

ITEM NO.: HE04M 4 x 4 HDMI + HDBaseT Matrix Switcher

With the latest and more affordable HDBaseT technology extend HDMI sources up to 100M at 1080p or 1920x1200. HE04M HDMI 4 by 4 Matrix Switcher allows for effortless control of up to 4 devices through IR remote control, RS-232 and the front panel.



HE04M 4 x 4 HDMI (HDBaseT) Matrix Switcher

- ◆ 4 x HDMI inputs , 4 x HDMI Outputs Matrix switcher
- ◆ Dual Output: local HDMI port and remote RJ45 HDBaseT™
- ◆ Work with HE02ER, HE02R receiver at each monitor up to 100 meters over CAT5e/6.
- ◆ Work with HE02EIR receiver at each monitor up to 70 meters over CAT6a cable.
- ◆ Three control option: Front panel button, IR remote control, RS232 through remote PC.
- ◆ Support local/remote IR control to select input/output.
- ◆ Built in RS232 console port to select input/output.
- ◆ **Built 1 in 4 out IR distributor function, allow the HE04M control each monitor and also could be using the IR remote control to select the input source from the monitor side.**
- ◆ Uncompressed high definition video 1080p@60Hz 12 bit and 3D capable
- ◆ HDMI 1.4 video features supported, HDCP compliant.
- ◆ Built in 4 channel IR & RS232 extender (work with Receiver: HE02EIR, HE02ER,)
- ◆ Input/Output status could be displayed at front panel LCM & LED.

◆ **Optional Model:**

RC04 : 4 x 4 Keypad remote control (select HE04M input/output)

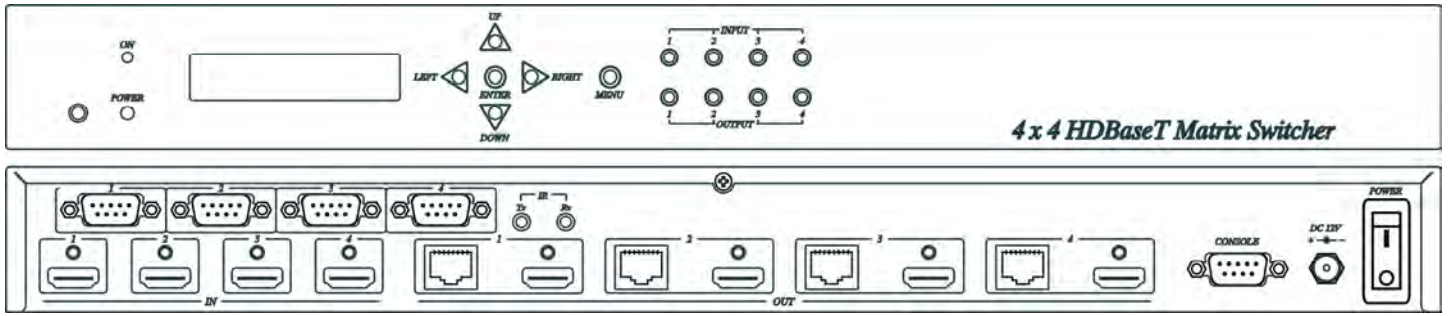


◆ **Optional CAT5E/CAT6 Receiver Model:**

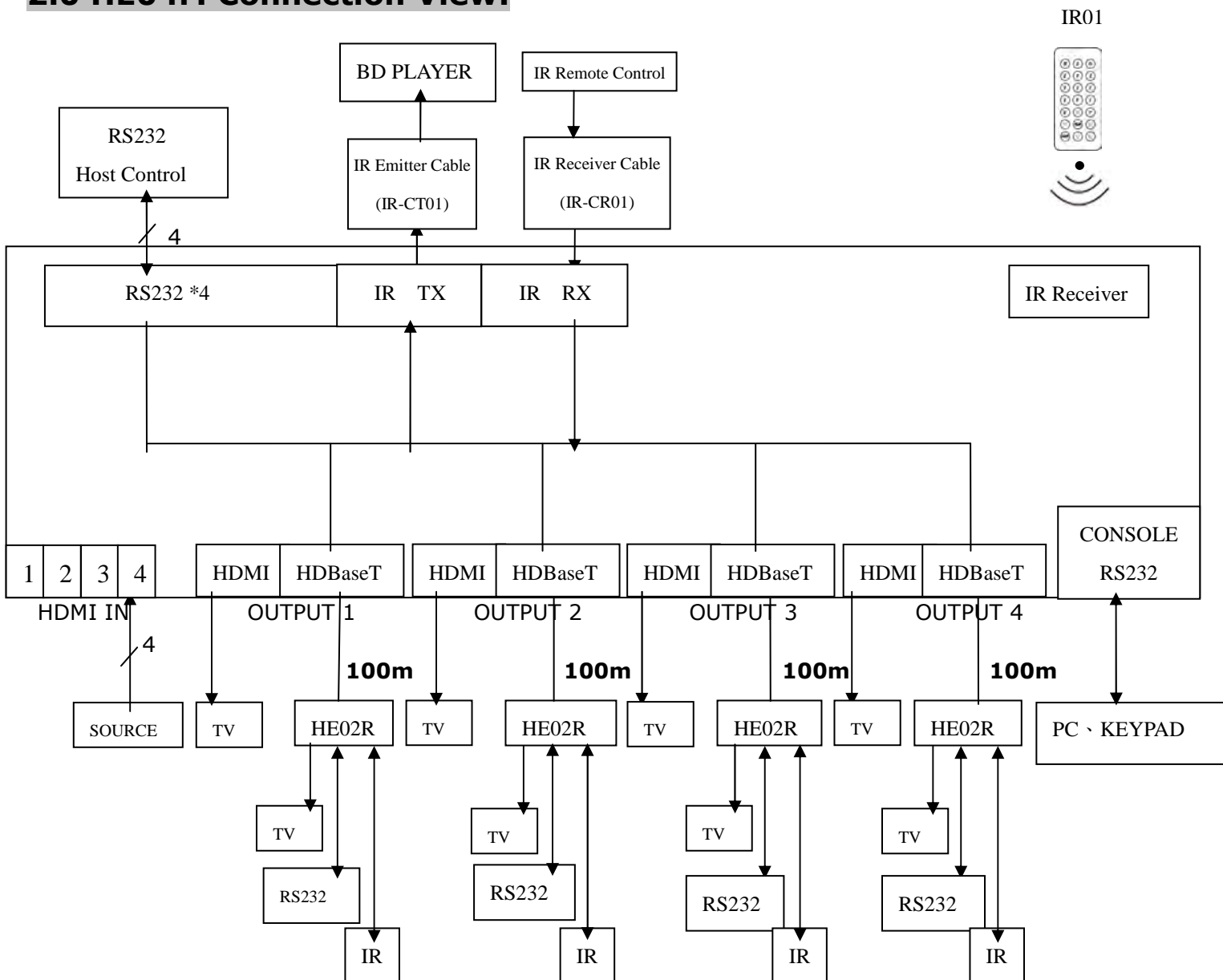
- HE02ER: 100m HDMI Receiver
- HE02R : 100m HDMI, bidirectional IR and RS232 Receiver
- HE02EIR: 70m HDMI and IR mono directional



1.0 HE04M Panel View:



2.0 HE04M Connection View:



*** Under dual Output connection: local HDMI port or remote RJ45 termination**
Once you link both HDMI & HDBaseT connection, the output will be effected HDMI port only.
For HDBaseT active output, you must disconnection HDMI output link.

3.0 Keypad and Leds

3.1 Back Panel Switch:

POWER	Light on	Power on
	Light off	Power off

3.2 Front LED Indication:

ON	BLUE	Power on
	RED	Standby
	LED off	Power Off
INPUT 1, 2, 3, 4	BLUE	Presence signal indication
	LED off	No signal incoming
OUTPUT 1, 2, 3, 4	BLUE	HDMI output indications
	RED	HDBaseT output indication
	LED off	Output unlink

3.3 Standby mode: The IR Remote only could control POWER on/off.

Front Button Function:

Power	Power on/standby
UP	up
DOWN	down
LEFT	left
RIGHT	right
ENTER	select confirm key
MENU	back to main menu

*When the sub-menu setting changed, press the ENTER key to complete the setting. If no press ENTER key, then the setting will be failed.

3.4 LCM Panel Function:

4X4 HDMI MATRIX: Power on Main Screen

When the power is on and the main screen appears, press the MENU key to enter the main menu

Main MENU Option:

* SWITCH SETTING

RS232 SETTING

IR TX SETTING

IR RX SETTING

HDBaseT IR ID

MATRIX IR ID

EDID

FIRMWARE VER.

KEYLOCK

Operation:

- Press UP or DOWN key to move * to select an item for setting and press ENTER key to enter into subpage.
- When the selected sub-page setting is completed, press the MENU button to return to the main page



4.0 LCM Main MENU Function Operation:

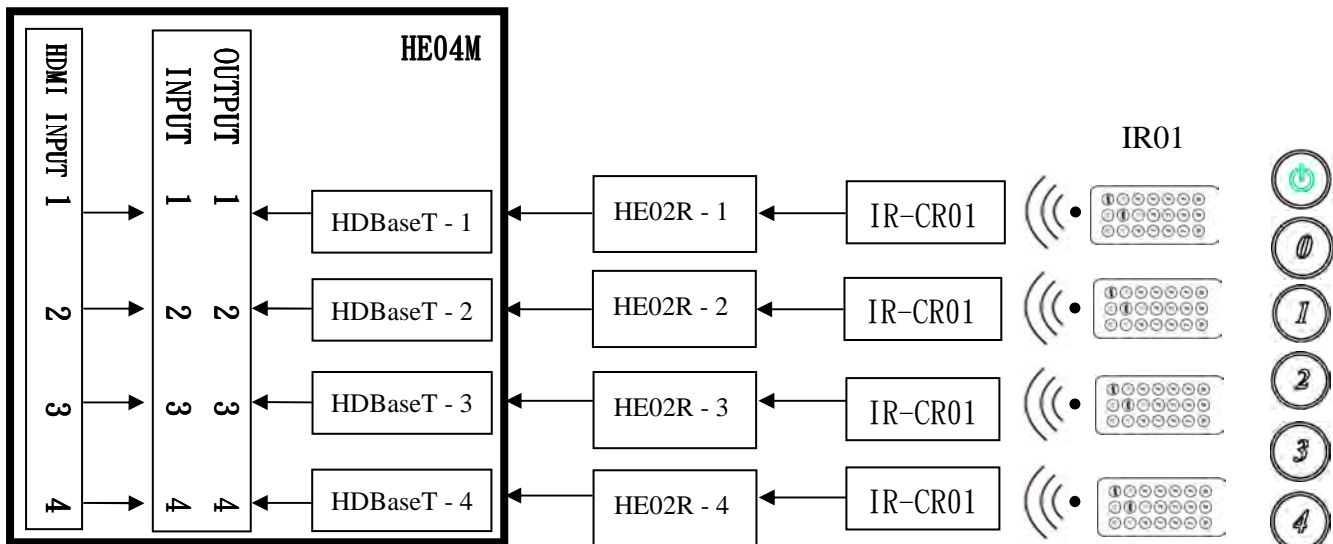
4.1 SWITCH SETTING : (Default: 1 2 3 4)

OUTPUT	1	2	3	4
INPUT	1	2	3	4

This function is used to switch the input/output port. Enter the SWITCH SETTING menu. Press the ENTER key, then the LCM second line INPUT 1 will flash. Press LEFT or RIGHT button to select the output to be modified. Then press UP or Down button to select the input port. After that, press ENTER to confirm setting.

At HDBaseT remote port you could use IR01 remote control to do a quick input selection

①~④ represent select HDMI input ports 1~4. Press  or  to turn off the video output. (See cap. 4.5 HDBaseT IR ID)

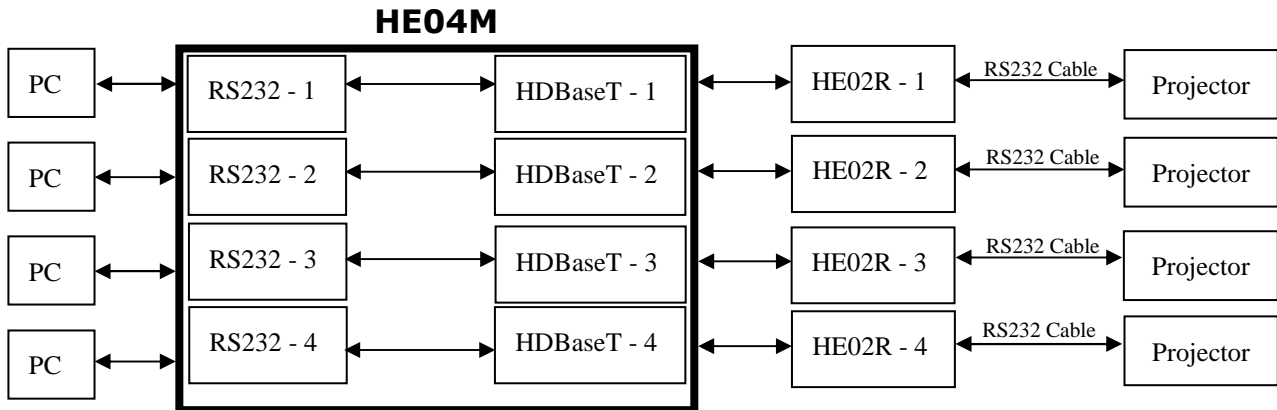


4.2 RS-232 SETTING : (Default: FIX MODE)

HDBaseT RS-232 extender function works in two mode. Enter RS-232 SETTING MENU, press ENTER. The * will flash, then press UP or DOWN button to select FIX MODE or MATRIX MODE. Press ENTER key to confirm setting.

- ◆ FIX MODE is one to one transmission, RS-232 port 1 only work with HDBaseT port 1, RS-232 port 2 only work with HDBaseT port 2, and so on...

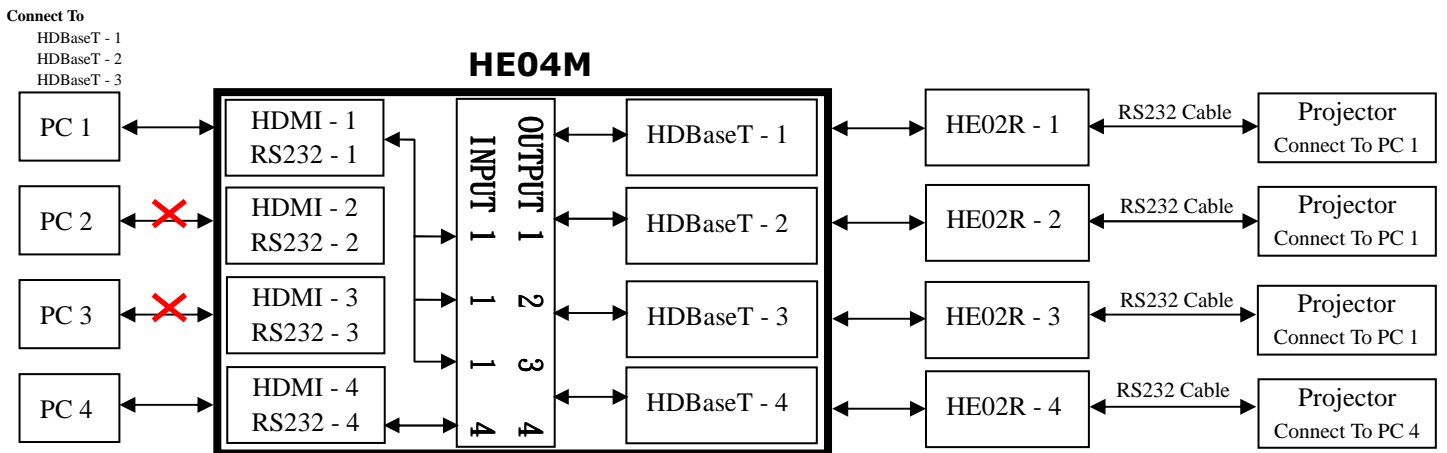
* FIX MODE
MATRIX MODE



RS-232 SETTING : FIX MODE

- ◆ RS-232 MATRIX MODE is based on the Status of the Matrix. The RS-232 transmission will follow the HDMI switching. In the example below, RS-232 port 1 work with HDBaseT port 1, 2 and 3. RS-232 port 4 works with HDBaseT port 4

FIX MODE
* MATRIX MODE



RS-232 SETTING : MATRIX MODE

4.3 IR TX SETTING (From matrix to remote locations): (Default IR TX: 0 0 0 0)

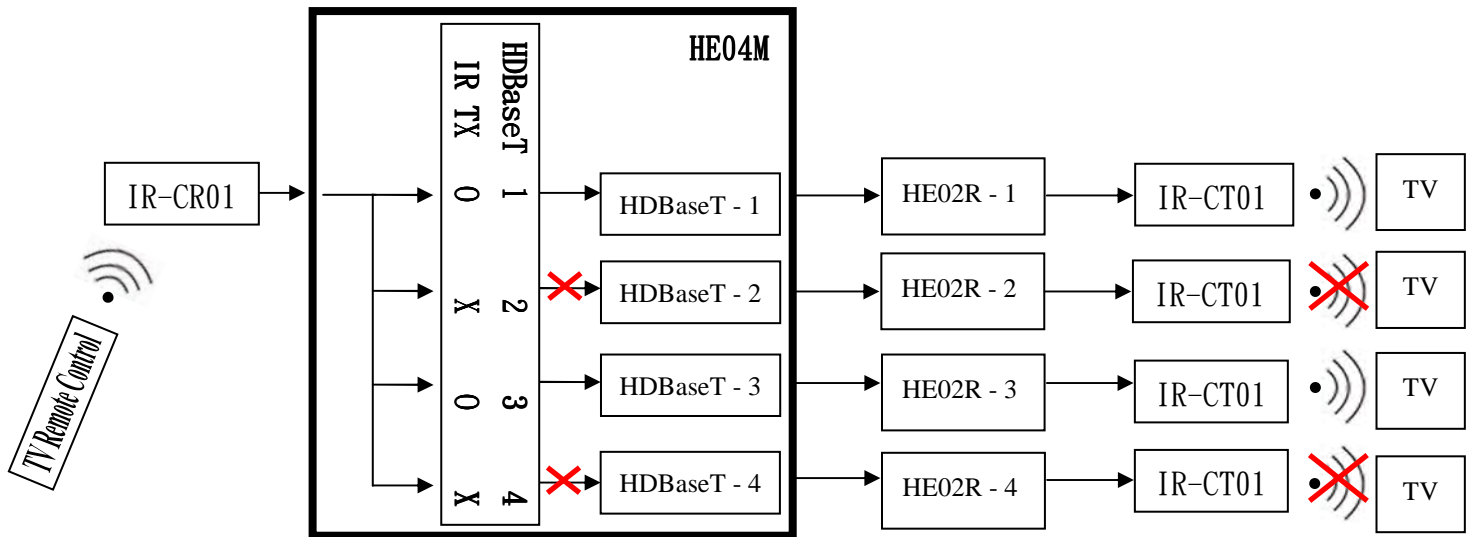
This function setup the IR signal whether from MATRIX, by IR Rx input jack, is sent to HDBaseT ports. Setting 0 the transmission is enabled, setting X transmission is off.

This is the typical application when the user wants to control from the matrix side the remote destination like a TV.

After entering IR TX SETTING menu, press ENTER. Then LCM second line of text will flash. Press RIGHT or LEFT button to select the IR TX output to be modified Press Press UP or DOWN button to select O or X. Then press ENTER to confirm setting.

HDBaseT	1	2	3	4
IR TX	0	X	0	X

0 : on **X : off**



4.4 IR RX SETTING : (Default IR RX: 0 0 0 0)

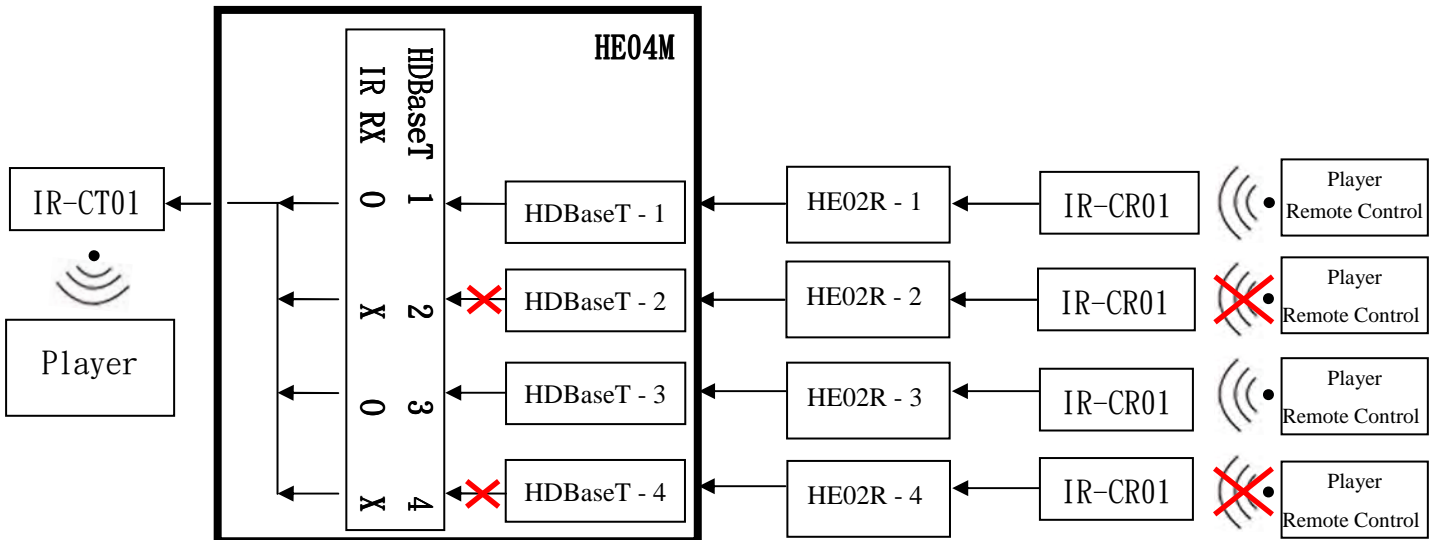
This function setup the IR signal whether from HDBaseT location is sent to MATRIX to control local device through the IR Tx output jack. Setting 0 the transmission is enabled, setting X transmission is off.

This is a typical application when the user wants to control from the remote location a source like a DVD player.

After entering IR RX SETTING menu, press ENTER. Then LCM second line of text will flash. Press RIGHT or LEFT button to select the IR RX input to be modified. Press UP or DOWN button to select 0 or X. Then press ENTER to confirm setting.

HDBaseT	1	2	3	4
IR RX	0	X	0	X

0 : on **X : off**



4.5 HDBaseT IR ID : (Default IR ID: 0 1 2 3)

HDBaseT	1	2	3	4
IR ID	0	1	2	3

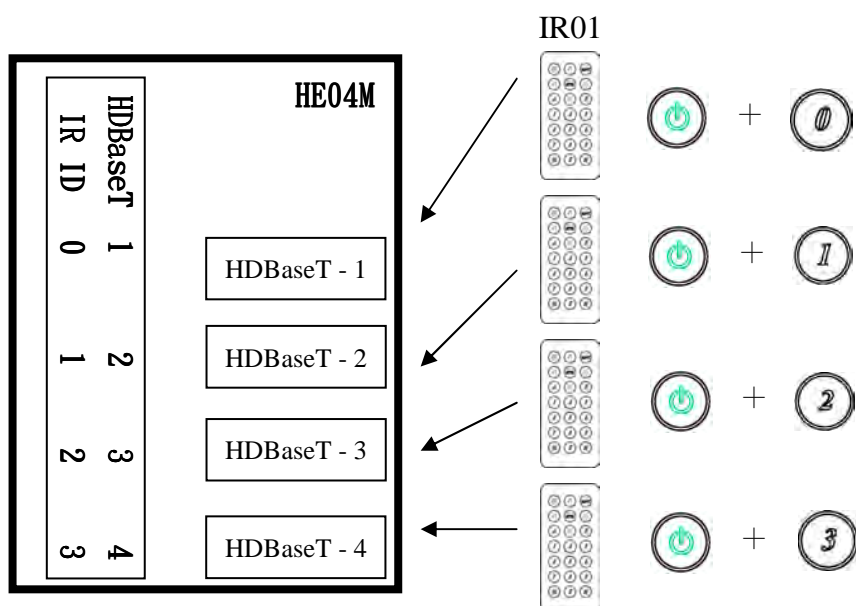
This function must be set to have different ID in order to avoid HDBaseT remote control IR01 conflicts with other devices remote control.

After entering HDBaseT IR ID menu, press ENTER. Then LCM second line of text will flash. Press RIGHT or LEFT button to select the IR ID input to be modified. Press UP or DOWN button to select the ID. Then press ENTER to confirm setting.

When you finish the HDBaseT IR ID setting, the HDBaseT remote controls IR01 must also be set with the **same ID** in order to perform the right operations. (See 5.2)

Remote IR ID setting mode: Press and hold the POWER button, then press the number button which can be set from 0 to 9, total 10 groups. (See 5.2)

These settings on IR01 remote control have to be done the first time you use the IR01 or when you change the batteries.



4.6 MATRIX IR ID : (Default IR ID: 4)

MATRIX IR ID 4

This function must be set to match the Matrix remote control IR01 with the matrix itself. Conflicts with other devices remote control is therefore avoided.

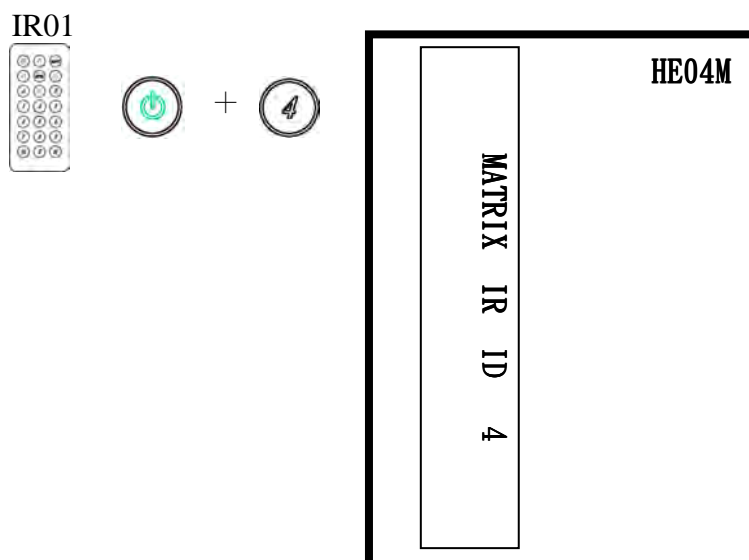
After entering MATRIX IR ID menu, press ENTER. Then the number representing the Matrix IR ID will flash. Press UP or DOWN button to select the number, then press ENTER to confirm.

When finish MATRIX IR ID setting, MATRIX remote control IR01 must also set the same ID in order to operation in normal.

When you finish the MATRIX IR ID setting, the remote control IR01 that will control locally the matrix, also is setted with the **same ID** in order to perform the right operations. (See 5.1)

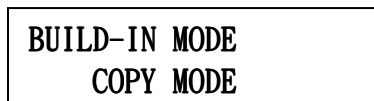
Remote IR ID setting mode: Press and hold the POWER button, then press the number button which can be set from 0 to 9, total 10 groups. (See 5.1)

These settings on IR01 remote control have to be done the first time you use the IR01 or when you change the batteries.



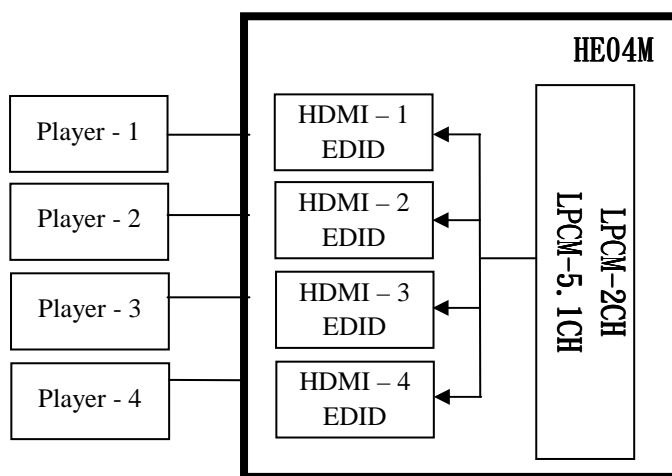
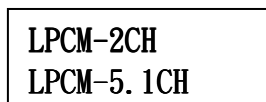
4.7 EDID : (Default: LPCM-2CH)

Because the player output display resolution will be based on TV EDID , this Matrix provides two default EDID mode: " BUILD-IN MODE" and "COPY MODE".



4.7.1 BUILD-IN MODE :

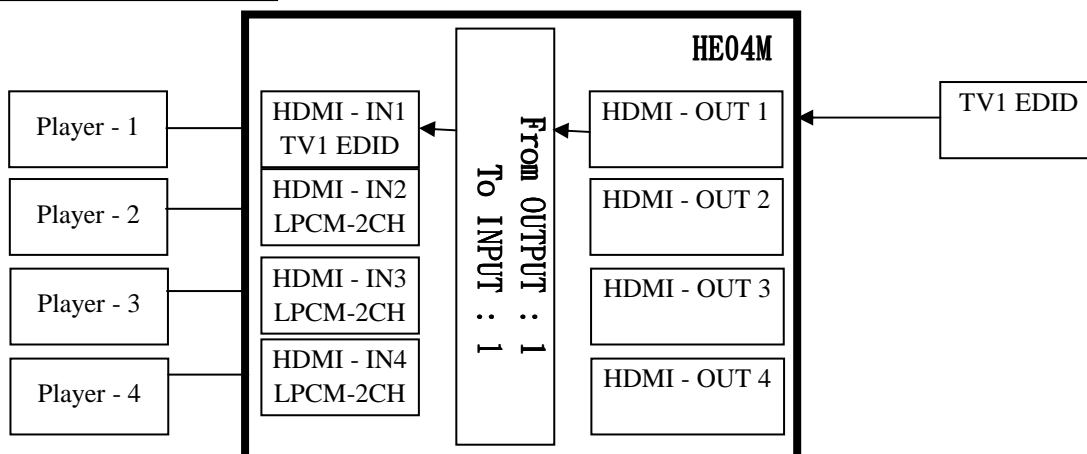
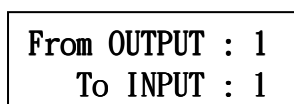
This mode supports video resolution 480p, 720p, 1080i / p at 24/50/60Hz, support LPCM two-channel audio and 5.1 channel . After enter BUILD-IN MODE menu, press UP or DOWN key to select LPCM-2CH or LPCM-5.1CH, then press ENTER to confirm setting.



4.7.2 COPY MODE :

To fully support the TV resolution and audio mode, the matrix provides "copy mode" to copy TV EDID for input source reference. When use the copy mode, recommend to copy the lowest resolution TV EDID. Otherwise it may cause no picture display if the TV resolution is not able to support higher resolution.

After entering COPY MODE menu, press UP or DOWN button to select the OUTPUT (1 to 4). Then press ENTER. Press UP or DOWN button to select the INPUT (1 to 4). Then press ENTER to confirm.



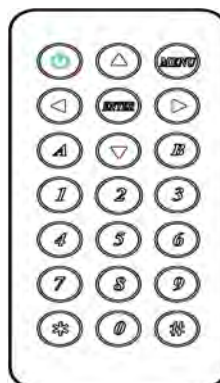
4.8 FIRMWARE VER. :

Display HE04M Matrix firmware version

4.9 KEYLOCK :

KEYLOCK function is to avoid any wrong button press. Under keylock mode press "POWER + MENU" to unlock

5.0 Remote Control Function (IR01):



5.1 To command the matrix locally, setup the remote control IR01 ID with the same code of the Matrix (see 4.6). The default code is 4. (Power+4)











5.2 To command from remote HDBaseT output which input port must be routed on the output, setup the remote control IR01 according to chapter 4.5

- Power+0 enable to work on Output 1
- Power+1 enable to work on Output 2
- Power+2 enable to work on Output 3
- Power+3 enable to work on Output 4

5.3 Warning: These settings have to be done the first time you use the IR01 or when you change the batteries.

- IR ID setup : press and hold POWER button , then press Number key

Remote control button define :

Symbol	Local Side	Remote Side	
	Power	ON/Standby(same as Matrix)	off output
	LEFT	left (same as Matrix)	no function
	RIGHT	right (same as Matrix)	no function
	UP	up (same as Matrix)	no function
	DOWN	down (same as Matrix)	no function
	ENTER	confirm (same as Matrix)	no function
	MENU	menu (same as Matrix)	no function
	Quick key1		select input 1
	Quick key2		select input 2
	Quick key3		select input3



Quick key4	select input4
no function	no function
no function	no function
no function	no function
no function	no function
no function	no function
turn off output	turn off output

Local side (HE04M Matrix) Remote control Quick key operation:

For example: to connect output port 1 to input port 4, press the quick key 1 (OUTPUT 1) and then press the quick key 4 (INPUT 4).

Remote side (HDBaseT) remote control quick key operation:

Press 1 to 4 to select the source input, press 0 to turn off the output.

* Under using quick key operation, LCM screen will jump to the output / input setting page, it won't allow to use the front panel button to operate the HE04M Matrix.

6.0 RS232 Computer Local Control Function : (CONSOLE)



6.1 Connect the RS232 CONSOLE port to the COM port of the host by a F/M RS232 straight cable (pin 2 to pin 2; pin 3 to pin 3, pin 5 to pin 5).

The Matrix communication format is 9600,8, N, 1 (9600 bps, 8 data bits, no parity check, 1 stop bit)

6.2 Operation Instruction format:

Command + Space + parameter + Enter

The Matrix will reply **OK** once string is correct, **NG** in case of incorrect string

TX[x] SP [y] is the string to switch on output x the input y
 PWR SP [z] is the string to put the matrix in Standby and On status

[SYMBOL]	[PARAMETER]	
x	1 2 3 4	Output 1 to 4
y	01 02 03 04 00	Input 1 to 4, 00: Off
z	00 01	00: Standby, 01: On

Example:

-To route input 4 to output 1, send the following string:

Command Input
 TX1 SP 04 Enter

-To route input 2 to output 3, send the following string:

Command Input
 TX3 SP 02 Enter

-To put in standby the matrix, send the following string:

Command
 PWR SP 00 Enter

Command are **case insensitive**. Be sure that your terminal after Enter (0D Hex) character doesn't send LF (0A). In this case, command will not be executed.

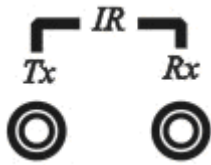
7.0 RS-232 Extender function : (Default: FIX MODE)



*Cable connection please refer to the connection view page.

* Transmission baud rate up to 115200 bps.

8.0 Remote side IR Extender Function:



◆ Tx Function:

Receiving IR signal via the 4 sets HDBaseT ports, it sends out the IR signal by Tx jack (connect with 3.5 mm IR Emitter) to control source device.

◆ Rx Function :

Feeding IR signal to Rx jack (connect 3.5 mm IR Receiver cable) it controls remote destinations at the 4 sets HDBaseT ports at the same time.

HDBaseT IR Function:

1. Use IR01 (remote control) to control the Matrix input port switching from receiver side. (Work with IR-CR01 IR receiver cable). See chap. 4.5
- 2 . Using remote control of source device or TV, to control source device or TV. (Work with IR-CT01 IR emitter cable, IR-CR01 IR receiver cable).

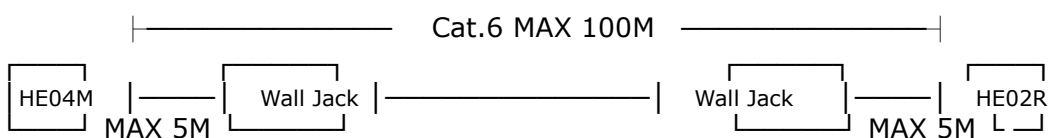
HDBaseT linking cable:

Recommend to use high quality Cat.5e 、 Cat.6 、 Cat.6a UTP / STP or FTP cable. AWG24 or AWG23 solid type is recommended.

HDBaseT transmission distance:

Transmission distances up to 100 meters with AWG24 cable. Using a lower resolution won't extend to longer distance.

If the CAT5e/6 cable connections go through wall socket from the wall outlet to HE02R receiver, the cable length must less 5 meters between HE02R receiver and wall socket. The wiring diagram as below:



9.0 HDBaseT RJ45 Pin Define:

Video Link (TIA/EIA-568-B)

1. Orange-white	DATA0 +
2. Orange	DATA0 -
3. Green-white	DATA1 +
4. Blue	DATA2 +
5. Blue-white	DATA2 -
6. Green	DATA1 -
7. Brown-white	DATA3 +
8. Brown	DATA3 -

Caution:

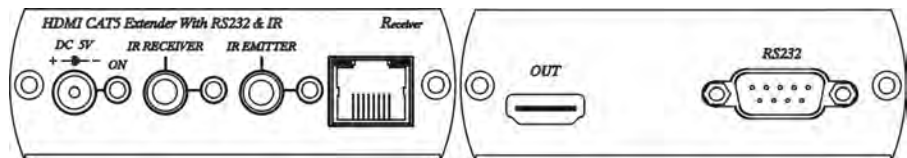
1. First time to use HE04M remote control or change new batteries, must set up IR ID.
2. The wiring must away from any equipment with electromagnetic wave, i.e.: microwave, mobile phone, radio equipment, high voltage, Fluorescent light fixtures, power lines, etc.
3. HDBaseT not regular network device, do not connect with any networking equipments to avoid damage.

HE04M Standard Package Include:

HE04M Matrix x 1 pcs
 IR01 IR Remote Control x 1 pcs
 IR Emitter Cable x 1 pcs
 IR Receiver Cable x 1 pcs
 Power Adapter x 1 pcs

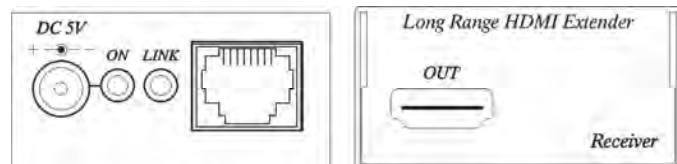
HE04MK Package Include:

HE04M Matrix x 1 pcs
 HE02R HDMI Receiver x 4 pcs
 IR01 IR Remote Control x 5 pcs
 IR Emitter Cable x 5 pcs
 IR Receiver Cable x 5 pcs
 Power Adapter x 5 pcs



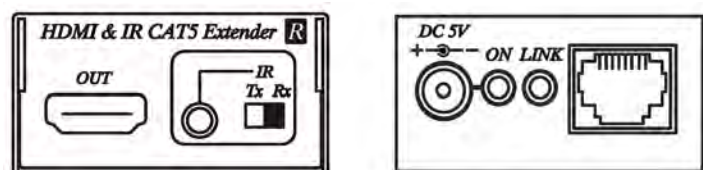
HE04MEK Package Include:

HE04M Matrix x 1 pcs
 HE02ER HDMI Receiver x 4 pcs
 IR01 IR Remote Control x 1 pcs
 Power Adapter x 5 pcs



HE04MEIK Package Include:

HE04M Matrix x 1 pcs
 HE02EIR HDMI Receiver x 4 pcs
 IR01 IR Remote Control x 5 pcs
 IR Emitter Cable x 1 pcs
 IR Receiver Cable x 4 pcs
 Power Adapter x 5 pcs



Specification:

Item No.	HE04M-2	
HDMI Input Max. Resolution	1080p @ 60Hz 12bit, 3D	
Video Input	HDMI Type A x 4	
HDBaseT RJ45 output Max. Resolution	1080p at 60Hz 12bit	
HDBaseT Max. Distance	100 Meters	
Video Output	HDMI Type A x 4 and RJ45 x4	
HDBaseT RJ45 output Max Distance	100 meters	
IR Input/Output	Phone Jack x 2	
HDBaseT IR Carrier Frequency	30-60Khz	
HDBaseT IR Angle	Tx : ±30d degree , Rx : ±55 degree	
HDBaseT IR Distance	5m	
HE04M IR Receive Angle	±45 degree	
HE04M IR Receive Distance	5M	
RS232 Input/Output	DB9 x 5	
Power Adapter	DC 12V 4.2 Amp	
Power Consumption	2.6 Amp (Max)	
Temperature	Operation: 0 to 55°C, Storage: -20 to 85°C, Humidity: up to 95%	
Dimension	mm	483 x 197 x 44
Weight	kg	2400

ITEM NO.	HE02R (HE04MK Kit receiver)	
Resolution	Up to 1080p / 60Hz / 12 bit	
Distance	100M (Max)	
HDMI Connector	Type A	
RS-232 Baud Rate	Up to 115200 bps / Full Duplex	
RS-232 Connector	DB9 Male	
IR Carrier	30-60Khz / ±10° / 5M / 2 Way	
Power Supply	DC 5V 2AMP Regulated	
Power Consumption	1200mA (Max)	
Temperature	Operation: 0 to 55°C, Storage: -20 TO 85°C, Humidity: up to 95%	
Dimensions	88 x 130 x 30	
Weight	270	

Item No.	HE02ER (HE04MEK Kit receiver)	HE02EIR (HE04MEIK Kit receiver)
Resolution	Up to 1080p / 60Hz / 12 bit	
Distance	100 m (Max)	50 m by CAT5e/6, 70 m by CAT6a
Video Output	HDMI Type A x 1	
IR Carrier Frequency	X	30-60KHz
IR Angle	X	±55
IR Distance	X	5m
Power Supply	Regulated DC5V 2A	
Power Consumption	1200mA (Max)	820mA (Max)
Temperature	Operation: 0 to 55°C, Storage: -20 TO 85°C, Humidity: up to 95%	
Dimensions	mm	49 x 92.3 x 25
Weight	g	135



Rev. B