# 4K

## HD Quad Video Multiplexers

# User manul

# table of Contents

# Machine installation

**1、 Unpacking**

**Check the host and accessories. Including the host, CD, power cord, remote control, warranty card, and manual.**

**2、 Install the machine**

➤ Display unit setting: The high-definition four screen splitter supports 1 channel of HDMI2.0 output. Please set the input signal of the display unit to HDMI; If there are multiple HDMI signal inputs at the same time, please set the signal source to the HDMI input port connected to the screen splitter.

➤ Output and display unit connection: After the screen splitter is placed, the signal output is connected to the corresponding HDMI port of the display unit through an HDMI cable.

If an external audio system is required, please connect the external audio system to the device through an audio cable with 3.5mm headphone jack at both ends.

➤ Input signal connection: Please connect the computer or other signal source output device to the input port of the splitter through an HDMI cable, VGA cable, or DP cable;

If VGA requires audio function, please use a cable with 3.5MM headphone jack at both ends to connect the computer to the Audio port of the device input group;

**3、 Power on and start up**

**After the above cables are connected, insert a 100-240V AC power supply and turn on the device power switch. The power indicator light shows red as the on state, and the indicator light shows red as the standby state;**

# Device Port Description

During the use of the device, it is necessary to first understand each input and output video port in order to operate the device more proficiently. The device input and output ports are composed of three parts, namely the input part, output part, and USB part.

**1、 Input section:**

**The input part is located in the Input box on the rear panel of the chassis, consisting of nine input ports: A0: VGA, D0: DP, D1: HDMI, D2: MHL, D3: Mmhl, D4: MHL, D5: DP, RS232/IR, and Audio. The following are the functions of each port:**

`A0:VGA`：VGA signal input;

`D0:DP---DP`：Signal input, with a maximum input resolution/refresh rate of 3840x2160@60HZ , backward compatibility;

`D1:HDMI`：HDMI signal input, highest input resolution 3840x2160@30HZ , backward compatibility;

`D2:MHL`：HDMI signal input, highest input resolution 3840x2160@30HZ , backward compatibility; Compatible mobile phone MHL signal input through Micro USB to HDMI signal;

`D3:MHL`：HDMI signal input, highest input resolution 3840x2160@30HZ , backward compatibility; Compatible mobile phone MHL signal input through Micro USB to HDMI signal;

`D4:MHL`：HDMI signal input, highest input resolution 3840x2160@30HZ , backward compatibility; Compatible mobile phone MHL signal input through Micro USB to HDMI signal;

`D5:DP`：Signal input, with a maximum input resolution/refresh rate of 3840x2160@60HZ , backward compatibility;

`RS232/IR`：Use RJ45 to RS232 cable and control through computer control software or central control; Infrared remote control can also be achieved by transferring the remote control receiver head away from the device by transferring the IR signal through the adapter cable;

`Audio`：Bind VGA video signal input to synchronize and switch with VGA signal;

**2、 Output section:**

**The input part is located in the OUTPUT box on the rear panel of the chassis, and the HDMI interface is directly connected to the display unit; Audio can be directly connected to an external audio system, achieving high-power audio playback**

**effects.**

    3、 **USB part**

The USB input part is composed of input ports USB1, USB2, USB3, and USB4 in the Input box, which are connected to the corresponding computer group;

The USB output part is composed of two USB ports of OUTPUT, which can simultaneously connect a USB mouse and keyboard, enabling a single set of mouse and keyboard to simultaneously control four computer hosts;

**Connection instructions:**

1. Connect the four signal sources to the device input ports through cables;

2. After setting up different signal sources for each window (as shown in the figure below, Signal 1, Signal 2, Signal 3, and Signal 4 are four windows) (refer to the remote control settings in the next chapter for the setting method), do not change the position of the signal source display window;

3. Connect the USB ports of four computers to the devices' USB1, USB2, USB3, and USB4 through a USB cable; If the image of computer A is displayed in the position of signal 1 window, the USB cable of that computer should be connected to the USB1 port of the device, and other computers should be connected similarly;

# Remote control operation

After the output signal is correctly connected to the display terminal, and the input signal source is correctly connected to the device, different display modes can be set through the remote control, chassis buttons, and control software, such as four split display, selecting a signal for full screen display, and picture in picture function. This chapter introduces how to operate the device through an infrared remote control. If you are using our device for the first time, please follow the following steps to set up or configure it:

**1. Window signal position definition:**

To use a high-definition 4k four screen splitter, it is necessary to understand the definitions of signal 1, signal 2, signal 3, and signal 4:

Signal 1, also known as window 1, is located in the upper left corner of the screen;

Signal 2, also known as window 2, is located in the bottom left corner of the screen;

Signal 3, also known as window 3, is located in the upper right corner of the screen;

Signal 4, also known as window 4, is located in the bottom right corner of the screen;

As shown in the following figure:

**2、. Resolution settings**

If the output resolution of the device is higher than the physical resolution of the display unit, the display may not be able to display images; If the output resolution of the device is lower than the physical resolution of the display unit, although there is image display, it is not the best effect, so we must choose a resolution that is consistent with or similar to the display unit for output.

By using the SWITCH key on the remote control, the device output resolution can be switched in turn to achieve the best result, which is consistent with the physical resolution of the display unit. When switching resolutions, we must pay attention to the following points:

☆、After each press of the remote control switch, it takes about 2 seconds to switch to the next resolution;

☆、If the output resolution of the device is higher than the physical resolution of the display unit, the display unit will not display the image, or the display is not supported, and pressing the remote MENU key will not pop up any menu;

☆、After switching the resolution, if the display unit can support that resolution, an input resolution will pop up on the screen. By switching, select the best resolution that supports the display unit.

☆、After pressing the MENU key, a device menu will pop up, indicating that the resolution setting can display the image normally.

**3、Set the quad display mode:**

Press the 0 key on the remote control or chassis first to display the image splitter in four division mode. It is possible that no image will appear after pressing the 0 key, and the following steps need to be followed for further operation.

**4、Enter the settings menu:**

Press the MENU menu on the remote control to pop up the menu shown in

Figure 1. When the signal source menu is red, press the OK key or → key to display the input signal selection menu shown in Figure 2. You can select the signal you want to display, as shown in the following figure:



| Signal source | ▶ |
| Output Resolution | 1080P@60HZ |
| Auto adjustment | ▶ |
| Brightness | 50 |
| Contrast ratio | 50 |
| Region | Full |
| Language | English |

Figure 1. Main Menu

Signal 1 　AO:VGA
Signal 2 　DO:DP
Signal 3 　D1:HDMI
Signal 4 　D3:MHL

Figure 2. Signal Menu

| Signal 1 | Signal 2 |
| Signal 3 | Signal 4 |

Figure 3. Definition of Signal Channel

**5、 Window display signal settings**

Signal 1, Signal 2, Signal 3, and Signal 4 have fixed display positions, but the four signal ports can choose different input signal sources at will, as shown below:

1. If the upper left corner displays the AO: VGA port input signal, select AO: VGA for signal 1

2. the DO: DP port input signal is displayed in the bottom left corner, select D0: DP for signal 2

3. D1: HDMI port signal is displayed in the upper right corner, select D1: HDMI for signal 3

4. D3: MHL port signal is displayed in the bottom right corner, select D3: MHL for signal 4

**6、 Screen mode switching:**

By clicking on the shortcut keys on the remote control, quick switching of signals or modes can be achieved. The following are the definitions of each key:

**1**： Full screen display of signal in signal 1 window, synchronized switching between audio, video, and USB;

**2**： Full screen display of signal in signal 2 window, synchronized switching between audio, video, and USB;

**3**：Full screen display of signal in signal 3 window, synchronized switching between audio, video, and USB;

**4**：Full screen display of signal in signal 4 window, synchronized switching between audio, video, and USB;

**0**：4 screen segmentation display;

**UA1**: Switch sound and USB to signal channel 1;

**UA2**: Switch sound and USB to signal channel 2;

**UA3**: Switch sound and USB to signal channel 3;

**UA4**: Switch sound and USB to signal channel 4

### 7、Brightness and contrast adjustment

7.1、Simultaneously adjust all signal windows:

After pressing the MENU key to pop up the menu, set the area inside the menu to the Full state, and then adjust the brightness or contrast separately. All windows can change the brightness or contrast at the same time;

7.2 Adjusting a single channel:

Press the MENU key to pop up a menu, set the area to 1, and then adjust the brightness or contrast to adjust the signal 1 window; The adjustment method for other windows is similar.

### 8、Other key functions

**SOURCE**：4 screen segmentation, 2 screen segmentation, and switching between various modes of picture in picture and out of picture;

：Power on/off;

：Mute on/off;

：Volume -, press to reduce sound;

：Volume+, press to increase the sound;

**SWITCH**：Switch between different resolutions, please press again every 2-3 seconds after each press;

：Return key;

：VGA signal correction, one click correction for VGA input signal offset or insufficient screen;

# key operation

By pressing the buttons on the chassis, it is convenient to call the shortcut mode, which corresponds to the remote control. The following only introduces the purpose of each button:
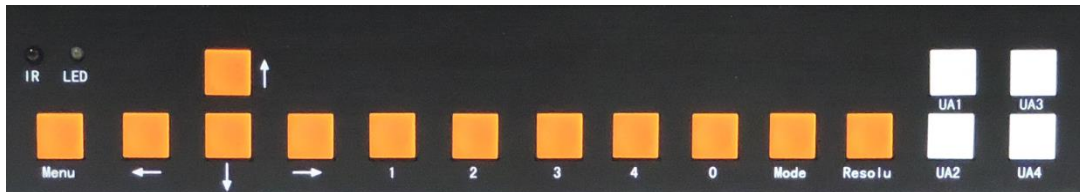


Menu: menu

↑、↓、←、→：Up, down, left, and right navigation keys;

1：The first window screen is full screen;

2：The second window screen is full screen;

3：Full screen display of the third window;

4：Full screen display of the fourth window;

0：Four screen segmentation display;

Mode：Rotate the screen segmentation mode;

Resolu：Resolution switching;

UA1：Switch to the first window for audio and USB mouse and keyboard;

UA2：Switch to the second window for audio and USB mouse and keyboard;

UA3：Switch to the 3rd window for audio and USB mouse and keyboard;

UA4：Switch to the 4th window for audio and USB mouse and keyboard;

# Software operation

1、**Connect RS-232 serial port cable**

   Firstly, connect the RS-232 cable to the product's supporting RS-232 to RJ45 network port connection cable, and connect the other end of the RS-232 cable to the device.

2、**Check computer settings**

   To check if the COM port of the computer device is working properly, right-click on the desktop "My Computer" - "Properties" - "Device Manager", and the COM port number is shown in the following figure:
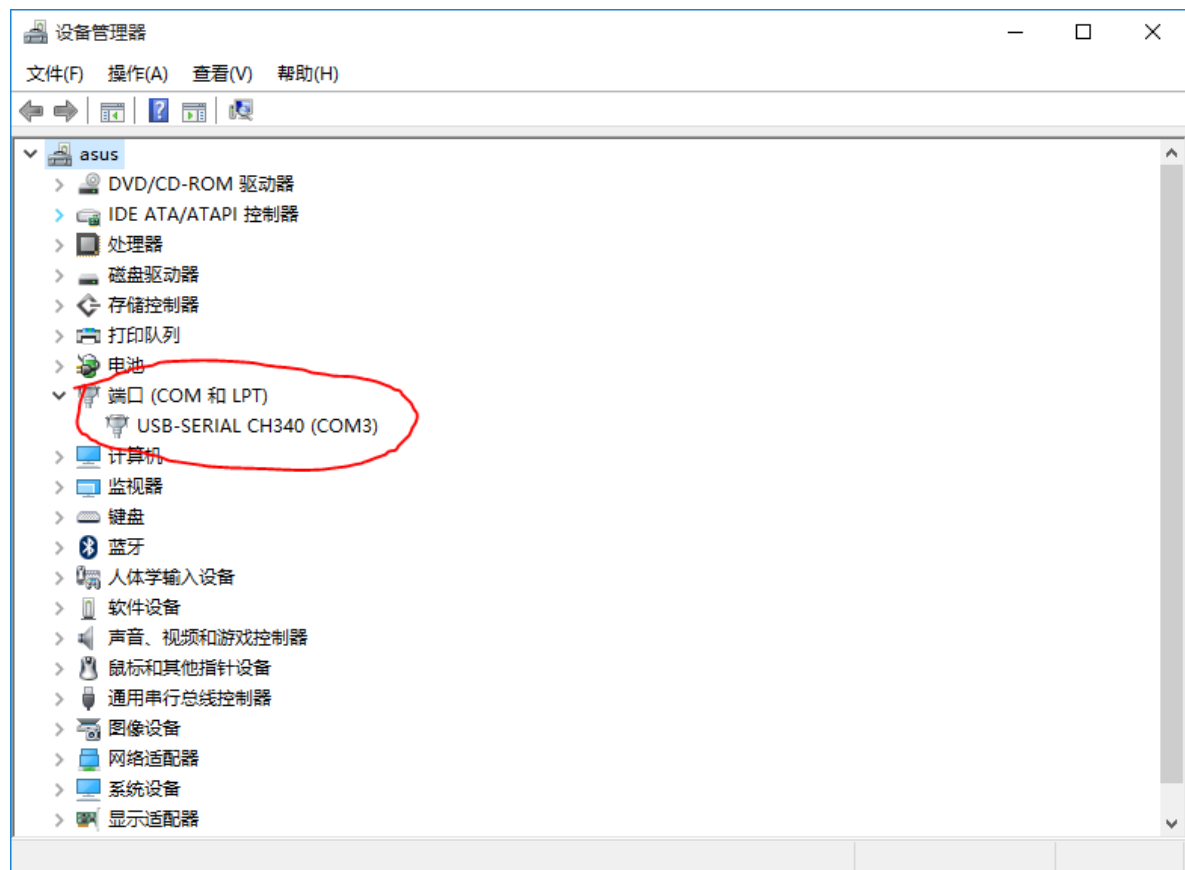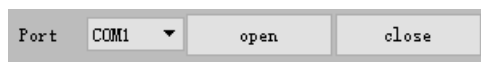
## 3、run software

Copy the random delivery CD control software folder to the control computer and open the VideoConverter file, as shown in the following interface:



## 4、communication

Click on the drop-down menu at the right end of the serial port list → select serial port number → click on serial port open to control the device.



## 5、Resolution settings

Click on the resolution drop-down menu on the right side of the resolution, and select the corresponding resolution and refresh rate based on the physical resolution of the monitor. If the physical resolution of the display unit is 3840 * 2160 and supports a maximum refresh rate of 30Hz for 4K, then 3840 should be selected for this option* 2160@30HZ .

## 6、Mode switching

By clicking on the icon in the display mode, you can quickly control the mode, as shown in the following figure: 1, 2, 3, 4 window full screen display, four split mode, left and right two split mode, up and down two split mode, and picture in picture display mode.
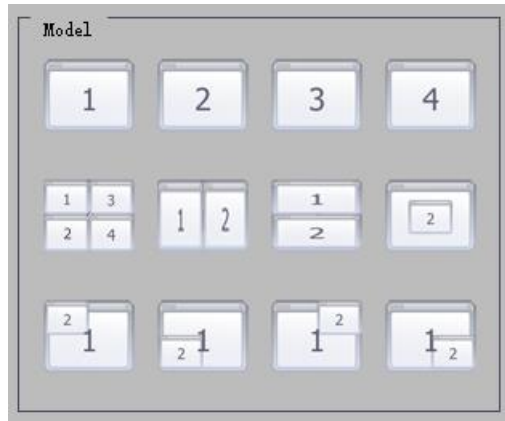


## 7、Audio part

As shown in the following figure, the definitions of each menu in the audio section：

PowerOn/off：Equipment on/off;

VolDec：Volume reduction;

VolInc：Increase the volume;

Mute：Mute on/off;



USB：Switch USB external devices and audio to the first window;

USB：Switch USB external devices and audio to the second window;

USB：Switch USB external devices and audio to the second window;

USB：Switch USB external devices and audio to the fourth window;

## 8、Menu settings

Through menu settings, you can switch signals for each window, adjust brightness, resolution, language settings, and define each key in the settings menu (as shown in the figure below)：
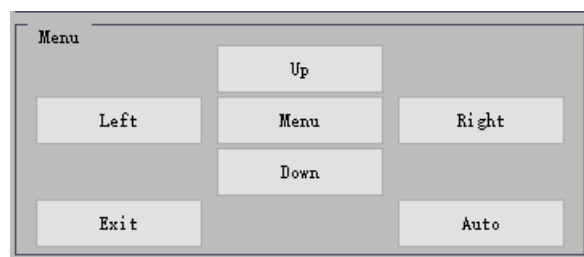
↑：Navigation key up;

↓：Navigation key down;

←：Navigation key left;

→：Navigation key right;



Menu：Menu;

AUTO：VGA signal automatic correction;

Exit：Exit menu

# Central control code

Baud rate: 9600 Data bits: 8

Stop bit: 1 Check code: None

#define _RS232_MENU_MSG（Menu）                0x22   0x10   0x10   0x20   0x33

#define _RS232_LEFT_MSG（Left navigation key）        0x22   0x10   0x11   0x21   0x33

#define _RS232_RIGHT_MSG（Right navigation key）       0x22   0x10   0x12   0x22   0x33

#define _RS232_EXIT_MSG（Return/Exit）          0x22   0x10   0x13   0x23   0x33

#define _RS232_POWER_MSG（On/off）          0x22   0x10   0x14   0x24   0x33

#define _RS232_UP_MSG（Up navigation key）         0x22   0x10   0x15   0x25   0x33

#define _RS232_DOWN_MSG（Down navigation key）       0x22   0x10   0x16   0x26   0x33

#define _RS232_4P（Quadruple mode）           0x22   0x10   0x30   0x40   0x33

#define _RS232_1P_FULL（1 window full screen）       0x22   0x10   0x31   0x41   0x33

#define _RS232_2P_FULL（2 window full screen）       0x22   0x10   0x32   0x42   0x33

#define _RS232_3P_FULL（3 window full screen）       0x22   0x10   0x33   0x43   0x33

#define _RS232_4P_FULL（4 window full screen）       0x22   0x10   0x34   0x44   0x33

#define _RS232_POP_LR（about）            0x22   0x10   0x35   0x45   0x33

#define _RS232_POP_TB（up and down）         0x22   0x10   0x36   0x46   0x33

#define _RS232_PIP_LT（Upper Left）          0x22   0x10   0x37   0x47   0x33

#define _RS232_PIP_LB（LEFT）           0x22   0x10   0x38   0x48   0x33

#define _RS232_PIP_RT（upper right）         0x22   0x10   0x39   0X49   0x33

#define _RS232_PIP_RB（lower right）         0x22   0x10   0x3A   0x4A   0x33

#define _RS232_PIP_MID（Center）           0x22   0x10   0x3B   0x4B   0x33

#define _RS232_L_MODE（UA1）            0x22   0x10   0x3C   0x4C   0x33

#define _RS232_N_MODE (UA2)            0x22   0x10   0x3D   0x4D   0x33

#define _RS232_M_MODE (UA3)            0x22   0x10   0x3E   0x4e   0x33

#define _RS232_K_MODE (UA4)            0x22   0x10   0x3F   0x4F   0x33

#define _RS232_OUTPUT_1280*720@60HZ       0x22   0x10   0x40   0x50   0x33

```
#define _RS232_OUTPUT_1920*1080@60HZ        0x22   0x10   0x41   0x51   0x33
#define _RS232_OUTPUT_2560x1440@60HZ        0x22   0x10   0x42   0x52   0x33
#define _RS232_OUTPUT_3840*2160@30HZ        0x22   0x10   0x43   0x53   0x33
#define _RS232_OUTPUT_3840*2160@60HZ        0x22   0x10   0x44   0x54   0x33

#define _RS232_MUTE(Mute On/Off)            0x22   0x10   0x45   0x55   0x33
#define _RS232_VOL_DEC（Volume-）               0x22   0x10   0X46   0x56
0x33
#define _RS232_VOL_INC （Volume+）              0x22   0x10   0x47   0x57
0x33
#define _RS232_Auto_MESSAGE（VGA calibration）    0x22   0x10   0x56   0x66
0x33
```