

TESmart

User **2x2** HDMI 2.1 KVM Switch Manual

HKS202 Master 24

To Enjoy Smart

HKS202 Master 24

English



English



Preface

It's our great honor that you have chosen the HDMI KVM Switch produced by our company, Tesla Elec 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

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www.tesmart.com

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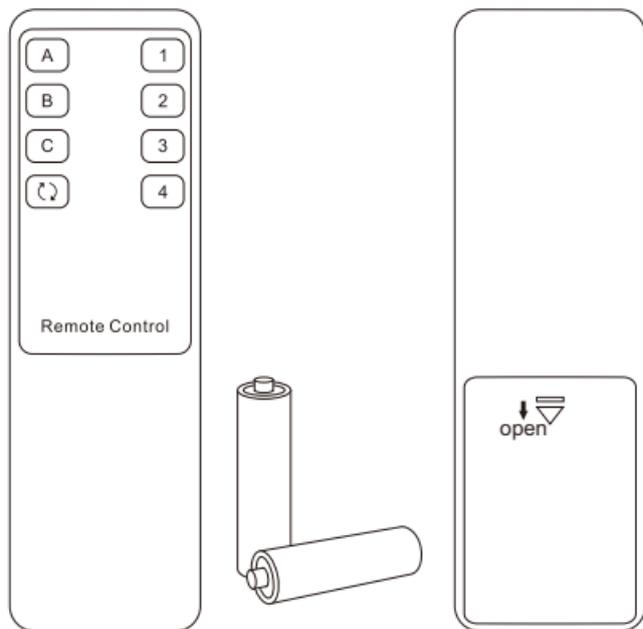
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1. Safety Tips and Warnings

Tips: Please read the safety tips and warnings for HDMI KVM Switch 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. Battery Description



Tips: By default, the remote control is not equipped with batteries, due to the safety requirements of some express companies. Install AAA dry cells before use.

Caution: Improper disposal of the lithium battery may cause an explosion. Do not throw the battery into fire. Keep the battery away from children. Dispose the waste battery in accordance with local regulations.



3. 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.

4. Preface

Dear Users,

HDMI KVM Switch can easily integrate cross-platform computer devices and greatly simplify the devices management. Support managing a dual-display multimedia workstation. If you connect 2 HDMI ports of the same PC to one group of input ports on the KVM, you will realize 2-screen extended display or copy display. It has the same effect as connecting the PC directly to 2 displays. The KVM also supports displaying different PCs on 2 monitors.

This KVM support USB 3.2 Gen 1 with superspeed data transfer rate. Support fast channel switching through panel keys, IR remote control, mouse wheel and keyboard hotkeys. At the same time, with EDID emulators in each input port, it can keep PCs always having correct display information. Also, we have integrated vibrant RGB lighting effects into our KVM. Whether you're in the zone for work or unwinding with entertainment, the mesmerizing RGB lighting becomes a unique spectacle on your desk.

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, please visit our official website: www.tesmart.com.

5. Features

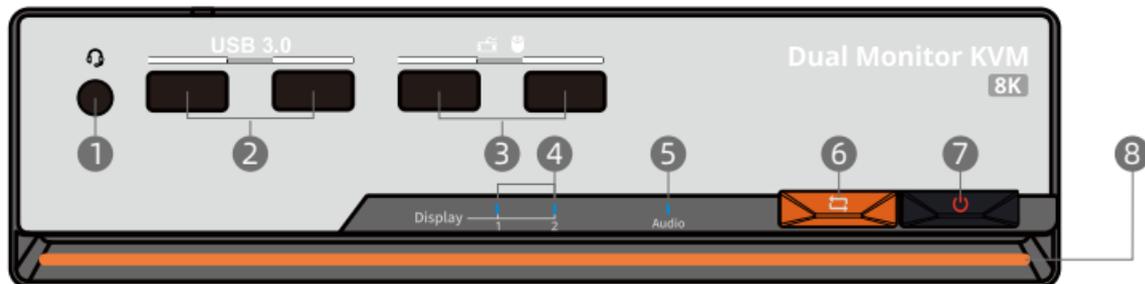
- Using 2 monitors, 1 set of keyboard and mouse to control 2 computers
- HDMI 2.1 compliant, has 48Gbps ultra-high speed bandwidth and also support VRR, FVA and ALLM
- Support resolution up to 8K(4320p)@60Hz 4:4:4 and is backward compatible with 4K(2160p)@60Hz/120Hz/144Hz
- HDCP 2.3 compliant, and DSC 1.2a compliant
- Support HDR 10 and Dolby Vision
- Support 2 display modes
- Support Gigabit wired network connection, 2 PCs connected to KVM can access to the network with only one network cable
- Support USB 3.2 Gen 1 with super-speed data transfer rate
- With EDID emulators in each input port, it can keep PCs always having correct display information
- Keyboard and mouse support passthrough mode and legacy emulation mode, significantly improving compatibility for keyboards and mice.
- Support fast channel switching through panel keys, IR, mouse wheel and keyboard hotkeys
- Built-in RGB lighting effects, you can switch different lighting effects using hotkeys for a personalized experience.

6. Packing List

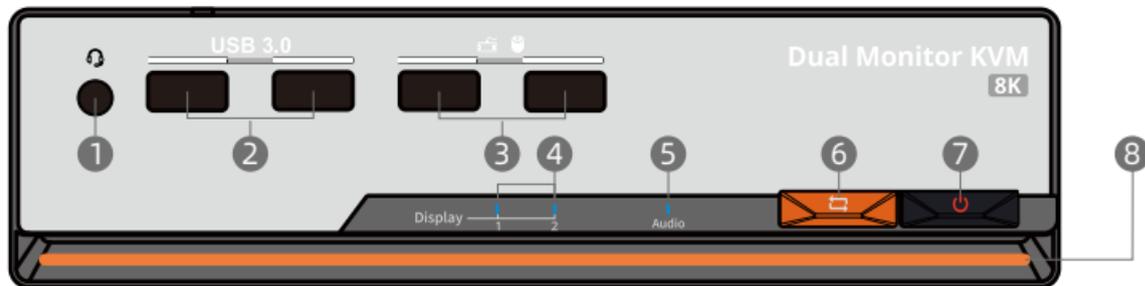
- 1 * 2x2 HDMI 2.1 Dual Monitor KVM Switch
- 2 * KVM Cables
- 2 * HDMI Cables
- 1 * IR Remote Control
- 1 * DC 12V Power Adapter
- 1 * User Manual

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.

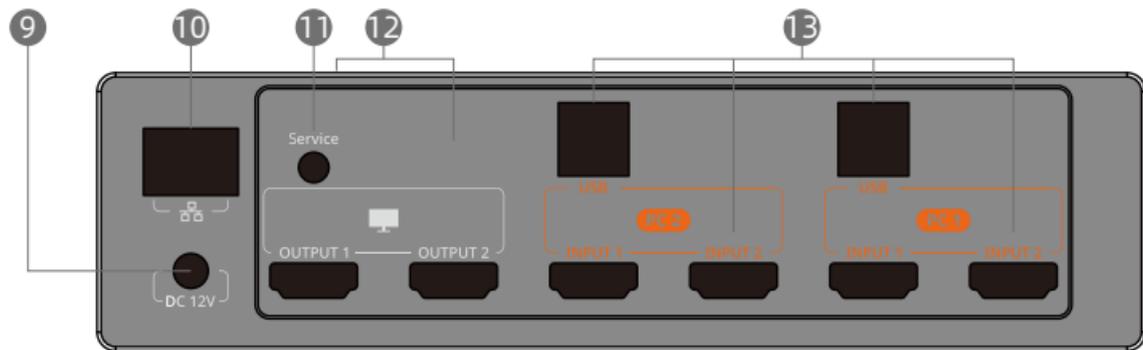
7. Panel Description



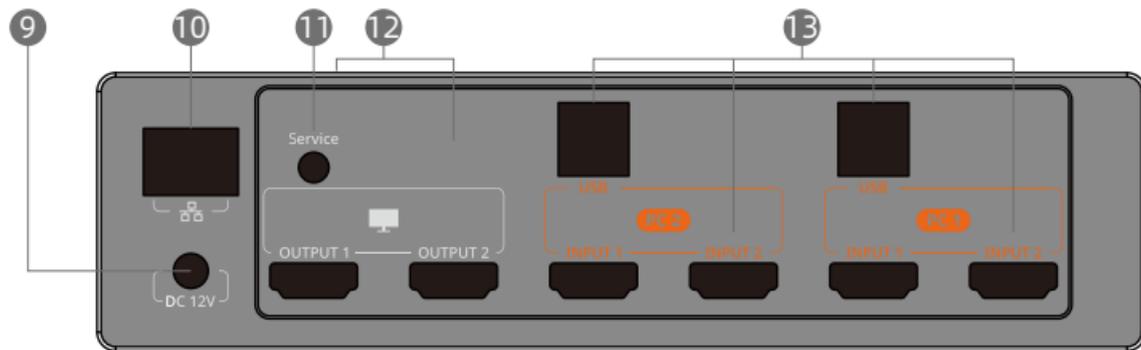
ID	Name	Function
1	3.5mm audio/mic	Integrated microphone and L/R audio output.
2	USB 3.2 Gen 1 ports	Connect to USB 3.0 device.
3	Keyboard and mouse input	For USB keyboard and mouse input.
4	Display status indicators	Display the current output status of each monitor.



ID	Name	Function
5	Audio and USB 3.0 indicator	Indicate the current path of audio and USB 3.0.
6	Input selection button	Press to switch input sources.
7	Power switch	Press for about 2 seconds to turn on or turn off power supply.
8	RGB LED stirp	Features 4 lighting modes to match your atmosphere. Please refer to page 30 for how to switch different modes.



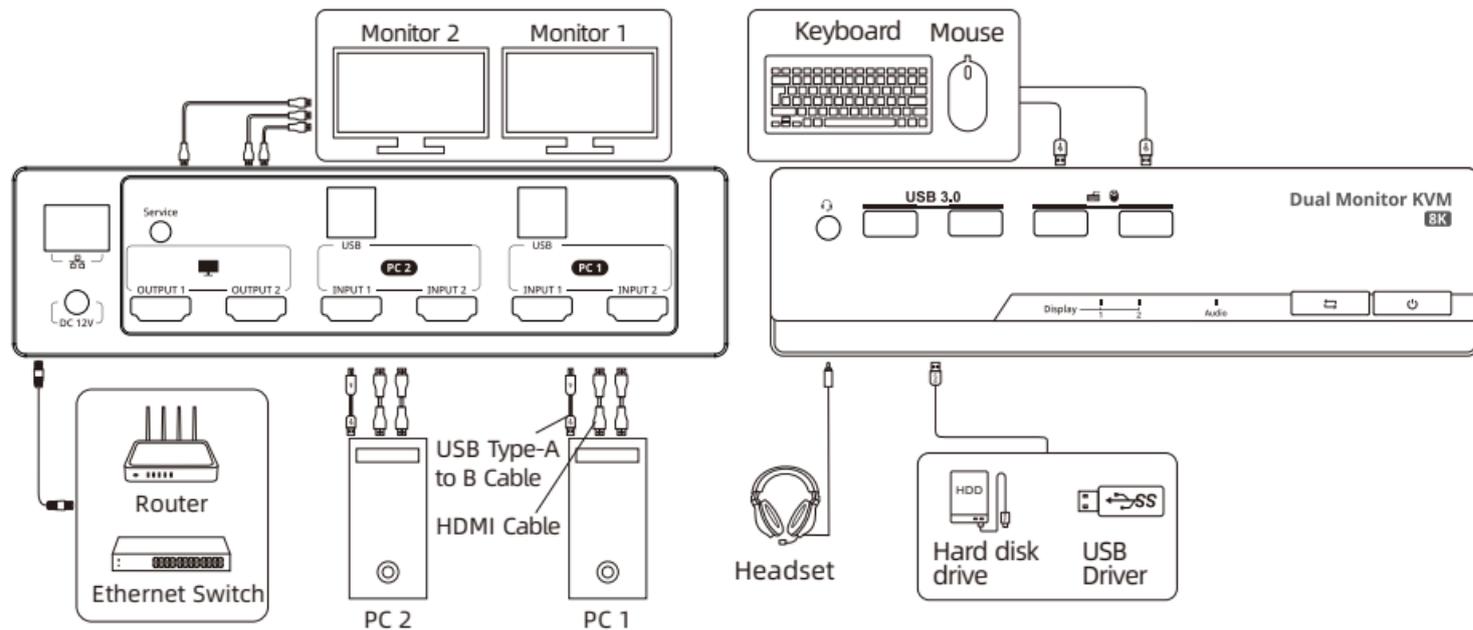
ID	Name	Function
9	DC 12V	12V DC power supply.
10	LAN port	Insert the network cable into this port to let the 2 input PCs to connect to the local network area.
11	UART command interface	Support external UART commands for channel switch and functionality control.



ID	Name	Function
12	HDMI outputs	Connect to 2 HDMI displays for video output.
13	KVM input ports group	2 PCs can be connected to the KVM at the same time. Each group contains 2 HDMI ports(marked as Input 1/2) and a USB port. Connect the ports to corresponding input devices for signal input.

8. Connection Description

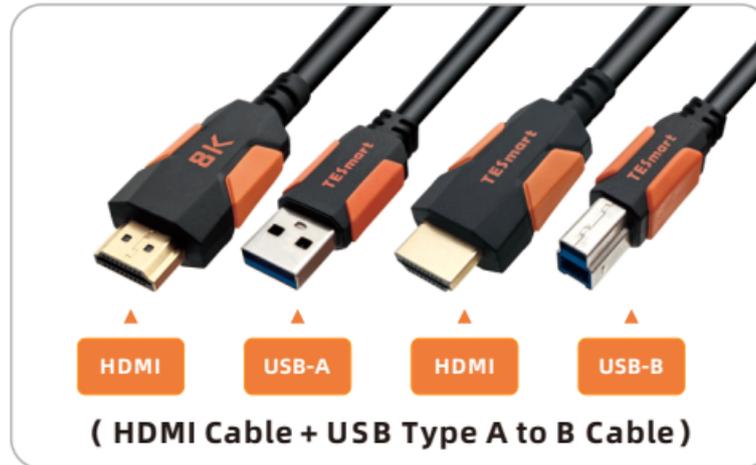
8.1 Connection Diagram



Tips: For your better experience, please use an HDMI 2.1 cable to connect to the display.

8.2 Connection Preparation

- Take into consideration all devices required to be connected and prepare a workbench large enough before the connection.
- Lay out the cables properly to facilitate the layout of power supply as a lot of power sockets and plug boards will be adopted in connection.
- Prepare different sticker labels to mark cables as a lot of cables will be adopted in connection.



8.3 Connection Steps

1. Connect PC 1 with 1 HDMI cable and 1 KVM cable.



2. Connect PC 2 with the same method.

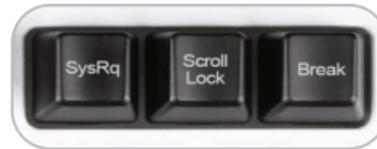
3. Connect KVM's HDMI output ports to 2 HDMI displays with 2 HDMI cables.



4. Use 1 network cable, one end is connected to the RJ45 port, the other end is connected to a switch or a router.



5. Connect external mouse and keyboard to KVM's keyboard and mouse input port.

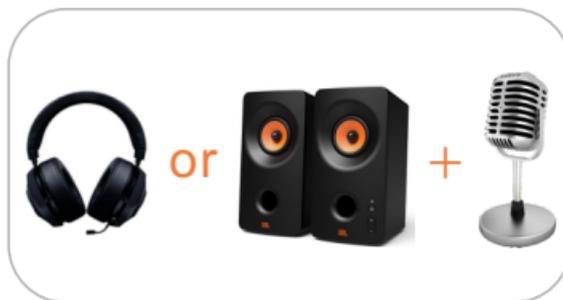


Tips: For the normal service of hotkeys, we recommend you use the full-key external keyboard with a separate [Scroll Lock] key (as shown above).

6. Connect USB 3.0 devices to KVM's standard USB 3.0 ports.



7. Connect external audio device to KVM's L/R out port.



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



9. By now, the connection has been completed. Turn on the power supply and the KVM Switch will begin to work.

Tips: 1. By default, the network cable is not included in the package.
2. Please refer to Chapter 10 for the detailed information about how to use the KVM.

8.4 KVM Workbench

A workbench with 2x2 dual monitor KVM Switch successfully connected is shown as below:



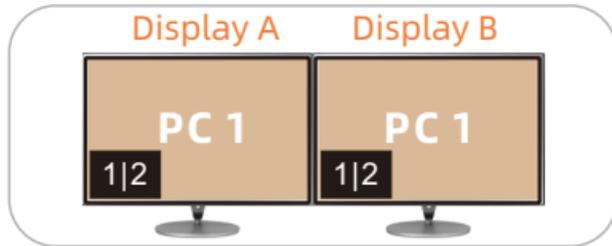
9. Function Description

9.1 Display Mode Description

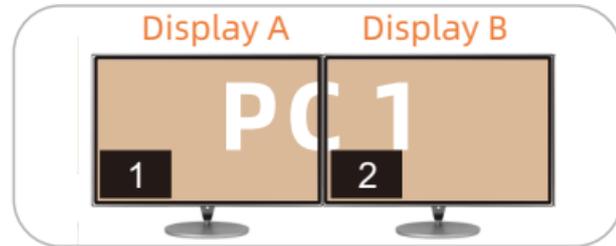
The 2x2 HDMI 2.1 dual monitor KVM Switch support 2 display modes. You can choose to implement 2-screen extended display or duplicate display or display different PCs on 2 monitors.

Display Mode 1: Display the same PC

Duplicate displays

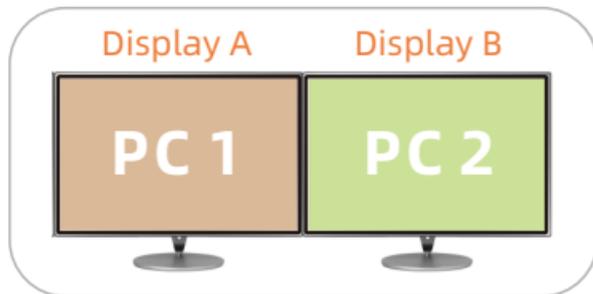


Extend displays



- Tips:**
1. You can set the duplicate or extend displays in the Display Settings of the current selected PC.
 2. Only when 2 video ports of the same PC are connected to Input A and Input B of a group of input ports at the same time, can duplication or expansion of two screens be realized.

Display Mode 2: Display the different PCs



In this mode, you can show one PC on any two monitors connected to the KVM and the other PC on the remaining monitor. Use the front panel, hotkeys, or IR control to switch between PCs and monitors.

Tips: When different PCs are displayed on different monitors, you can double-click the **Right-[Alt]** on the keyboard connected to the KVM to switch the focus between different PCs.

9.2 Keyboard and Mouse Emulation Mode

We provide two keyboard and mouse modes: Pass Through Mode and Legacy Emulation Mode. Pass Through mode supports most keyboard and mouse drivers and multifunction keyboards and mice. Legacy Emulation Mode ensures the normal functioning of the keyboard, mouse, and hotkey features.

- Typically, we recommend using Passthrough Mode for an optimal user experience, allowing you to:

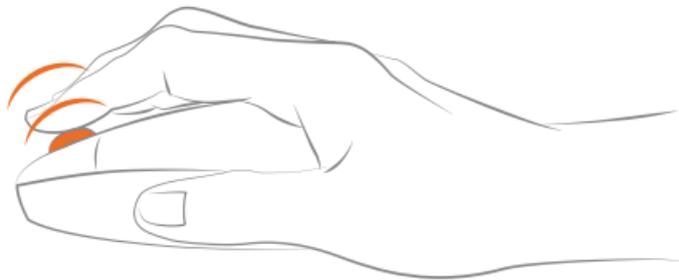


If you encounter issues with the keyboard and mouse in Passthrough Mode, we recommend switching to Legacy Emulation Mode.

- Tips:**
1. To toggle between two modes, please refer to Page 27. After toggled, please restart the KVM.
 2. In Legacy Emulation Mode, the keyboard and mouse control software will no longer be available.

9.4 Mouse Wheel Switching

Mouse wheel switching method can quickly switch input sources by mouse operation, double-click the mouse wheel to switch to the next input port. Mouse wheel switching mode is off by default. You can use keyboard hotkey command to turn on mouse wheel switching mode. Please refer to Page 29.



10. Operation Method

10.1 Front Panel Button Switching Method

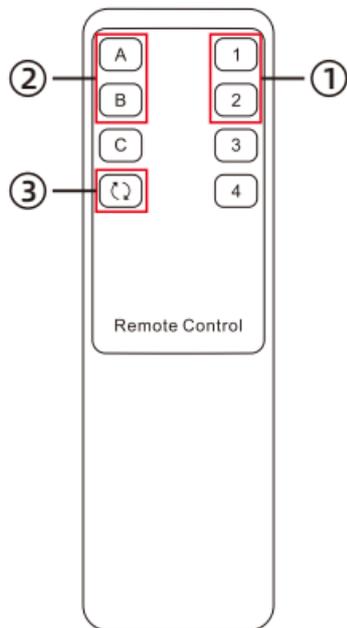
The 2x2 KVM Switch can switch to any input devices at any time with front panel keypad, IR remote control and keyboard hot keys. You can choose your favorite switching method according to your personal needs and habits.



→ The blue light indicates PC1 and the green light indicates PC2.

→ Press [] button to switch between PCs on display mode 1.

10.2 IR Remote Control



- ① — Press directly to select among 2 PCs, and 2 displays will display the selected PC at the same time. (i.e. display mode 1)
- ② — Press the key, and then press the [1~2] key to make the selected monitor display the selected PC. (i.e. display mode 2)
- ③ — Turn off/on buzzer sound.

Tips: Unspecified buttons at above are non-functional.

10.3 Keyboard Hot Keys

- Use external keyboard hot keys to switch the input source or set up some other functions..

Tips: The keyboard hot keys can only work with external keyboard correctly connected to the keyboard and mouse input port of the KVM. The default hot key trigger key is **[Right-Ctrl]**.

After press **[Right-Ctrl]** key twice within 2 seconds and you will hear the buzzer beep once, please enter the commands within 3 seconds and the KVM will execute the corresponding commands.

Select previous input port:

[Right-Ctrl]→[Right-Ctrl]→[PgUp]



Select next input port:

[Right-Ctrl]→[Right-Ctrl]→[PgDn]



Select port by port number(i.e. display mode 1):

[Right-Ctrl]→[Right-Ctrl]→[1]~[2]



Switch PCs on different monitors separately(i.e. display mode 2):

Monitor 1: **[Right-Ctrl]** → **[Right-Ctrl]** → **[←]**



Monitor 2: **[Right-Ctrl]** → **[Right-Ctrl]** → **[→]**



Switch keyboard and mouse focus in display mode 2:

[Right-Alt] → **[Right-Alt]**



Disable/enable follow mode:

Tips: "Follow Mode" refers to whether the audio devices and USB 3.0 devices connected to the front panel will switch synchronously with the keyboard and mouse focus when switching.

[Right-Ctrl] → [Right-Ctrl] → [~]



Tips: The default setting of follow mode is enabled. When you disable it, the buzzer will emit only 1 short beep; when enable it, the buzzer will emit 2 short beeps.

When Follow Mode is disabled, you can use the following hotkeys to switch audio and USB 3.0 channels between PCs:

[Right-Ctrl] → [Right-Ctrl] → [0]



Toggle between keyboard and mouse modes:

[Right-Ctrl] → [Right-Ctrl] → [F2]



Tips: The default keyboard and mouse mode is Pass Through mode. When switching to Legacy Emulation Mode, the buzzer will emit 2 short beeps; when switching to Pass Through Mode, the buzzer will emit only 1 short beep.

Disable/enable fan:

[Right-Ctrl] → [Right-Ctrl] → [F3]



Tips: The fan has 4 adjustable modes, distinguishable by the number of beeps from the buzzer. The default fan mode is 2.

Fan mode 1: The fan is disabled. Adjust to this mode, the buzzer will beep once.

Fan mode 2: The fan speed is automatic. It operates at high speed when video signal transmission is active and shuts off when no video signal is detected. Adjust to this mode, the buzzer will beep twice.

Fan mode 3: The fan operates at low speed continuously. Adjust to this mode, the buzzer will beep three times.

Fan mode 4: The fan operates at high speed continuously. Adjust to this mode, the buzzer will beep four times.

Disable/enable built-in network card:

[Right-Ctrl] → [Right-Ctrl] → [F4]



Tips: The built-in network card is enabled by default. Enable it will trigger the buzzer to beep twice and disable it will trigger the buzzer to beep once.

Turn on/off mouse wheel switching mode:

[Right-Ctrl] → [Right-Ctrl] → [F6]



Tips: Turning on the mouse wheel switching mode will trigger the buzzer to beep twice and turning it off will trigger the buzzer to beep once.

Disable or enable buzzer sound:

[Right-Ctrl] → [Right-Ctrl] → [F11]



Tips: The default setting of buzzer sound is enabled. Disable buzzer sound will trigger the buzzer to beep once and enable it will trigger the buzzer to beep twice.

Switch lighting modes:

Turn off lighting:

[Right-Ctrl] → [Right-Ctrl] → [L] → [0]



Light effects vary with KVM indicators:

[Right-Ctrl] → [Right-Ctrl] → [L] → [1]



Marquee lighting effect:

[Right-Ctrl] → [Right-Ctrl] → [L] → [2]



Orange breathing light:

[Right-Ctrl] → [Right-Ctrl] → [L] → [3]



11. Change Hot Key Combinations

For your convenience, we have built-in a custom hotkey function. By setting, you can use any key on the keyboard connected to the KVM as the trigger key for the hot key command. The default hotkey trigger key is the **[Right-CTRL]**. The custom hotkey function can be set in the following ways:

Method 1:

- After powering on the KVM, press and keep holding the [] button on the front panel for 10 seconds until you hear the buzzer is long beeping. When starting to set the trigger key, the buzzer will have a 5 seconds tone. Please press the key you want to use as the hot key trigger key on the keyboard within 5 seconds. After pressing the button, the prompt tone ends and the setting is complete.

Method 2:

- Press [Right-Ctrl]→[Right-Ctrl]→[F1], then the buzzer will have a 5 seconds tone. Please press the key you want to use as the hot key trigger key on the keyboard within 5 seconds. After pressing the button, the prompt tone ends and the setting is complete.



12. UART Command Description

The 2x2 HDMI 2.1 dual-monitor KVM Switch is equipped with a UART command interface, allowing users to communicate with the KVM using UART (Universal Asynchronous Receiver-Transmitter) commands.

ID	Command	Function	Configuration
1	AA BB 03 00 00 EE	Switch to PC1.	Baud rate: 115200 bps Stop bit: 1 bit Data length: 8 bits Parity bit: None
2	AA BB 03 00 01 EE	Switch to PC2.	
3	AA BB 03 01 00 EE	Switch the view of Output 1 to PC1.	
4	AA BB 03 01 01 EE	Switch the view of Output 1 to PC2.	
5	AA BB 03 02 00 EE	Switch the view of Output 2 to PC1.	
6	AA BB 03 02 01 EE	Switch the view of Output 2 to PC2.	

ID	Command	Function
7	AA BB 04 02 XX EE	Disable or enable buzzer sound. (XX can be any value.)
8	AA BB 05 02 00 EE	Disable RGB LED strip.
9	AA BB 05 02 01 EE	Switch the RGB LED strip lighting effects to vary with KVM indicators.
10	AA BB 05 02 02 EE	Switch the RGB LED strip lighting effects to marquee.
11	AA BB 05 02 03 EE	Switch the RGB LED strip lighting effects to orange breathing light.
12	AA BB 06 02 03 EE	Query current connection status.

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