TESmart

User Manual

120m HDMI KVM Extender

120m IR

HKE12MM-L25

English

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Preface

It's our great honor that you have chosen the HDMI KVM Extender produced by our company, TESmart Technology Co.,Ltd. In this user manual, you will learn how to operate and use this product. Please read this user manual comprehensively before use. If you have any questions, comments or suggestions, please contact us via the following email:
support@tesmart.com.

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Product Information

For more information about TESmart products and how they can help you to enjoy your job, please visit the following TESmart website or contact an TESmart Authorized Reseller.

www.tesmart.com

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1. Safety Tips and Warnings

Tips: Read the safety tips and warnings for HDMI KVM Extender comprehensively before use. Use this produce in accordance with its instructions, safety tips and warnings to prevent unnecessary damage to the product and potential dangers to users.

- Keep the product away from water.
- Clean the product with dry cloth.
- Use the product in accordance with its instructions and do not block its vents.
- Keep the product away from ignition sources, such as heat sinks, heat accumulators, stovepipes and other heat production settings (including audio amplifiers).
- Do not touch the product and the power cord with wet hands so as to lower the risk of electric shock and damage to the product. Do not let the product get wet or become damp.
- Unplug the power supply of this product in thunderstorm days or when it has been not used for a long time.
- Do not expose this product and its battery to open fire or overheating environment. Dispose the waste battery in accordance with instructions.
- Users shall not remove and repair the product without authorization.

2. Warranty Information

We warrant this product as free of defects in material and workmanship for a period of one (1) year from the date of shipment. If during the period of warranty this product proves defective under normal use, we will repair or replace this product, provided that this product has not been subjected to mechanical, electrical, or other abuse or modifications. If it fails under conditions other than those covered will be repaired at the current price of parts and labor in effect at the time of repair. Such repairs are warranted for six (6) months from the day of reshipment to the buyer.

3. Preface

Dear Users,

The HKE12MM-L25 HDMI KVM Extender is designed to transmit high-definition audio and video signals over long distances using standard Cat 5e or higher Ethernet cables. It is an ideal solution for conference rooms, classrooms, control rooms, and digital signage applications, providing reliable, high-quality extension up to 120 meters. Adapt to your viewing needs with two flexible display modes: Single-Screen for a focused view, or Quad-Screen to monitor four sources at once. The unique Keyboard & Mouse Cross-Control in Quad-Screen mode eliminates the need for multiple peripherals, allowing you to efficiently manage all four computers from a single desk setup. Designed for growth, the system scales to support up to 32 TX and RX units, providing a robust foundation for professional and enterprise-level AV systems.

Tips: If you need to control more computers or conduct more complex and professional switching, you can also choose other products of our company. For more details, you can visit our official website: www.tesmart.com.

4. Features

- Supports 1080P @ 60Hz video signal transmission up to 120 meters via Cat 5e or higher Ethernet cable.
- Complies with HDCP 1.4 for broad device compatibility.
- Supports both Single-Screen and Quad-Screen display modes.
- In Quad-Screen mode, a single keyboard and mouse set can seamlessly operate all four computers connected to the on-screen sources by moving the cursor freely across the four video segments.
- Supports up to 32 TX units and 32 RX units in the same network, allowing flexible and large-scale system integration.
- Features DHCP for automatic IP assignment.
- Supports Power over Ethernet (PoE) when connected to a PoE-enabled switch, simplifying power and data cabling.
- RX unit includes a 3.5mm audio output port.

5. Packing List

- 1 * Transmitter
- 1 * Receiver
- 2 * DC 12V Power Adapter
- 1 * User Manual

Tips: After receipt of the product, please check the packing list carefully to make sure that no components have been lost and no damage to the product has been caused during transportation. If you have any problem, please contact us at any time.

6. Panel Description

6.1 Transmitter Panel Description



ID	Name	Function	ID	Name	Function
1	USB Connection Port	Using USB Type-A to Type-B cable to connect to the input device for USB data signal input.	2	Digital Display	Indicate the current communication ID of the Transmitter.
3	ID Switch Button	Switch the Transmitter communication ID.	4	DC 12V	DC 12V power supply.
5	RJ45 port	Connect to UTP/FTP cable.	6	HDMI Input Port	Connect to HDMI source device.

6.2 Receiver Panel Description



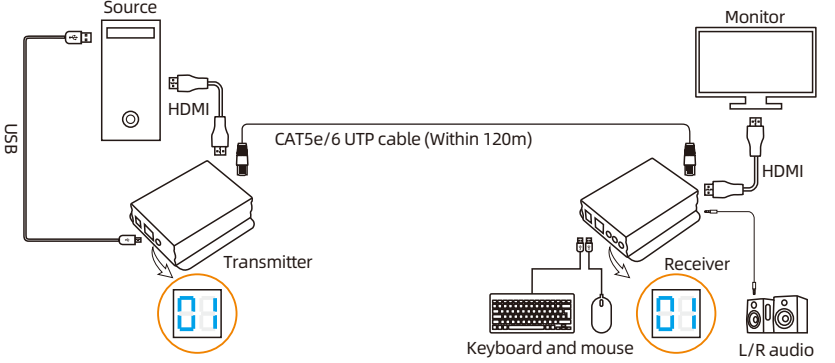
ID	Name	Function
8	Keyboard and Mouse Input	For USB keyboard and mouse input.
9	Digital Display	Switch the Receiver communication ID.
10	Up Selection Button	Press this button to perform a "forward" selection action.
11	Down Selection Button Audio Selection Button	Press this button to perform a "backward" selection action. In Quad-Screen mode, it shifts the audio output to the next source channel.
12	Menu Button	Press to open the menu OSD on the display.



ID	Name	Function
13	DC 12V	DC 5V power supply.
14	RJ45 port	Connect to UTP/FTP cable.
15	HDMI output port	Connection HDMI display for video output.
16	Stereo Output	Connect your speakers or headphones here to output audio from the source.

7. Connection Description

7.1 Connection Diagram



Tips: 1. 'Source' here represents general input devices like DVD player, STB, PC, etc.
2. Please refer to Chapter 9.1 for the details about the connection diagram of multipoint-to-multipoint.

7.2 Connection Steps

1. Connect a PC to the Transmitter with one HDMI cable and one USB Type-A to Type-B cable. Connect the type-B end of the USB cable to Transmitter's USB connection port, and the type-A end to PC (as shown below).

2. Connect one end of UTP/FTP cable to Transmitter's RJ45 port.

3. Connect the power cable to Transmitter's DC 12V port and plug it to a power socket.

   Tips: You do not need to perform this step if your device is powered by a PoE (Power over Ethernet) switch.

4. Press the ID switch button to set the communication ID for the Transmitter, and the ID code will be displayed on the digital display (take 01 as an example). The Transmitter is now connected.

5. Connect Receiver's HDMI output port to a display with one HDMI cable.

6. Connect external mouse and keyboard to Receiver's keyboard and mouse input port.

7. Connect external audio device to the L/R out port.

8. Connect the other end of the UTP/FTP cable to receiver's RJ45 port.

9. Connect the power cable to receiver's DC 12V port and plug it to a power socket.

Tips: You do not need to perform this step if your device is powered by a PoE (Power over Ethernet) switch.

10. Press the ID switch button to switch the ID code displayed by the digital display to the same number with the Transmitter (take 01 as an example). The Receiver is now connected.

11. By now, all the connection has been completed. The Extender will begin to work if the PC is turned on.

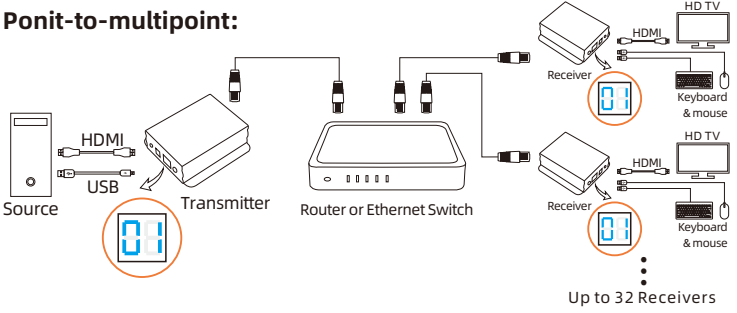
Tips: 1. Please refer to Chapter 10 for detailed information about how to use the HDMI Extender.
2. By default, the HDMI cables and Ethernet cables are not included in the package.

8. Function Description

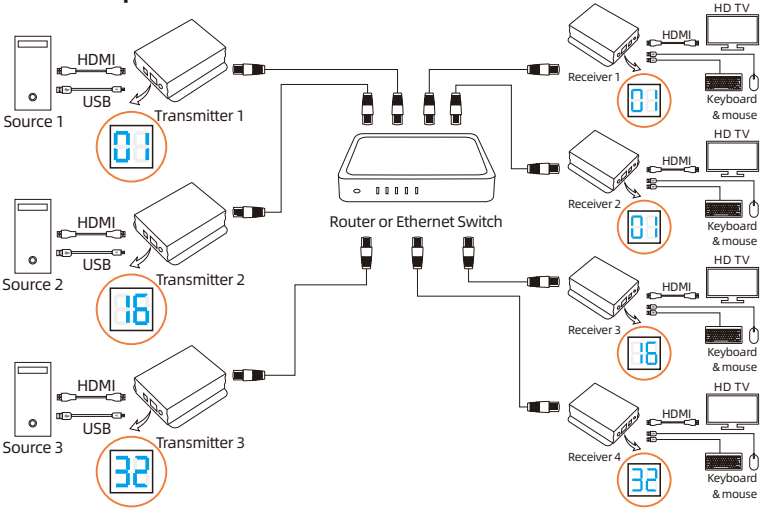
8.1 Multipoint-to-multipoint Administration

Point-to-multipoint and multipoint-to-multipoint administration can be achieved by connecting multiple Transmitters and Receivers through Ethernet switch or router. The system operates in a many-to-many network mode using UTP protocol, where each TX and RX unit is assigned a unique IP address for individual identification and communication. You can set the communication ID to any value from 1~16.

Ponit-to-multipoint:



Multiponit-to-multipoint:



Support up to 32 Transmitters (communication ID: 1~32) in one local area network. Set the Receivers' communication ID to the same as the Transmitter which the Receiver wants to connect to.

Tips: 1. When a Transmitter is set to have the same communication ID as multiple Receivers, these Receivers can control the input source connected to the Transmitter at the same time.
2. When using multiple Transmitters, please do not set the Transmitters to the same communication ID, this will cause usage problems.
3. To enable automatic IP address acquisition, the device's built-in DHCP client requires connection to a network that has a DHCP server.

8.2 Display Mode Description

The device features two flexible operating modes—Single-Screen and Quad-Screen—to support a wide range of visual management requirements, from focused content viewing to multi-source surveillance and control.

- **Full Screen mode:**

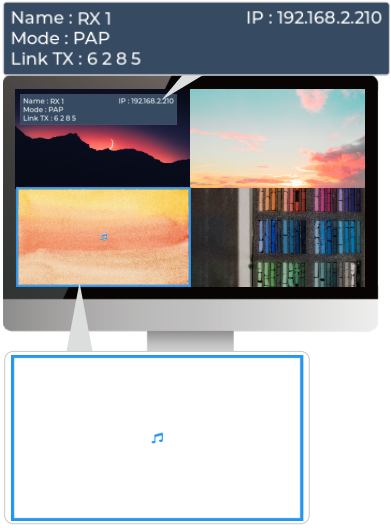
In Single-Screen mode, the video output from one selected Transmitter (TX) is displayed across the entire screen of the Receiver (RX). This mode is suitable for applications that demand full-screen, high-concentration viewing, such as presentations, training sessions, or digital signage.



- **On Quad-View mode:**

In Quad-Screen mode, the RX can simultaneously display video inputs from four different TX units, arranged in a quad-view layout.





- **OSD Description**

Name: Custom Naming for the current RX unit.
IP: Shows the RX's current IP address.
Mode: Indicates the active mode.
"PAP" (Picture-and-Picture): Representing the Quad-Screen layout.
Link TX: The IDs are shown in their corresponding screen quadrant, indicating which source is displayed in each segment.

Active Audio Channel Indicator: This shows which of the four displayed sources is currently outputting audio to the connected speakers or headphones. The audio output can be switched using the front-panel keys or dedicated hotkeys.

8.3 Keyboard & Mouse Cross-Control

A standout feature of quad-screen mode is Keyboard & Mouse Cross-Control. With this function, a single keyboard and mouse connected to the RX can intuitively operate all four source computers. The cursor moves freely across the screen segments, enabling direct control over any source without the need for additional peripherals.



Zero-Configuration Setup: Requires no additional software installation on source computers.

Protocol Transparency: Compatible with Windows, macOS, and Ubuntu operating systems.

Real-Time Switching: Implements sub-second control transition between computing sources.

9. Operation Method

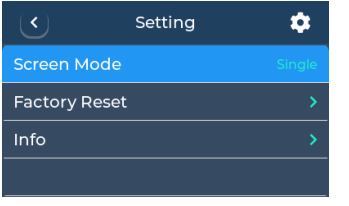
9.1 Panel Button Switching Method

The functions of the front-panel keys vary depending on the current operating mode.

↑	Single-Screen Mode	Increases the target TX ID by 1.
	Quad-Screen Mode	Increases the TX ID assigned to the current audio channel by 1.
	Menu Mode	Selects the next menu option.
↓ / ♫	Single-Screen Mode	Decreases the target TX ID by 1.
	Quad-Screen Mode	Cycles the audio source by cycling through the screen quadrants.
	Menu Mode	Selects the previous menu option.
MENU	Menu Closed	Press to open the On-Screen Display (OSD) menu.
	Menu Open	Press to confirm and apply the currently highlighted selection.

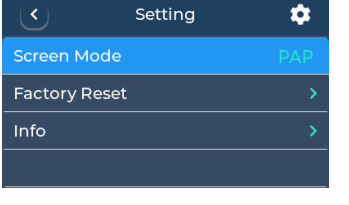
- **To Switch to Single-Screen Mode**

1. Press "**MENU**" to open the main menu. The OSD will appear overlaid on the monitor screen connected to the Receiver (RX) unit.
2. Press "**MENU**" again to select the "Screen Mode" .
3. Press "**MENU**" again, choose "Single" .



- **To Switch to Quad-Screen Mode**

1. Press "**MENU**" to open the main menu. The OSD will appear overlaid on the monitor screen connected to the Receiver (RX) unit.
2. Press "**MENU**" again to select the "Screen Mode" .
3. Press "**MENU**" again, choose "PAP" .



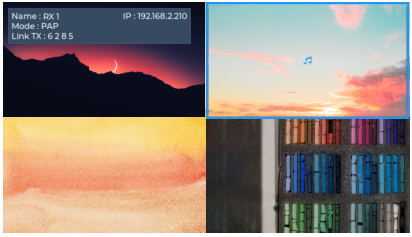
- **Switching the Connected TX Source in Single-Screen Mode**

1. Press Key “↑” to increment the TX ID by 1.
2. Press Key “↓/♫” to decrement the TX ID by 1.

The digital display on the RX unit and the OSD will update to show the new TX ID.

- **Switching the Audio Channel in Quad-Screen Mode**

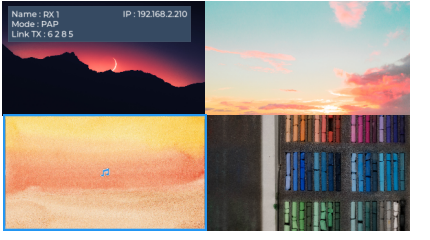
Press Key “↓/♫”. Each press sequentially cycles the active audio channel through the four screen quadrants in the order: Upper-Left → Upper-Right → Lower-Left → Lower-Right → Upper-Left. The OSD will clearly highlight the newly selected quadrant as the active audio source.



- **Switching the Connected TX Source in Quad-Screen Mode**

First, select the target quadrant (audio channel):Press Key “↓/♫” to cycle the active audio channel (which determines the target quadrant). The OSD will highlight the current audio channel.

Then, change the TX for that quadrant:
With the target quadrant selected, press Key “↑” to increment the TX ID for that quadrant.



9.2 Keyboard Hot Keys

→ Use external keyboard hot keys to operate.

After press **[Right-Ctrl]** key twice within 2 seconds, then please enter the commands within 3 seconds and the Extender will execute the switching commands.

- **Switching Display Modes:**

[Right-Ctrl]→[Right-Ctrl]→[M]



- **Switching the Connected TX Source in Single-Screen Mode**

Switch communication ID 1~3:
[Right-Ctrl]→[Right-Ctrl]→[1~9]



Switch communication ID 4~9:
[Right-Ctrl]→[Right-Ctrl]→[4~9]



Tips: When switching the communication ID to 1,2,3, there will be a delay of about 1s, because it is necessary to determine whether you need to press other numeric keys to switch to ID 10~32.

Switch communication ID 10~29:
[Right-Ctrl]→[Right-Ctrl]→[1~2] →[0~9]



Switch communication ID 30~32:
[Right-Ctrl]→[Right-Ctrl]→[3] →[0~2]



When operating in Quad-Screen mode, please follow the procedure below:

- **Switching the Audio Channel in Quad-Screen Mode**

Switch cycle to the next channel:
[Right-Ctrl]→[Right-Ctrl]→[↑]



Switch cycle to the previous channel:
[Right-Ctrl]→[Right-Ctrl]→[↓]



- **Switching the Connected TX Source in Quad-Screen Mode**

First, use the hotkeys mentioned in the previous step, switch to the desired quadrant, then use the same hotkey combination for switching IDs in Single-Screen mode to change the source.

Switch the ID of the target quadrant to 1~9:
[Right-Ctrl]→[Right-Ctrl]→[1~9]



Switch the ID of the target quadrant to 4~9:
[Right-Ctrl]→[Right-Ctrl]→[4~9]



Switch the ID of the target quadrant to 10~29:
[Right-Ctrl]→[Right-Ctrl]→[1~2] →[0~9]



Switch the ID of the target quadrant to 30~32:
[Right-Ctrl]→[Right-Ctrl]→[3] →[0~2]



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