

Meicheng[®]

Quad-View Video Processor

MX-1004-4K

User manual



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Chapter One Installation Notes

For your safety and equipment security, please be sure reading the safety instructions carefully before using the machine.

If you have doubts in the use, please read this manual first. Described in detail in the device operation. If you still have questions, please contact us, we will provide you a satisfactory answer soon.

Specifications subject to release to change without notice, please understand.

Please following the notes as below when installing:

1. Power supply:

Please use with protection to single-phase three-wire AC 100-240V power supply, and ensure that the entire engineering system using the same protected. You can not use unprotected power, the power cord ground pin can not be destroyed.

2. Power:

When you need to move equipment or other work must outage, to shut off all power, including the power switch, unplug the power plug, so as to ensure the safety of your equipment.

3. Cable:

Do not put pressure on the power supply lines, signal lines, communication lines, cable should keep from trample or extrusion, to prevent the risk of leakage or short circuit.

4. Signal cable:

Inserting or pulling the signal line to the device, the device needs outage, so as not to damage the device. Hot plug caused damage not covered under warranty.

5. Vents:

The outer surface of the device may have openings for heat dissipation, do not block these openings, in order to avoid heat build-up, the risk of damage to the equipment or cause fire.

6. Equipment placement:

Should a reasonable settlement for devices such as standard rack mount, chassis, cabinets, or placed on a stable flat work surface to prevent the unit from dropping.

7. Surroundings:

Equipment working environment should pay attention to dust, moisture, in particular, to prevent the liquid from soaking and splashing into the interior of the device.

8. Service:

All repairs should be done by qualified service personnel, untrained
Never attempt to repair equipment. To prevent the risk of electric shock,
do not open the cabinet.

9. Safety Precautions:

- A. The internal high-voltage equipment, non-professional maintenance personnel shall not open the case, to avoid danger.
- B. Non-dripping or splashing, prohibited place any container with liquid items on the device.
- C. For the prevention of fire, keep device away from the fire.
- D. For adequate ventilation, equipment should be maintained at least 20CM void of the front and rear panels.
- E. Devices should be immediately unplug the power cord and handled by professional maintenance personnel such as eerie noise, smell or smoke.
- F. In the case of lightning or unused for long periods, unplug the power cord.
- G. Not stuffed any object to ventilation holes of the device to avoid damage to the equipment or electric shock.
- H. Not to place the device near water or other damp places.
- I. The device should not be placed near heat sink or other high temperature places.
- J. Properly organize the power cord to prevent breakage.
- K. The following conditions should unplug the device power cord, handled by qualified service personnel:
 - 1) the power cord is damaged or frayed.
 - 2) When the liquid has been spilled into the device.
 - 3) The device is dropped or the cabinet damaged.
 - 4) This device malfunction or significant performance changes.

This device is not suitable for non-professionals to operate the debugger, users are subject to professional training and guidance.

Please read carefully before using and this manual should be properly preserved for later use.

Chapter Two Product Introduction

1. Product description

MX-1004-4K is a high-performance 4K quad-view video processor, its main function is to make the four HD or analog signals displayed simultaneously on a super-high-definition display unit under quad mode, and contain PIP, POP function.

MX-1004-4K 4K quad-view video processor supports 1 channel VGA, 2-way DP, 4-way HDMI signal input. Maximum input signal DP supports 3840x2160 @ 60Hz, the highest HDMI input signal can support 3840x2160 @ 30Hz, maximum output resolution up to 3840x2160 @ 60Hz.

It support 1 channel HDMI 2.0 output, the output resolution and refresh rate up to 3840x2160 @ 60Hz the output refresh rate of high-definition ,4K quad-view video processor is the highest on the market. Meanwhile, if the four 1920x1080 signal input, 4K display unit may quad display mode, point-to-point display 4-way high-definition signals, four full HD 1080P video signal can be completely uncompressed displayed on a 4K display unit and 4 source image effects with one 1080P signal source connected with a single 1080P display unit without any distinction.

Meanwhile, MX-1004-4K 4K quad-view video processor can also supports USB synchronous switch HD video multiplexers, switch to a computer signal display full screen by button or remote control , the corresponding host computer's USB also synchronous switch, which realize the need of achieving synchronous switch mouse, keyboard of video conferencing.

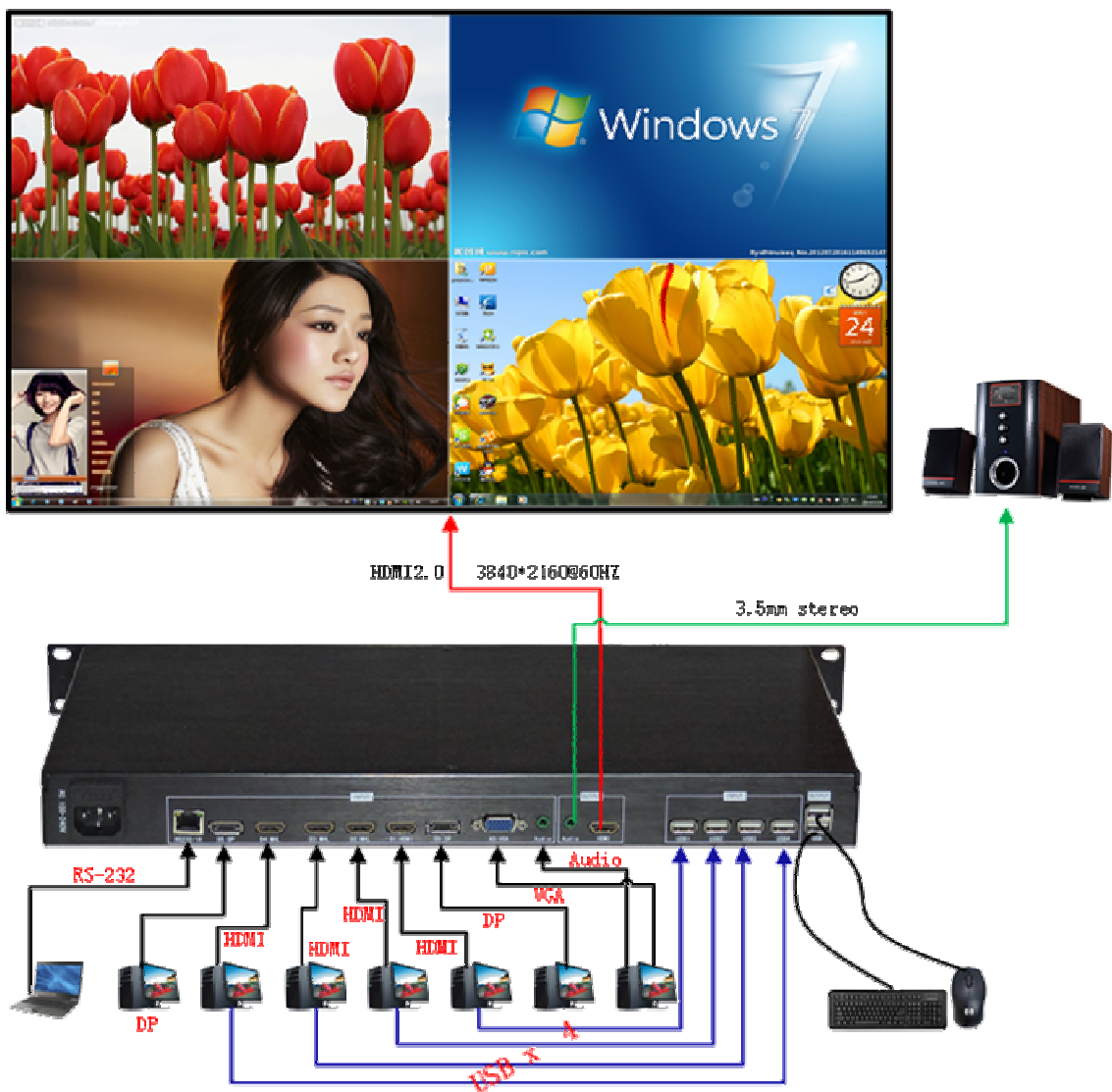
MX-1004-4K 4K quad-view video processor is currently use a relatively large number of standard products on the market, products are mainly used in where need to use a single display unit simultaneously display multiple HD signals workplace like video conferencing, teaching, exhibitions.

2. The main function

- Supports one VGA, 2-way DP, 4-way HDMI (including 3-way compatible MHL) input signal, the input resolution up to 3840 x 2160 @ 60Hz, backward compatible.
- Support 1 channel HDMI2.0 output, the output resolution up to 3840 x 2160 @ 60Hz.
- Support point-to-point display 4-way 1920 x 1080 full HD signal.
- Input and output signal widely support audio, and 3.5mm headphone jack support the left and right channel stereo output.

- 2 USB signal output, USB connection support mouse and keyboard, and USB with image synchronous switch.
- Single screen simultaneously displays four HD digital / analog signals, or switching to a signal full-screen display.
- Support image fixed position POP, PIP function.
- Widely support 100V ~ 240V AC input, can be commonly use to any country worldwide.
- Standard 19-inch 1U chassis drawing, directly on the cabinet.
- Support control by front panel button, IR remote control, RS-232 serial control and the control.

3. System topology



4. Machines pictures and size



5. 4K Quad-view processor specifications:

Model

MX-1004-4K

Input Signal	
Input port	1VGA port [D-Sub 15 pin , female], 2DP ports [20 pin, female], 4HDMI ports (including 3-way compatible MHL) [19 pin, Type A, female], 4USB ports [4 pin, Type A, female] and 1 stereo audio jack (operate with VGA port) [3.5mm, female]
Resolution	DP Port: Support up to 3840 x 2160@60Hz (4K x 2K@60 Hz) resolution and backward compatibility. HDMI Port: Support up to 3840 x 2160@30Hz resolution and backward compatibility
Color depth	24bit,1677 ten thousand color
PIP 、POP mode	Fixed model
Output Signal	
Output port	1 HDMI 2.0 port [19 pin, Type A female] which connect display device and support video and audio sync output; 1 3.5 mm audio right and left stereo jack [3.5mm, female], 2 USB 2.0 ports [4 pin, Type A, female] respectively connect with mouse and keyboard
Resolution	3840 x 2160@60 Hz(4K x 2K@60 Hz), 3840 x 2160@30 Hz(4K x 2K@30 Hz), 2560 x 1440@60 Hz(2K@60 Hz), 1920 x 1080@60 Hz(1080P@60 Hz), 1280 x 720@60 Hz(720P@60 Hz) selectable
Color depth	24bit,1677 ten thousand color
Control mode	RS232 [RJ-45,female],IR, Front panel button.
Voltage	AC 100 ~240V[3 pin, power male]
Dimension	441mm(L)*44mm(H)*239mm(W) [Front panel: 482mm(W)]
Power consumption	Max. 15 W

Chapter Three Machine installation

1.Unpacking

Check main frame and accessories. Product contents: Main frame, CD, power cable, RJ-45 to RS-232 converter, remote control, warranty card, manual.

2.Install the machine

Display unit setting: MX-1004-4K 4K quad-view video processor Support 1 channel HDMI 2.0 output, the display unit input source has set as HDMI signal; if there are several HDMI input signals simultaneously, the signal source is set to HDMI input port.

Connected MX-1004-4K output port with display unit: After proper placed 4K quad-view video processor, the signal will output via HDMI cable and docking with HDMI port of the corresponding display unit.

If user needs to connect with external audio equipment, please connect audio equipment with MX-1004-4k through 3.5mm audio jack.

Input Signal Connection: Connect the computer or other signal source output devices with splitter input port via HDMI cable, VGA cable or DP line.

If VGA require audio feature, use the 3.5mm headphone jack in the ends of both side with 3.5MM headphone jack cable to connect the computer and the input Audio ports of device.

3.Power on

After finishing connecting the cables as the descriptions as above, insert the 100~240V AC power supply, and turn on the power switch then the power indicator lights will shows in red for power-on state and standby mode.

Chapter Four Device Port Description

In the process of using the device, first you need to know each input and output video ports in order to operate the equipment more skilled. Device input and output port consists three parts: input section, output section, USB section.

1. Input section

Input portion of the chassis rear panel INPUT box ,by A0: VGA, D0: DP, D1:HDMI, D2: MHL, D3: MHL, D4: MHL, D5: DP, RS232 / IR, Audio composed of nine input port, under function for each port:

A0: VGA- VGA signal input.

D0: DP - DP signal input, maximum input resolution / refresh rate to 3840x2160 @ 60HZ, backward compatible.

D1: HDMI - HDMI input signal, the input resolution up to 3840x2160 @ 30HZ, backward compatible.

D2: MHL - HDMI input signal, the input resolution up to 3840x2160 @ 30HZ, backward compatible; compatible MHL mobile phone signal through the Micro USB to HDMI input.

D3: MHL - HDMI input signal, the input resolution up to 3840x2160 @ 30HZ, backward compatible; compatible MHL mobile phone signal through the Micro USB to HDMI input.

D4: MHL - HDMI input signal, the input resolution up to 3840x2160 @ 30HZ, backward compatible; compatible MHL mobile phone signal through the Micro USB to HDMI input.

D5: DP - DP signal input, maximum input resolution / refresh rate to 3840x2160 @ 60HZ, backward compatible.

RS232 / IR - Using RJ45 to RS232 line to control through computer control software or in the centralized control; IR signals can also be transferred via cable, if user put the remote control receiver away from the device may also be implemented by infrared remote control.

Audio - Bind VGA video signal input, can be synchronized switching with the VGA signal.

2. Output section

The input section of the chassis's rear panel OUTPUT frame, HDMI interface directly connected to the display unit; Audio can be directly connected to an external sound to achieve high power audio playback affections.

3. USB section

USB input section contain the USB1, USB2, USB3, USB4 input port in INPUT box, which are connected with the respective host computer.

USB output section consists of two USB ports of output, it can connect with USB mouse and keyboard at the same time, to achieve the function which a single set of mouse and keyboard to control 4 mainframes simultaneously.

Connection Description:

- a. Connected 4 signal sources into input port of device through cable.
- b. By setting to makes each window (as shown below Signal 1, Signal 2, Signal 3, Signal 4 four window) to display different signal source (setting mode refer to the next chapter of the remote control), do not change display window position of the signal source.
- c. Through the USB cable to makes 4 computer's USB port connect respectively with USB1, USB2, USB3, USB4 of the device, for example : A image of computer is displayed in the window position of the signal 1, then the computer's USB cable must be connected to the USB1 port of the device, similar to other computer connection.

Chapter Five Remote control operation

Properly connect the output signal and display terminal, then you need to properly connect the input signal source and the device. Via remote control, chassis button and control software to set different display modes, such as quad display, select a signal full-screen display, the PIP and other functions. This chapter describes how to operate the equipment via infrared remote control, if you are use our devices for the first time, configure or settings as follows

1. The window position of signal definition:

Before using MX-1004-4K quad-view video processor, we must understand the definition of signal 1~4:

- Signal 1 is also called window 1 which at the top left corner of the screen.
- Signal 2 also known as window 2 which at the lower left corner of the screen.
- Signal 3 also known as window 3 which at the upper right corner of the screen.
- Signal 4 also known as window 4 which at the lower right corner of the screen.

Picture as below:



2. Resolution setting:

If the output resolution of the device is higher than the physical resolution of the display unit, the display may not display images, if the output resolution of the device is lower than the physical resolution of the display unit, the image display but not the best, so we must select identical or similar resolution output.

SWITCH button on the remote control switching in turn the output resolution of the device, so that the output resolution of device with physical resolution of the display unit fit that achieve optimal effect, when switching the resolution we must note the following:

- ☆ Each time you press the **SWITCH** button on the remote control, need about 2 seconds before you can switch to the next resolution.
- ☆ If the output resolution of device is higher than the physical resolution of the display unit, the display unit will not display images, or display does not support, and press the MENU button of remote control does not pop up any menu.
- ☆ After switching resolution, if the display unit can support the resolution, will pop up input resolution at side of the screen, you can select the best resolution to support the display unit by switching.
- ☆ Press the **MENU** key to pop up menu, and user can setting the proper resolution in it.

3. Quad-view display mode setting:

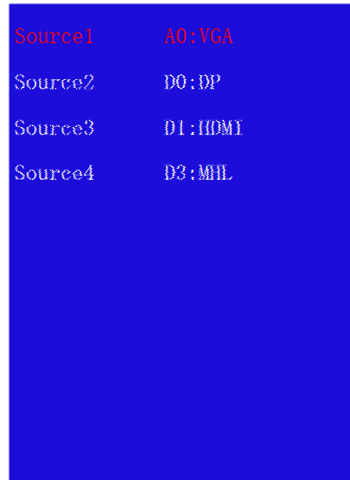
First press buttons **0** on the remote control or front panel to displaying image as Quad mode. If displayer doesn't shows image after press the **0** key, user need to operate as following steps.

4. Access the setup menu:

Press the **MENU** key on the remote control to pop-up menu like Figure 1, when signal source menu shows in red character and press the "OK" key or the "→" key appears input signal selection menu as Figure 2, you can choose the signal, picture as below:



▲ Figure 1: Main menu



▲ Figure 2: Signal menu



▲ Figure 3: Signal path definitions.

5. The window displays signal settings

Signal 1~ 4 displays as fixed position, but the four signal ports can be arbitrarily selected, description as below:

- The upper left corner shows A0: VGA port input signal therefore signal 1 have to select A0: VGA
- The lower left corner shows D0: DP port input signal therefore signal 2 have to select D0: DP
- The top right corner shows D1: HDMI port signal therefore signal 3 have to select D1: HDMI
- The bottom right corner shows D3: MHL port signal therefore signal 4 have to select D3: MHL

6. The screen mode switching:

By clicking the shortcut keys on the remote control, you can achieve fast switching signal or mode, the following is the definitions of each key:

- Key **1**: signal1 display as full screen, audio, video and USB sync switch;
- Key **2**: signal2 display as full screen, audio, video and USB sync switch;
- Key **3**: signal3 display as full screen, audio, video and USB sync switch;
- Key **4**: signal4 display as full screen, audio, video and USB sync switch;
- Key **0**: quad-view display;

UA1 key: Audio and USB switch to signal 1 channel;

UA2 key: Audio and USB switch to signal 2 channel;

UA3 key: Audio and USB switch to signal 3 channel;

UA4 key: Audio and USB switch to signal 4 channel;

7. Brightness and contrast adjustment






a. While adjusting all signals window:

Press the **MENU** key to pop-up menu and to set "Full state" at the region in the menu, then respectively adjust brightness or contrast. All windows can change the brightness or contrast simultaneously.

b. Adjust one single channel:

Press the **MENU** key to pop-up menu and to set "1 state" at the region, then adjust the brightness or contrast for signal 1 window. The rest of windows are operating similar to that.

8. Other keys functions

Key	Descriptions
SOURCE	Quad-view, dual-view, POP and PIP various modes switch by turns.
	Power on / off;
	Mute on / off;
	Volume -, press sound reduction.
	Volume + press to increase the sound.
SWITCH	Switch different resolutions, after each press, please interval 2-3 seconds.
	Return key.
AUTO	VGA signal correct, for the VGA input signal offset or not full screen situation, one-click calibration.



Chapter Six Front panel button operation

Through the front panel button, user can easily call in quick mode, call mode are correspond with the remote controller. The following describes the purpose of each button:



Menu Key: Menu

↑, ↓, ←, → Keys: Upward, downward, leftward and rightward cursor movement key

- 1** Key: The first window display as full-screen.
- 2** Key: The 2nd window display as full-screen.
- 3** Key: The 3rd window display as full-screen.
- 4** Key: The 4th window display as full-screen.

0 Key: Quad-view display.

Mode Key: Switching each split screen mode by turns.

Resolu Key: Resolution switching.

UA1 Key: Audio and USB mouse, keyboard, switch to the first window.

UA2 Key: Audio and USB mouse, keyboard, switch to the 2nd window.

UA3 Key: Audio and USB mouse, keyboard, switch to the 3rd window.

UA4 Key: Audio and USB mouse, keyboard, switch to the 4th window.

Chapter Seven Software Operation

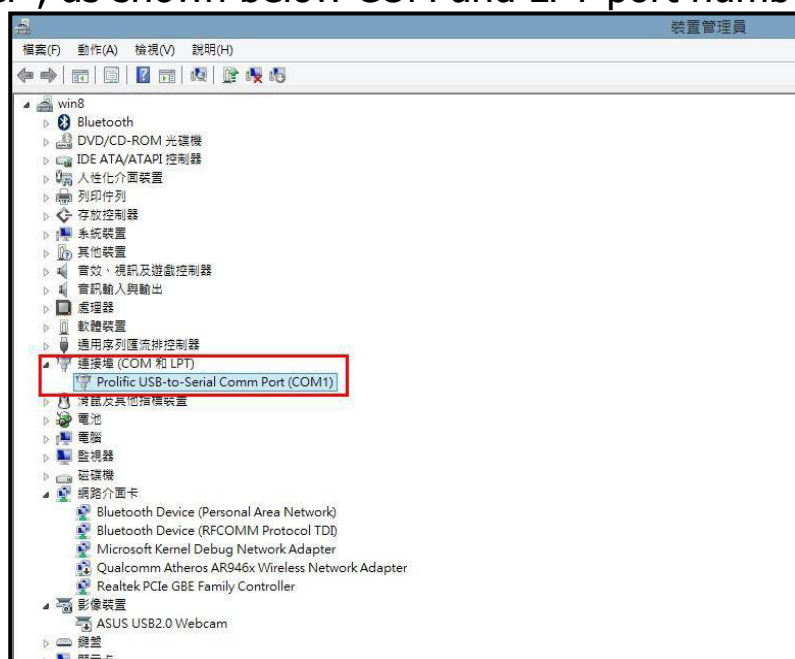
User can operate and setting through remote controller or front panel button to reach the most user's basic needed. When user need to process some special split screen functions, so that need to operate via control software. There are some operate steps as following,

1. RS-232 serial cable connection

First, using network cable to convert RJ-45 port to RS-232 port, and connected the control computer with serial port of MX-1004-4K quad-view video processor via RS-232 control line. (If the control computer doesn't equip RS-232 serial ports, and user needs to prepare a USB to RS-232 port convert cable, meanwhile install the corresponded drive software.)

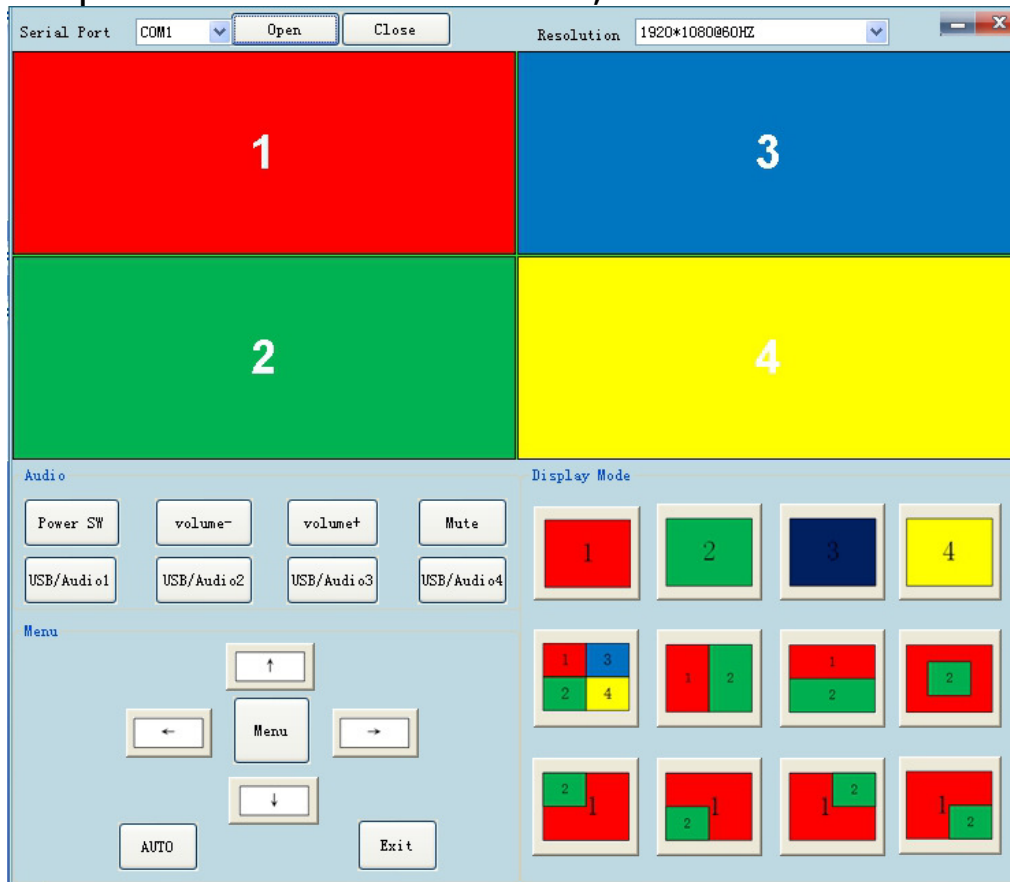
2. Check the computer settings

To check the COM port of computer if is functional, checking steps as following: Right-click by mouse on the desktop "My Computer" - "Properties" - "Device Manager", as shown below COM and LPT port numbers:



3. Run the software

Copy the control software folder in the CD-ROM into the control computer, and click to open "VideoConverter.exe" file, such as on the following picture:



4. The communication settings [Serial Port] :

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

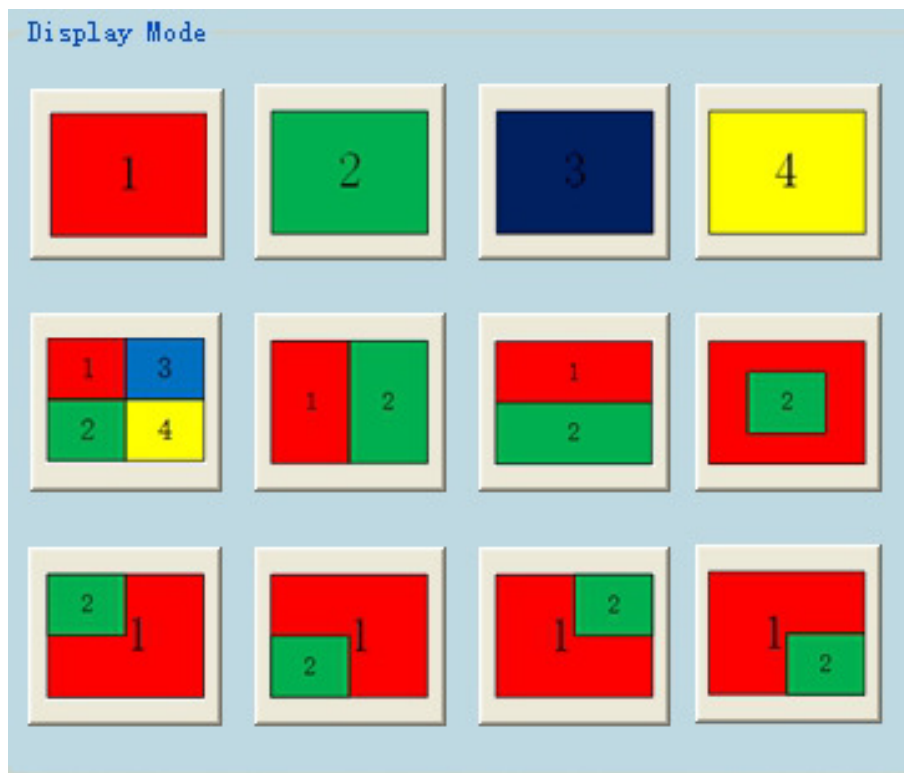


5. Resolution settings [Resolution] :

Click on the right side of the resolution, Resolution drop-down menu, select the appropriate resolution and refresh rate depending on the physical resolution of the monitor. Such as the display unit physical resolution is 3840 * 2160, support for 4K maximum refresh rate is 60HZ, so you should choose 3840 * 2160 @ 60HZ in this item.

6. Switching mode [Display Mode] :

By clicking the icon under the display mode to operate speedy mode control, as shown below, respectively: 1,2,3,4 window full screen, quad mode, the left and right split mode, down and up two split mode, PIP display mode.



7. The audio portion [Audio] :

Each menu definition of audio portion, as shown below,

[Power SW] : Device on / off

[volume-] : Volume decrease

[volume+] : Volume increase.

[Mute] : Mute on / off.

[USB/Audio1] : USB peripherals and audio switch to the first window.

[USB/Audio2] : USB peripherals and audio switch to the second window.

[USB/Audio3] : USB peripherals and audio switch to the third window.

[USB/Audio4] : USB peripherals and audio switch to the fourth window.



8. Menu settings [Menu] :

It can be switched signals of each window through the menu settings to adjust the brightness, resolution adjustment, language setting. The each definition of keys in the setup menu as below,

↑ : Upward cursor movement key.

↓ : Downward cursor movement key.

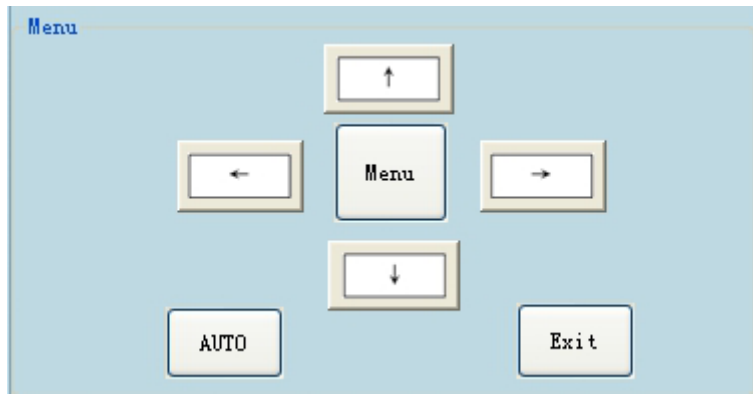
← : Leftward cursor movement key.

→ : Rightward cursor movement key.

Menu : The menu key

AUTO : VGA signal automatically corrected key.

Exit : Exit menu.



Chapter Eight Control Code

The device also support centralized control, user can type the control code into system to process centralized control. Control code list as below,

Baud Rate	2400
Data Bit	8
Parity Check	None
Stop Bit	1
Flow Control	None

```
#define _RS232_MENU_MSG (Menu)          0x22  0x10  0x10  0x20  0x33
#define _RS232_LEFT_MSG (Leftward key)  0x22  0x10  0x11  0x21  0x33
#define _RS232_RIGHT_MSG (Rightward 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 (Upward key)      0x22  0x10  0x15  0x25  0x33
#define _RS232_DOWN_MSG (Downward key)  0x22  0x10  0x16  0x26  0x33

#define _RS232_4P (Quad-view mode)      0x22  0x10  0x30  0x40  0x33
#define _RS232_1P_FULL (Window1 full-screen) 0x22  0x10  0x31  0x41  0x33
#define _RS232_2P_FULL (Window2 full-screen) 0x22  0x10  0x32  0x42  0x33
#define _RS232_3P_FULL (Window3 full-screen) 0x22  0x10  0x33  0x43  0x33
#define _RS232_4P_FULL (Window4 full-screen) 0x22  0x10  0x34  0x44  0x33
```

```

#define _RS232_POP_LR (Left and right)      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 (Lower 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_1280x720@60Hz        0x22  0x10  0x40  0x50  0x33
#define _RS232_OUTPUT_1920x1080@60Hz      0x22  0x10  0x41  0x51  0x33
#define _RS232_OUTPUT_2560x1440@60Hz      0x22  0x10  0x42  0x52  0x33
#define _RS232_OUTPUT_3840x2160@30Hz      0x22  0x10  0x43  0x53  0x33
#define _RS232_OUTPUT_3840x2160@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 correction) 0x22  0x10  0x56  0x66  0x33

```

Statement:

All product and brand names may be trademarks or registered trademarks of the corresponding manufacturer. TM and R may be omitted in this manual.

The picture and the picture of the product mentioned in this manual may be slightly different, the effect of the demonstration and schematic diagram for reference only (picture for the synthesis, schematics), the appearance of the product (including but not limited to color) please prevail in kind.

Meicheng Always strive to provide the best quality products to customers, so the product software and hardware will keep upgrading. The information contained in this manual is subject to change without notice.

Meicheng®

MEI CHENG AUDIO VIDEO CO., LTD.

Address: 13F., No.2, Jian 8th Rd., Zhonghe Dist., New Taipei City 235, Taiwan

Tel: +886(2) 8228 0311,

Fax: +886(2) 8228 0319

Website : www.meicheng.com.tw

Email : mei.cheng@msa.hinet.net