TESmart

User Manual

4x1 HDMI KVM Switch

HKS401 Master 24

English

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Preface

It's our great honor that you have chosen the KVM Switch produced by our company, Tesla Ele 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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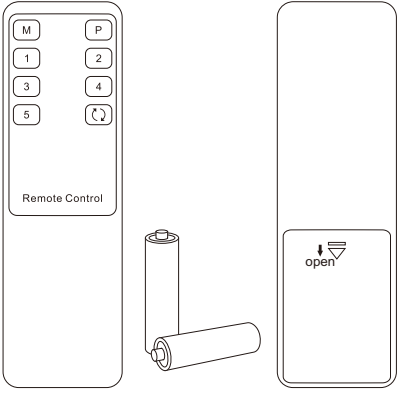
1. Safety Tips and Warnings

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,

The 4×1 HDMI KVM Switch efficiently integrates cross-platform computer systems, allowing centralized control of up to 4 PCs through a single HDMI display while reducing device management complexity.

Equipped USB 3.2 Gen 1 (5Gbps) SuperSpeed technology for superspeed data transfer and 8K@60Hz resolution support, this high-performance KVM switch delivers ultra-clear visuals with vibrant color reproduction and high-fidelity audio. It includes 1 USB-A charging port and 1 USB-C charging port for powering mobile phones, tablets and other devices. Input port switching can be performed through front-panel buttons, IR remote signals, mouse wheel and keyboard hotkeys for adaptable operation in various work environments. The customizable keyboard/mouse operation modes further enhance peripheral compatibility across platforms.

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

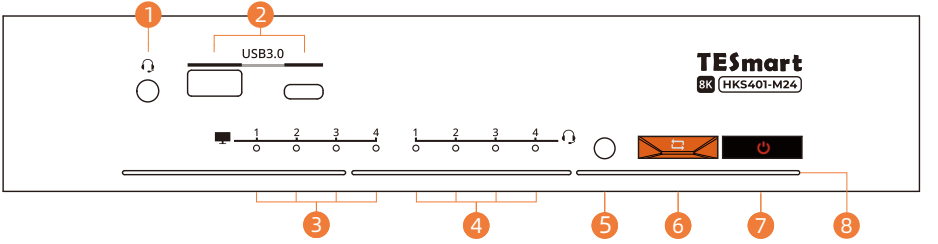
- Control 4 PCs with only 1 set of keyboard, mouse and monitor
- Support resolution up to 8K(4320p)@60Hz 4:4:4 and is backward compatible with 4K(2160p)@60Hz/120Hz/144Hz
- HDMI 2.1 compliant,has 48Gbps bandwidth,and also support VRR,FVA and ALLM
- HDCP2.3 compliant,and DSC 1.2a compliant
- Support USB 3.2 Gen 1 with super-speed data transfer rate
- Support wired network connection, 4 PCs connected to KVM can access to the network with only one network cable
- With EDID emulators in each input port, it can keep PCs always having correct display information
- Support hot-plug and the devices connected to the KVM can be added or removed at any time without turning off the devices
- Support fast channel switching through panel keys, IR, mouse wheel and keyboard hotkeys
- Support passthrough mode and legacy emulation mode, significantly improving compatibility for keyboards and mouses
- Support charging the devices like mobile phones and tablets connected to front panel USB ports

6. Packing List

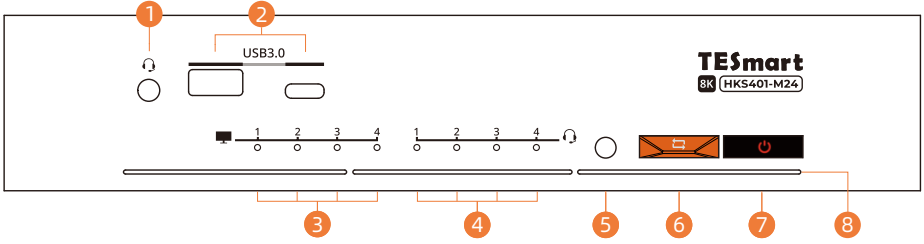
- 1 * 4x1 HDMI KVM Switch
- 4 * KVM Cables(HDMI+USB)
- 1 * IR Remote Control
- 1 * DC 12V Power Adapter
- 1 * User Manual

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.

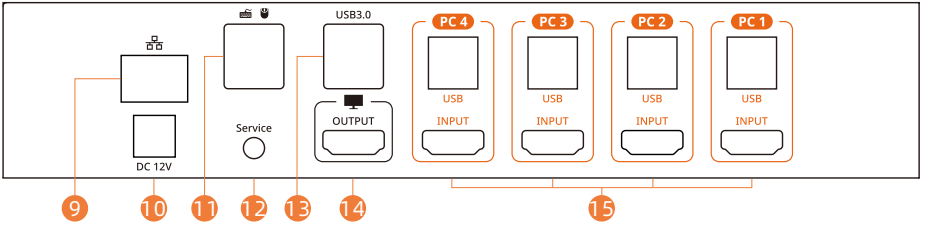
7. Panel Description



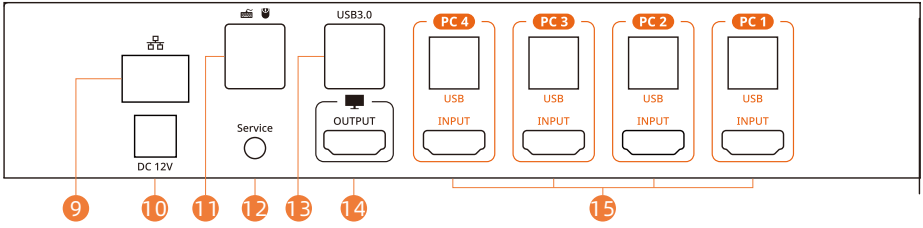
ID	Name	Function
1	3.5mm Audio/Mic	Integrated microphone and L/R audio output.
2	Data transfer and charging ports	Can be used to transfer data and charge your mobile devices.
3	Input selection status indicators	Indicate the current selected computer device.



ID	Name	Function
4	USB 3.0 and audio focus indicators	Indicate which PC (1~4) has active USB3.0 and audio focus.
5	IR receiver	Receive IR remote signal.
6	Input selection button	Select input sources.
7	Power switch	Turn on or turn off power supply.
8	RGB LED stirp	Features 4 lighting modes to match your atmosphere.



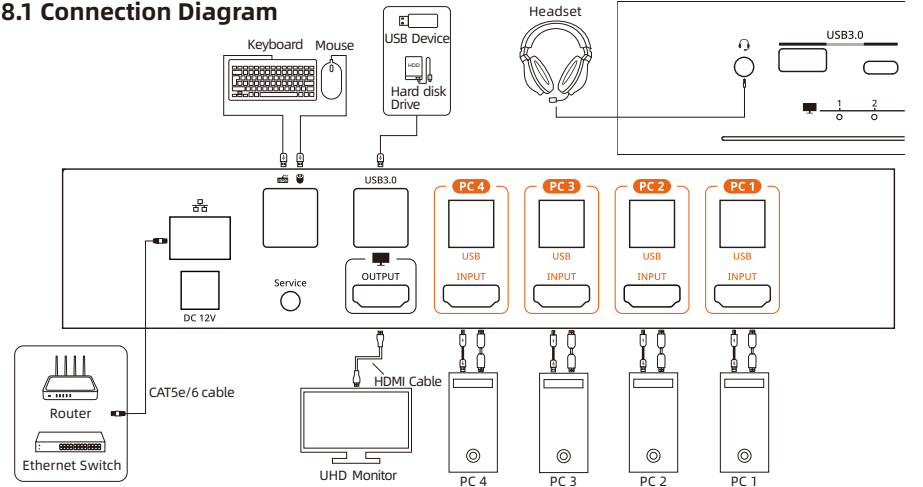
ID	Name	Function
9	LAN port	Insert the network cable into this port to let the 4 input PCs to connect to the local network area.
10	DC 12V	12V DC power supply.
11	Keyboard and mouse input	For USB keyboard and mouse input.
12	UART command interface or IR receiver cable in	Support external UART commands for channel switch and functionality control or connect IR extension cable to this port to receive IR signal.



ID	Name	Function
13	USB 3.2 Gen 1 ports	Connect to USB 3.0 devices.
14	HDMI output	Connect to 1 HDMI display for video output.
15	KVM input port group	Each group contains 1 USB port (upper) and 1 HDMI port (lower). Connect the ports to corresponding input devices for signal input.

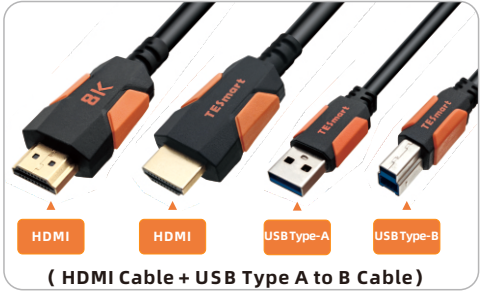
8. Connection Description

8.1 Connection Diagram



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.



(HDMI Cable + USB Type A to B Cable)

8.3 Connection Steps

1. Connect PC1 with 1 KVM cable, use HDMI end to connect PC1 to the HDMI port on the KVM, use USB Type-A end to connect PC1 and Type-B end to connect the KVM. Connect PC2~4 in the same way.

2. Connect the HDMI output port of the KVM to 1 HDMI display with 1 HDMI cable.

3. Connect external mouse and keyboard to the keyboard and mouse input port of the KVM.

4. Connect USB 3.0 devices to the standard USB 3.0 ports of the KVM.

5. Connect external audio device to the L/R out port of the KVM.

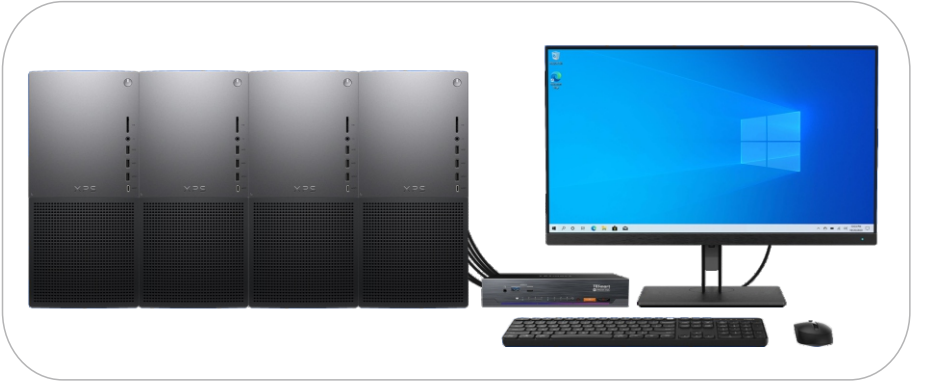
6. Use 1 network cable, one end is connected to the RJ45 port, the other end is connected to a switch or a router.

7. Connect the power cable to the DC 12V port of the KVM and plug it to a power socket.

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

8.4 KVM Workbench

A workbench with 4x1 HDMI KVM Switch successfully connected is shown as below:



9. Function Description

9.1 Built-in Charging Module

The 4x1 HDMI KVM switch has a built-in charging module, allowing you to safely charge your phone, tablet and other devices. With two front-panel USB ports (including an USB-A port and an USB-C port) , it supports data transmission while charging.

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 mouses. Legacy Emulation Mode ensures the normal function of the keyboard, mouse, and hotkey features.

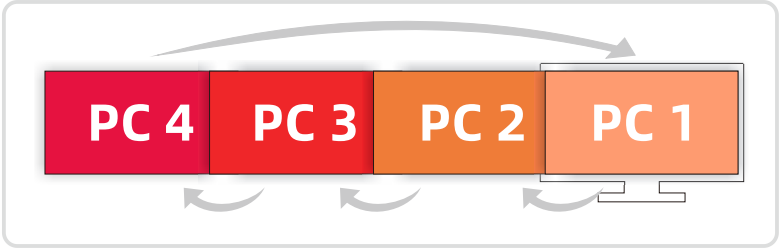
- Typically, we recommend using Passthrough Mode for an optimal user experience, allowing you to:

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 28. After toggled, please restart the KVM.
2. In Legacy Emulation Mode, the keyboard and mouse control software will no longer be available.

9.3 Auto Scan Mode

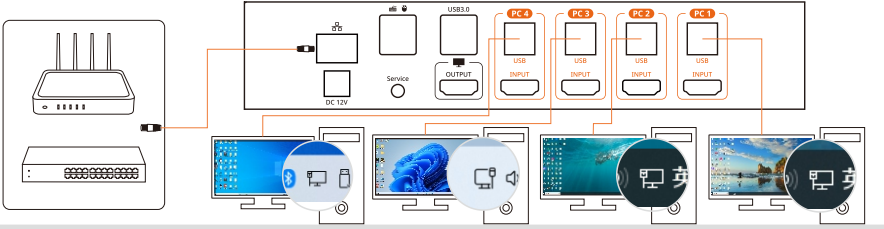
Auto Scan can automatically switch the display at regular intervals between the input devices that are powered on and connected to the KVM. As a result, any input devices connected to each port can be monitored without user intervention. Auto scan mode is off by default.



Tips: 1. The 4x1 HDMI KVM Switch will automatically switch between PC 1~4 after enable auto scan mode.
2. Please refer to 27 for detailed information about how to set the auto scan mode.

9.4 Built-in Network Switch

The 4x1 KVM Switch have a built-in USB Ethernet Adapter, which adds a standard RJ45 port to all the PC that is connected to the KVM and allows you to connect your computers to a router or network switch for gigabit wired network connection. Full 1000Mbps Ethernet for fast, stable data transfer, more reliable than most wireless connections. This feature has been added with a switch, allowing you to freely choose to enable or disable it.

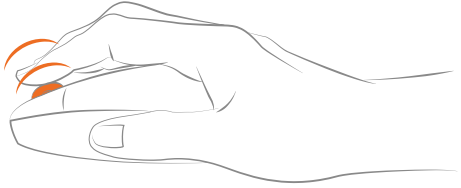


Tips: 1. It is recommended to connect the USB cable to a USB 3.0 or higher port on the PC to achieve a Gigabit bandwidth network connection.

2. The built-in network switch can be disabled separately. Please refer to Page 29 for the operating instructions.

9.5 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 4x1 HDMI KVM Switch can switch to any input devices at any time with front panel button, IR remote control, keyboard hot keys and mouse wheel switching mode. You can choose your favorite switching method according to your personal needs and habits.

→ Switch the input devices by pressing the button **[**  **]** on the front panel of the KVM Switch. For example, press **[**  **]** until you see the ② LED is lit. That means you have selected PC2 as input.

10.2 IR Remote Control

- M — Turn on/off auto detection mode
- 1 — Switch to PC 1
- 2 — Switch to PC 2
- 3 — Switch to PC 3
- 4 — Switch to PC 4
- ↻ — Switch to the next input port

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 ports of the KVM.

After press **[Right-Ctrl]** key twice within 2 seconds then 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:
[Right-Ctrl]→[Right-Ctrl]→[1]~[4]

Disable/enable follow mode:

[Right-Ctrl] →[Right-Ctrl] →[~]

Tips: 1."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.
2.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 hotkey to switch audio and USB 3.0 channels between PCs:

[Right-Ctrl] →[Right-Ctrl] →[0]

Turn on auto scan mode:
[Right-Ctrl] →[Right-Ctrl] →[Space]

Tips: The default auto scan time interval is 5 seconds. You can change the time interval by following the step presented below.

Increase or decrease auto scan time interval:
[Right-Ctrl] →[Right-Ctrl] →[+]/[-]

Tips: This hot key command can only work while the auto scan mode is activated. Press [Right-Ctrl] twice and keep pressing [+]/[-] key to adjust the time interval continuously. Increase or decrease 1 second at one time.

Press **[Esc]** to exit auto scan mode.

Tips: Enabling the auto scan mode will trigger the buzzer to beep twice and disable it will trigger the buzzer to beep once.

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 Compatibility 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 operates based on the actual temperature: it automatically turns on when the detected chip temperature exceeds 50℃ and turns off when the temperature drops below 48℃. 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.

Toggle the on/off status of the currently displayed PC's integrated network adapter:

[Right-Ctrl] →[Right-Ctrl] →[F4]

Tips: The integrated network adapter is enabled by default. It can be disabled separately. 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]

Right Ctrl → Right Ctrl → L → 0

Light effects vary with KVM indicators:

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

Right Ctrl → Right Ctrl → L → 1

Marquee lighting effect:

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

Right Ctrl → Right Ctrl → L → 2

Orange breathing light:

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

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 4x1 HDMI KVM Switch is equipped with an 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 68	Switch to PC1.	Baud rate: 9600 bps Stop bit: 1 bit Data length: 8 bits Parity bit: None
2	AA BB 03 00 01 69	Switch to PC2.	
3	AA BB 03 00 02 6A	Switch to PC3.	
4	AA BB 03 00 03 6B	Switch to PC4.	
5	AA BB 03 FF 00 67	Switch output to the next PC.	
6	AA BB 04 00 01 6A	enable buzzer sound.	

ID	Command	Function
7	AA BB 04 00 00 69	Disable buzzer sound.
8	AA BB 05 02 00 6C	Disable RGB LED strip.
9	AA BB 05 02 01 6D	Switch the RGB LED strip lighting effect to vary with KVM indicators.
10	AA BB 05 02 02 6E	Switch the RGB LED strip lighting effect to marquee.
11	AA BB 05 02 03 6F	Switch the RGB LED strip lighting effect to orange breathing light.
12	AA BB 08 00 01 6E	Turn on Legacy Emulation mode.
13	AA BB 08 00 00 6D	Turn off Legacy Emulation mode.
14	AA BB 09 00 0F 7D	Turn on the network of the PC1.

ID	Command	Function
15	AA BB 09 00 0E 7C	Turn off the network of the PC1.
16	AA BB 09 00 0F 7D	Turn on the network of the PC2.
17	AA BB 09 00 0D 7B	Turn off the network of the PC2.
18	AA BB 09 00 0F 7D	Turn on the network of the PC3.
19	AA BB 09 00 0B 79	Turn off the network of the PC3.
20	AA BB 09 00 0F 7D	Turn on the network of the PC4.
21	AA BB 09 00 07 75	Turn off the network of the PC4.
22	AA BB 0A 00 01 70	Turn on mouse wheel switching mode.

ID	Command	Function
23	AA BB 0A 00 00 6F	Turn off mouse wheel switching mode.
24	AA BB 0B 00 00 70	Turn off the fan.
25	AA BB 0B 00 01 71	Turn on automatic mode of the fan.
26	AA BB 0B 00 02 72	Turn on low-speed mode of the fan.
27	AA BB 0B 00 03 73	Turn on high-speed mode of the fan.
28	AA BB 0C 00 01 72	Enable follow mode.
29	AA BB 0C 00 00 71	Disable follow mode.
30	AA BB 0D 00 00 72	Switch the audio channel to PC1.

ID	Command	Function
31	AA BB 0D 00 01 73	Switch the audio channel to PC2.
32	AA BB 0D 00 02 74	Switch the audio channel to PC3.
33	AA BB 0D 00 03 75	Switch the audio channel to PC4.
34	AA BB 0D FF 00 71	Switch the audio channel to the next port.
35	AA BB 81 00 00 E6	Query the number of PCs and monitors.
36	AA BB 82 00 FF E6	Query the keyboard and mouse focus.
37	AA BB 83 00 FF E7	Query the correspondence between monitors and PCs.
38	AA BB 84 00 FF E8	Query the status of the buzzer.

ID	Command	Function
39	AA BB 85 00 FF E9	Query the lighting status.
40	AA BB 88 00 FF EC	Query the status of Legacy Emulation mode.
41	AA BB 89 00 FF ED	Query the status of the network.
42	AA BB 8A 00 FF EE	Query the status of the mouse wheel switching.
43	AA BB 8B 00 FF EF	Query the mode of the fan.
44	AA BB 8C 00 FF F0	Query the status of the audio follow mode.
45	AA BB 8D 00 FF F1	Query the status of the audio channel.

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