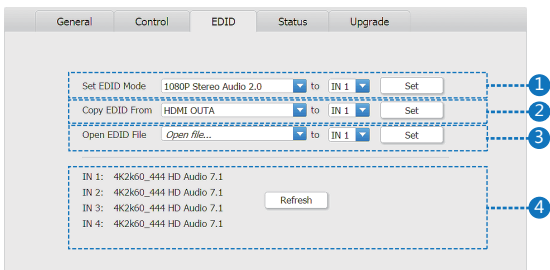
The screenshot shows the 'Control' tab of the interface. It features a matrix table for selecting input and output ports. The matrix has columns labeled 1, 2, 3, and 4, and rows labeled 1, 2, 3, and 4. The diagonal cells (1->1, 2->2, 3->3, 4->4) are highlighted in green. Below the matrix is an 'Audio Set' section with four options: A, B, C, and D. Option C is highlighted in green. Numbered callouts 1 and 2 point to the matrix and the Audio Set options, respectively.

OUT \ IN	1	2	3	4
1	1 -> 1	2 -> 1	3 -> 1	4 -> 1
2	1 -> 2	2 -> 2	3 -> 2	4 -> 2
3	1 -> 3	2 -> 3	3 -> 3	4 -> 3
4	1 -> 4	2 -> 4	3 -> 4	4 -> 4

Audio Set: A B C D

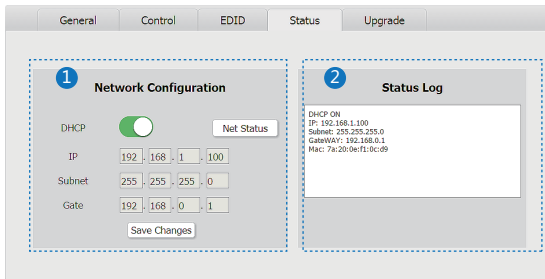
- ① Select the input source to the output port.
- ② Select the output port audio.

EDID page



- ① Set EDID mode to input source, then click “Set” button.
- ② Copy EDID from HDMI output port to input source, then click “Set” button.
- ③ Open EDID file to input source, then click “Set” button.
- ④ Click “Refresh” button to refresh currently EDID mode. It will display currently input source EDID mode status.

Status page



① Network Configuration

◆ In DHCP open status:

HDCP switch: Obtain the network configuration information, including IP address, Subnet, Gate. Then click “Save Changes” button to save DHCP status.

◆ In DHCP close status:

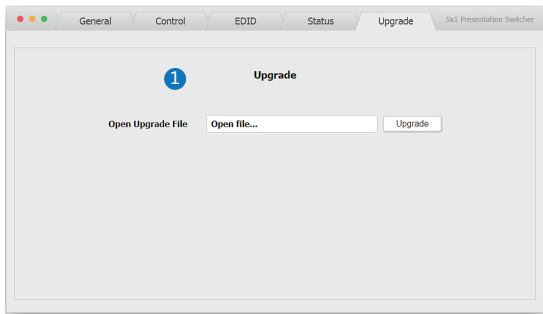
HDCP switch: If the DHCP switch has been closed, user can set IP, Subnet and Gate address. In this moment, click the “Save Change” button to save current status information. (Attention: If user have set the IP address, click the “Save Change” button. In this moment, user need set the IP address again to your PC/laptop/mobile Internet Explorer and click “Search” to enter Web GUI page.)

Net Status button: Press this button refresh current network configuration information to display in the status log.

In this unit, Mac address can check only, you can not set it.

② Display the network configuration information.

Upgrade page



① Open upgrade file to upgrade.

10. Application Example

