

MX-1004K

Professional Quad-View Video Processor with Keyboard & Mouse Control

User Manual



Full HD
1080

WUXGA
x1920
x1200

dvi
digital visual interface



Made in Taiwan



Safety and Notice

The **MX-1004K Professional Quad-View Video Processor with Keyboard & Mouse Control** has been tested for conformity to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the MX-1004K should be used with care. Please read and follow the safety instructions to protect yourself from possible injury and to minimize the risk of damage to the unit.

- Follow all instructions and warnings marked on this unit.
- Do not attempt to service this unit yourself, except where explained in this manual.
- Provide proper ventilation and air circulation and do not use near water.
- Keep objects that might damage the device and assure that the placement of this unit is on a stable surface.
- Use only the power adapter and power cords and connection cables designed for this unit.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.

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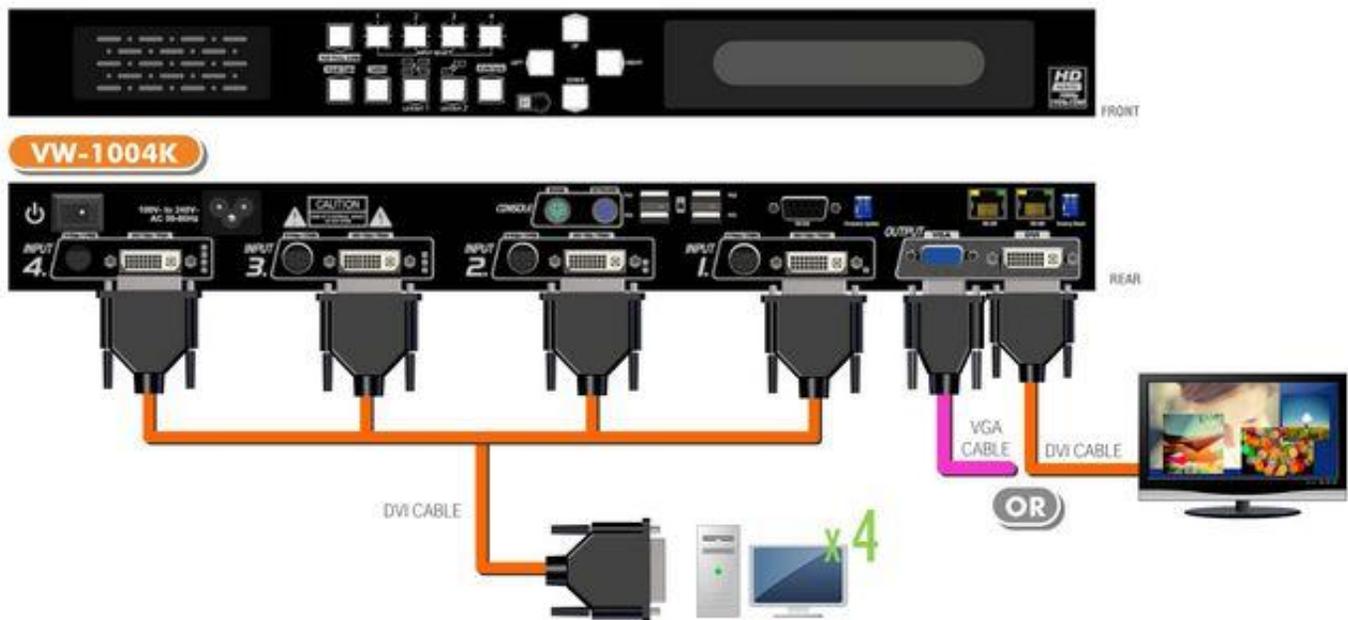
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General

The **MX-1004K Professional Quad-View Video Processor with Keyboard & Mouse Control** is an advanced video processor for multimedia presentations. It is an ideal solution for applications where up to four video signals must be displayed on a single display. It supports up to 16 video inputs, of which four can be outputted simultaneously with the desired display layout through software control. The advanced video processor allows you to manipulate output images, wherever positions and whatever sizes you want for viewing two computers or two video signals or a combination. In addition to typical 4 channel video processor, MX-1004K is also equipped with PS2-IN-USB-OUT keyboard and mouse control board. With this feature, users can switch K/M control among 2 to 4 PC sources.

The embedded scaler converts signals from input sources to match the native resolution of monitors, flat panel displays, projectors as well as user-selectable output settings up to WUXGA (1920x1200). Dual outputs are provided in both analog (VGA) and digital (DVI) format, one is connected to remote display and the other is connected to on-site display for real time monitoring.

Figure 1: Configuration Diagram



Features

- Support six most popular video formats: four VGA, four DVI/HDMI, four component, four S-Video and four composite inputs!
- Input resolution support from 640x480 to 1920x1200, interlaced or progressive.
- DVI 1.0
- Support HDCP 1.1
- Dual outputs (DVI / VGA), 640x480 to 1920x1200.
- 4 port KVM control with PS/2 input and USB outputs
- Video background available.
- Adjustable size& position through software.
- Dynamic transition for video sizing and positioning
- Titles, borders and colored backgrounds.
- Resize, position, zoom& pan and blend output video.
- Image parameters and layouts are automatically saved in flash memory and can be recalled for later use.
- Several Image parameters and layouts can be saved in computers and can be loaded for later use.
- Video parameters adjustable (brightness, contrast, color temperature, etc.).
- User-selectable output settings, up to 1920x1200.
- Perfectly as a video screen splitter, a video converter and a video switcher.
- Firmware upgradable for support of new features and technology enhancements.
- Software control through RS-232/RS-485 over Cat-5.
- Can be cascaded to obtain more images using RS-485 control path
- Control protocol available for customer proprietary design
- 1U size.

Specifications

Model Name		MX-1004K	MX-1004PF
Technical			
Role of usage		Multiplexer / video processor	
Dual output support		Yes [DVI & VGA]	
Background video input		Yes	
HDCP compliance		Yes	
Video bandwidth		DVI/HDMI [Single-link 4.95Gbps] [13.5MHz]	VGA [165MHz] S-Video [13.5MHz] Component [30MHz] Composite
Input Video support		480i / 480p / 720p / 1080i / 1080p60 / 1920x1200@75 / 1600x1200@60	
Audio support		No	
KVM support		Yes	NO
Control		RS-232 and RS-485	
Embedded video mixer		Yes	
Cascadable		Yes	
Input TMDS signal		1.2 Volts [peak-to-peak]	
ESD protection		Human body model — ±19kV [air-gap discharge] & ±12kV [contact discharge]	
PCB stack-up		6-layer board [impedance control — differential 100Ω; single 50Ω]	
Input		4x VGA + 4x DVI + 4x component + 4x composite + 4x S-Video + 1x RS-232 + 1x RS-485 + 2xPS/2 + 4 x USB	4x VGA + 4x DVI + 4x component + 4x composite + 4x S-Video + 1x RS-232 + 1x RS-485
Output		1x DVI + 1x VGA	
DVI connector		DVI-I [femal,29-pin]	
S-Video connector		9 pin	
VGA connector		HD-15 [15-pin D-sub female]	
RS-232 connector		DE-9 [9-pin D-sub female]	
USB connector		Type A	
PS/2 connector		Mini DIN-6	
RCA connector		75Ω female	
RJ-45 connector		WE/SS 8P8C with 2 LED indicators	
Mechanical			
Housing		Metal enclosure	
Dimensions (L x W x H)	Model	300 x 440 x 44mm [11.8"x1'5.3"x1.7"]	
	Package	310 x 525 x 155mm [1'0.2"x1'8.7"x6.1"]	
	Carton	570 x 580 x 260mm [1'10.5"x1'10.9"x10.2"]	
Weight	Model	3.8kg [8.4 lbs]	3.8kg [8.4 lbs]
	Package	5.9kg [13.0 lbs]	5.9kg [13.0 lbs]
Fixedness		1U rack-mount with ears	
Power supply		AC Power 100-240V	
Power consumption		35 Watts [max]	
Operation temperature		0~40°C [32~104°F]	
Storage temperature		-20~60°C [-4~140°F]	
Relative humidity		20~90% RH [no condensation]	
Package Contents		1x MX-1004K or 1x MX-1004PF 1x Remote Control 4x DVI to DVI&VGA breakout cable 4x VGA to component breakout cable 4x DVI to VGA adapter 1x USB to RS-232 cable 2x 1U rack mounting-ear 1x Installation software CD 1x UL AC power cord & 1x User Manual	

Package Contents

1. MX-1004K



2. DVI to DVI&VGA Breakout Cable (DDVY01)



3. VGA to Component Breakout Cable (VYPBA01)



4. DVI to VGA Adapter (DVA01)



5. S-Video & CVBS breakout cable



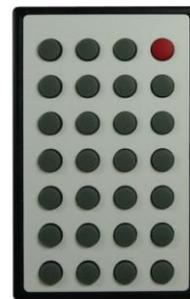
6. UL AC Power Cord



7. RS-232 to USB Adapter



8. IR Remote Control



8. 1U Rack Mounting-Ear

9. Installation Software CD

10. User Manual

Inputs and Outputs

The MX-1004K has 16 inputs and accepts both graphics and video signals, which come from computers (DVI or VGA), composite, and component video sources respectively. You can pick up four of the ten inputs and then display four of them simultaneously on the same screen. Figure 2 shows the rear panel connectors of a MX-1004K and Table 1 illustrates how you can connect video devices and display to the MX-1004K.



Figure 2: Rear Panel



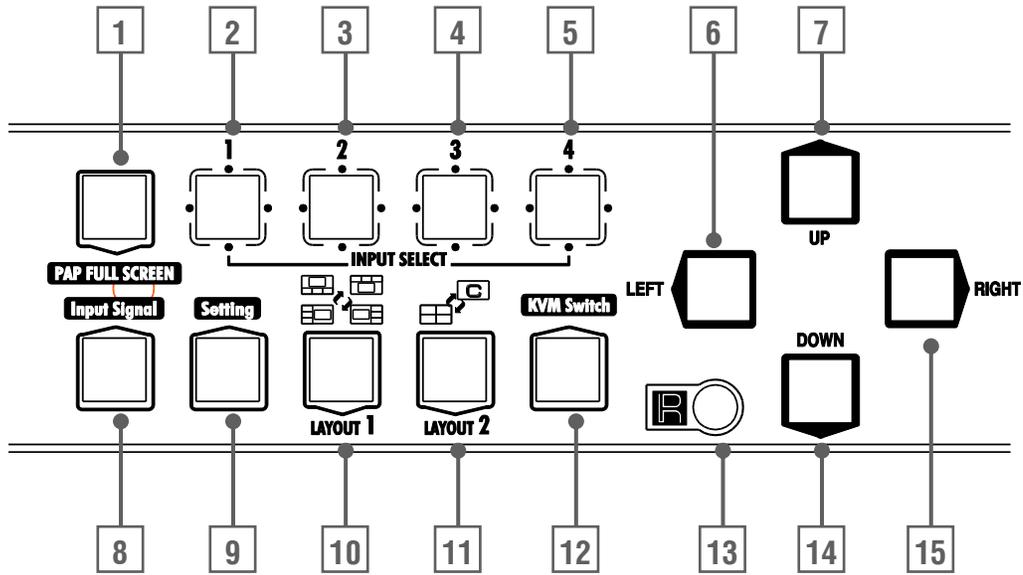
**Default: Turn on the MX-1004K then switch the circled DIP switch simultaneously up and down to factory default mode.*

**These IO ports support various resolution from 640x480 up to 1920x1200, for more detail of the supported modes, please refer to the Appendix – Supported Resolution.*

Table 1: Input/Output Connectors

Input Connector	Video Source
DVI-x YPbPr-x/VGA-x CVBS-x S-Video-x [x = 1~4]	[1] DVI
	[2] VGA — with a DVI-to-VGA adapter (DVA01)
	[3] Component (YPbPr) — with a DVI-to-VGA adapter (DVA01) and a VGA-to-component breakout cable (VYPBA01)
	[4] CVBS
	[5] S-Video
Output Connector	Display
DVI-I OUT	[1] DVI display
	[2] VGA display — with a DVI-to-VGA adapter (DVA01)
	[3] 1x DVI display + 1x VGA display — with a DVI to DVI&VGA breakout cable (DDVY01)
KVM Connector	Keyboard & Mouse Control
KVM I/O	[1] PS/2 compatible Keyboard and mouse
	[2] USB outputs connected up to 4 PC

Control Panel and VFD Menu

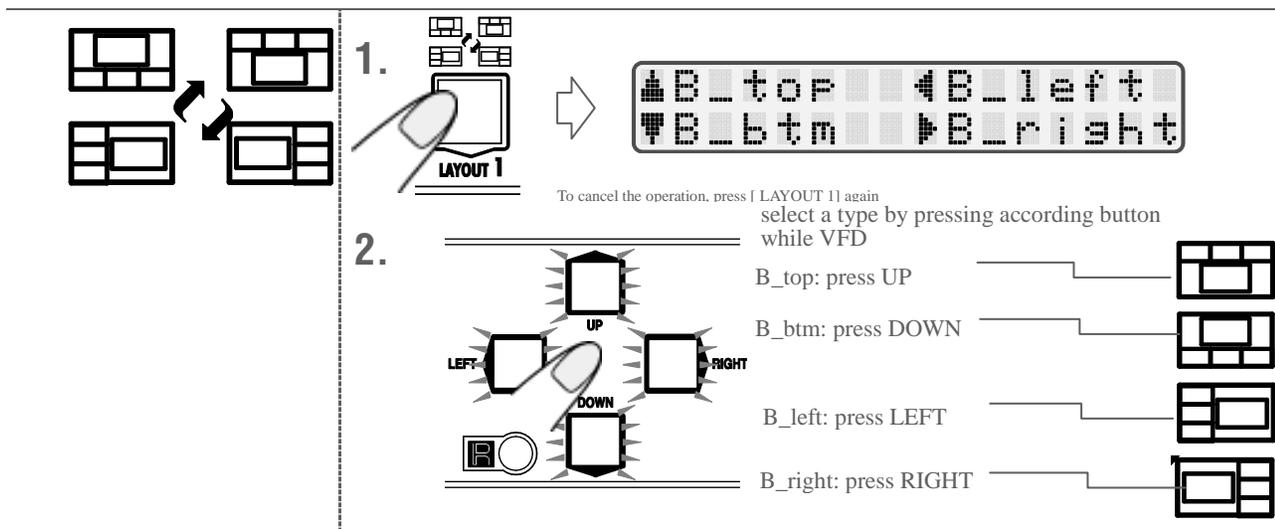


1	PAP Full Screen	11	Function key: Layout 2			
2	3	4	5	Input Select	12	Function key: N/A
8	Function key: Input Signal	13	Infrared Sensor			
9	Function key: Setting	6	7	14	15	Navigation
10	Function key: Layout 1					

Selecting PIP Window Arrangement

[Main Window with 3 triple sub-windows aside]

You can choose one of the following window arrangement from 4 presets



[Quad Windows in crisscross + 3 user-defined custom]

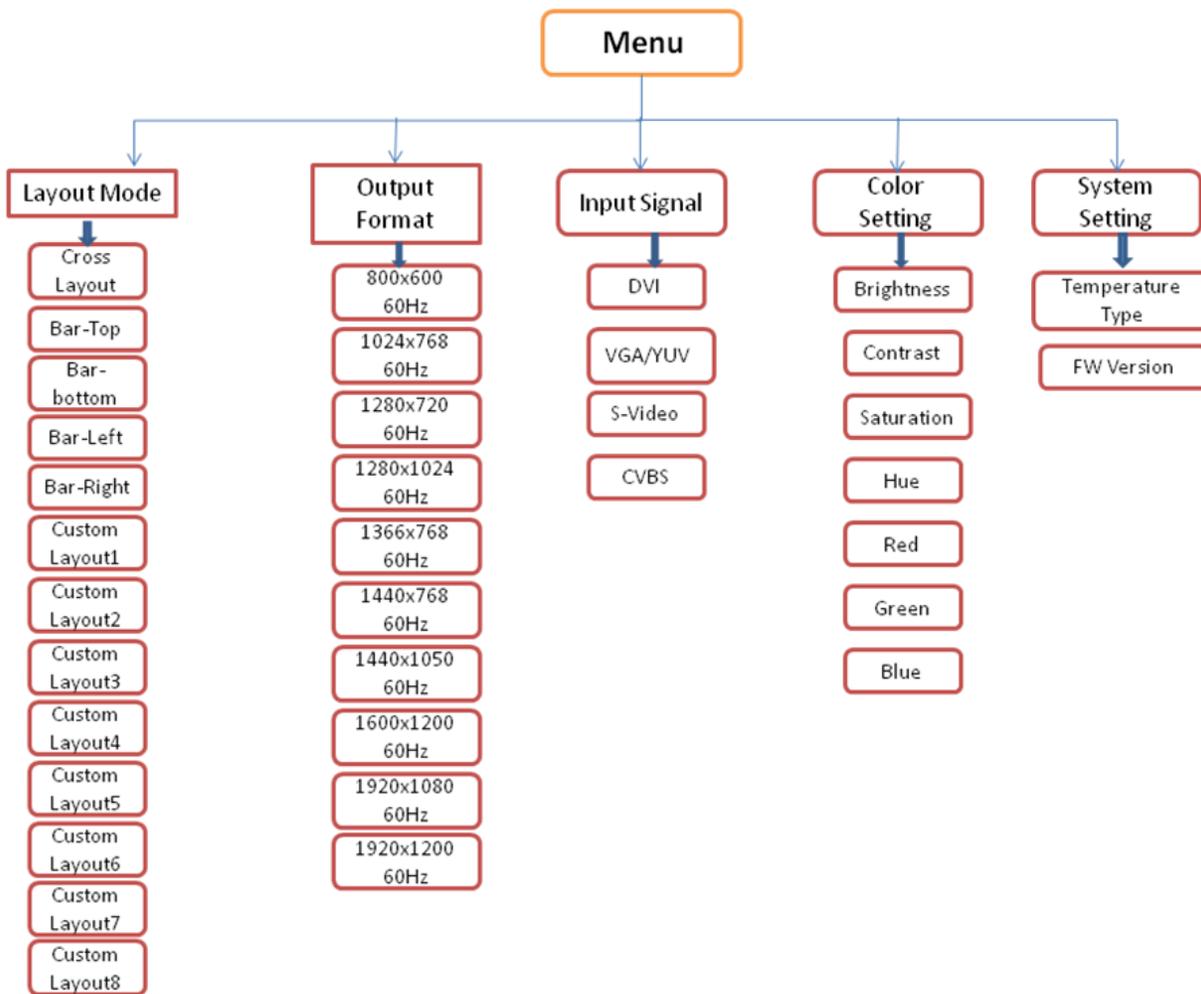
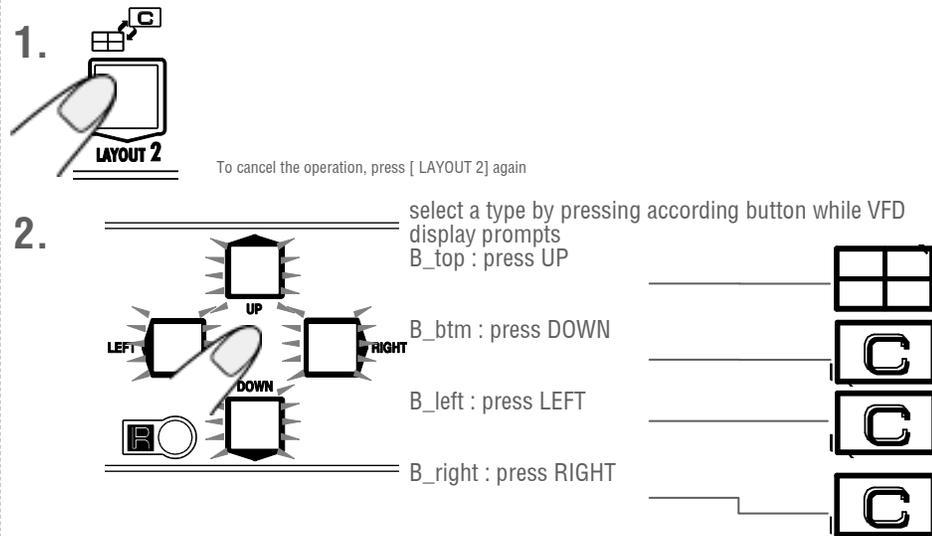
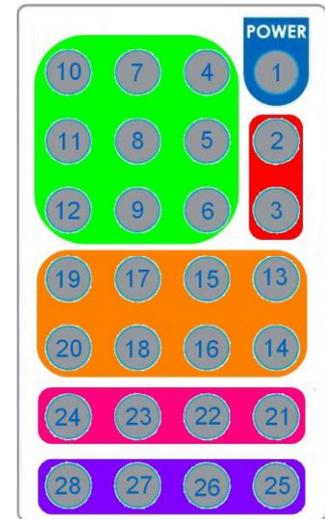


Figure 3: VFD Menu

IR Remote Control

MX-1004K ships with a compact remote control that allows for direct access to most commands used to control the video processor.

IR Remote Button Define	
1. Power Button	Power ON/OFF the device
2. Cross-Layout	Set PAP layout to default layout (cross type)
3. Side-Bar Layout	Set PAP layout to default layout (Side-Bar type)
4. Input CH2	Set channel 2 to be focus channel
5. Right Button	Menu button
6. Input CH4	Set channel 4 to be focus channel
7. Up Button	Menu button
8. PAP Full Screen	Move to the left titles
9. Down Button	Menu button
10. Input CH1	Set channel 1 to be focus channel
11. Left Button	Menu button
12. Input CH3	Set channel 3 to be focus channel
13. Custom Layout4	Set PAP layout to custom position and size
14. Custom Layout8	Set PAP layout to custom position and size
15. Custom Layout3	Set PAP layout to custom position and size
16. Custom Layout7	Set PAP layout to custom position and size
17. Custom Layout2	Set PAP layout to custom position and size
18. Custom Layout6	Set PAP layout to custom position and size
19. Custom Layout1	Set PAP layout to custom position and size
20. Custom Layout5	Set PAP layout to custom position and size
21. CH4 Source	Change channel 4 input source
22. CH3 Source	Change channel 3 input source
23. CH2 Source	Change channel 2 input source
24. CH1 Source	Change channel 1 input source
25. D Button	Switch KVM to port4
26. C Button	Switch KVM to port3
27. B Button	Switch KVM to port2
28. A Button	Switch KVM to port1



Safety Precautions

- I. To prevent fire or shock hazards, do not expose this device to rain or moisture.
- II. When connecting other products such as DVD players, and personal computers, you should turn off the power of this product for protection against electric shocks.
- III. The product should be placed more than one foot away from heat sources such as radiators, heat registers, stoves, and other products (including amplifiers) that produce heat. In addition, do not cover any material or devices on the top of the device.
- IV. Do not use immediately after moving from a low temperature to high temperature, as this causes condensation,
- V. Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious injury to a child or adult and serious damage to the product.
- VI. Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
- VII. Do not allow the same still picture to be projected for a long time or an abnormally bright video picture to be projected. The video image could be burned in to the display device.

Installation Procedures

Unpacking

Remove the MX-1004K from the shipping container and examine it for any signs of shipping damage or missing items (check with package contents above). All shipping items should be saved if the product is to be moved or returned for service. Shipping unit back to dealers for service not in the original box may result in voiding warranty or additional cost.

Placement

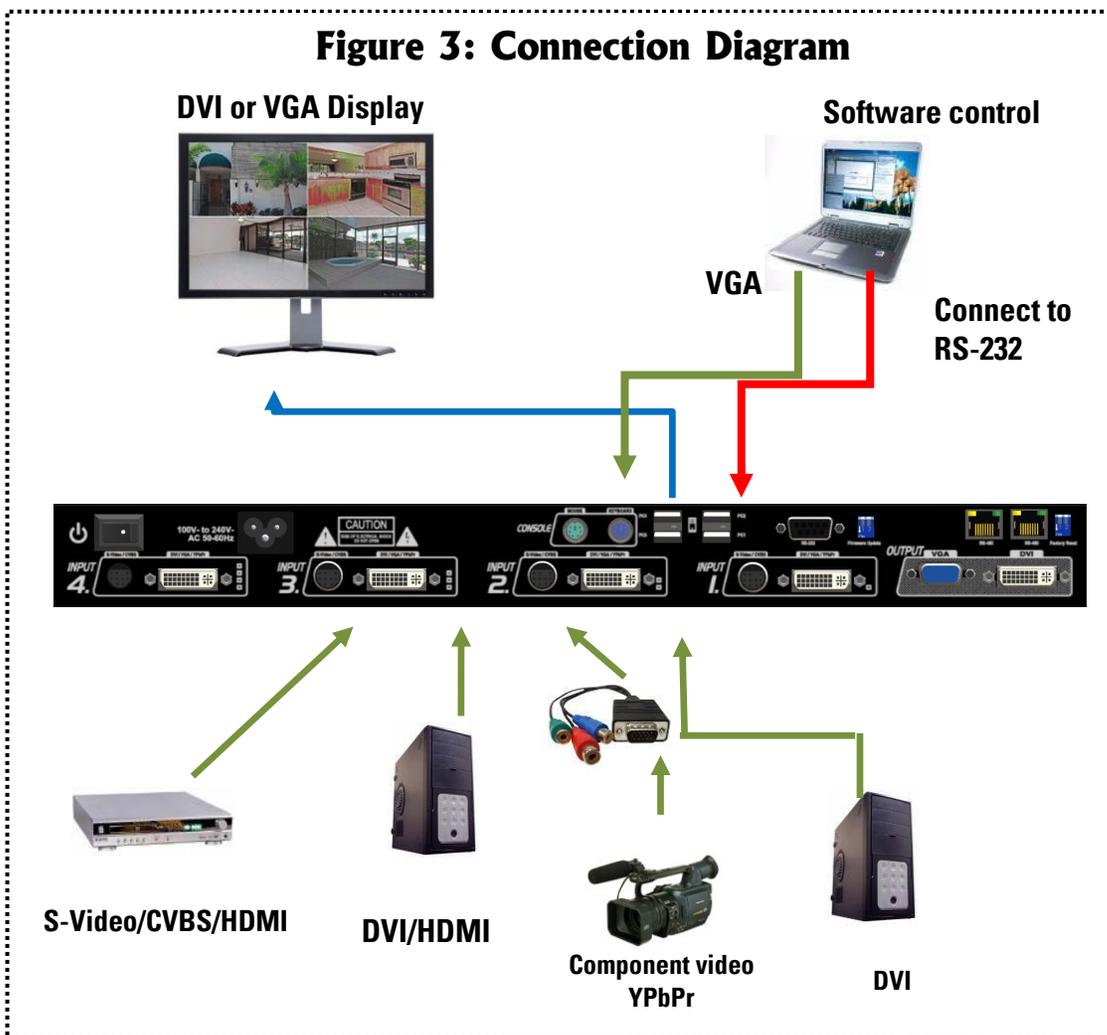
The unit uses convection to cool. A fan is not needed, so do not block the sides of this device or stack another device on the top or bottom of the MX-1004K.

Connections

We recommend the highest quality cables for both input and output connections.

1. Switch off the MX-1004K and all devices that you want to connect.
2. Connect a monitor, a projector or other displays that comes with DVI / VGA inputs by using 1 male-to-male DVI (VGA) cable to MX-1004K DVI output (you can connect 2 displays equipped with DVI and VGA respectively by a DVI to DVI&VGA breakout cable (**DDVY01**)).
3. Plug in DVI to DVI&VGA breakout cable (**DDVY01**) to DVI-YPbPr-VGA-x and plug in VGA to component adapter (**VYPBA01**) to the VGA connector of the breakout cable.
4. Connect a device equipped S-Video & CVBS through S-Video & CVBS breakout cable.

5. Connect a device equipped with DVI output (such as PC) to the DVI connector of the breakout cable.
6. Connect a device equipped with component video output (YPbPr such as DVD player or camera) to the 3-RCA jack of the **VYPBA01**.
7. Connect a device equipped with VGA output (such as laptop) to the VGA connector of MX-1004K.
8. Connect a device equipped with composite video output to composite input of the MX-1004K.
9. Connect one set of PS/2 compatible keyboard and mouse if any control to computer(s) is necessary
10. Connect the USB cable(s) between MX-1004K and computer(s)
11. Connect your computer with the MX-1004K by a 9-pin RS-232 cable and then install the software.
12. Plug in AD power cord into AC power socket.
13. Execute the control software and establish the connection between PC/Laptop and MX-1004K.
14. For detailed software control operation, please refer to the software instruction section.

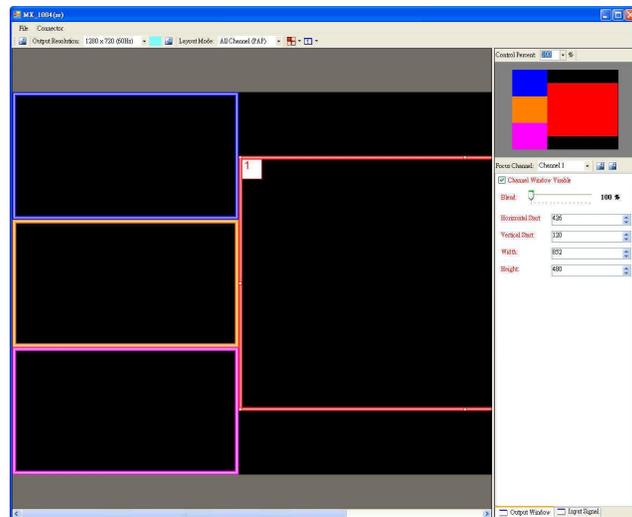
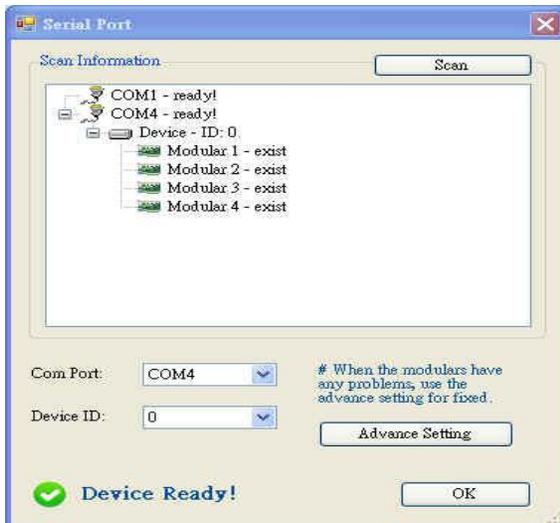


System Requirement and Precautions

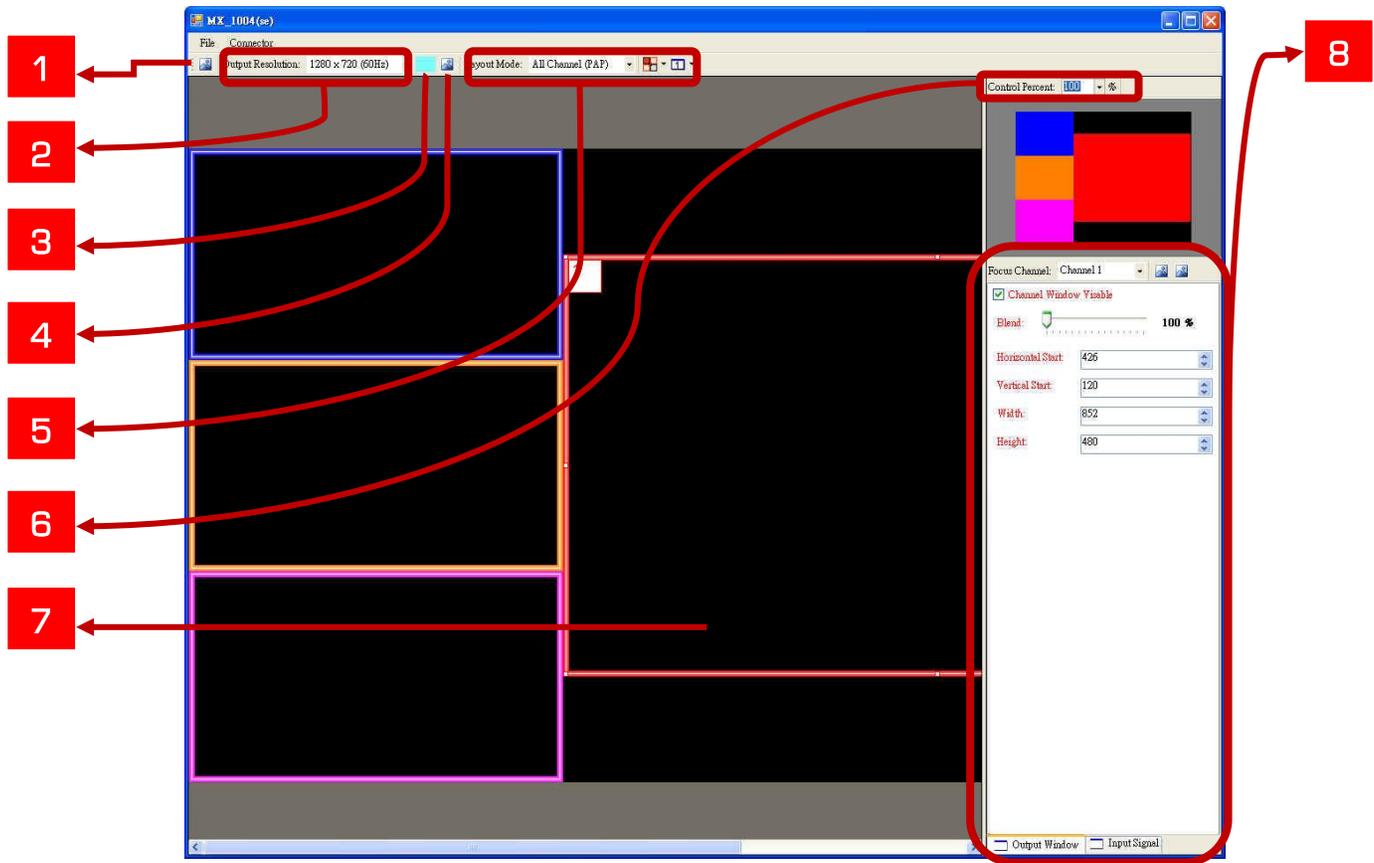
1. The MX-1004K provides a software control program, Quartet, which runs under Microsoft Windows 98, 2000, XP, Vista through the interface of RS-232 serial control.
2. Before you click on the icon of the software, make sure you have secured the connection between your computer COM port and the MX-1004K and switched on the MX-1004K with green LED light.

Instruction of Software Connection

1. Power up the MX-1004K and you can see VFD on the front panel blink. Make sure the serial port mode is right for your setting. RS-232 mode: , RS-485 mode:  or .
2. The first step after running the software is to automatically link (By last COM port setting) if the device responds correctly through RS-232, it will start application normally, otherwise the dialog will show up. You can click the “scan” button to get detail information. The information will help you choose the correct COM port and Device ID. After set the correct COM port and ID, you can select “Linkage” and click “Execute” button. When the MX-1004K is correctly connected, you can close the Linkage dialog. If the serial connection is well established, you can see work main control console as below.



Definitions of Menu Buttons and Icons



1 Fast Linkage

This button will update software GUI for device state.

2 Output Resolution:

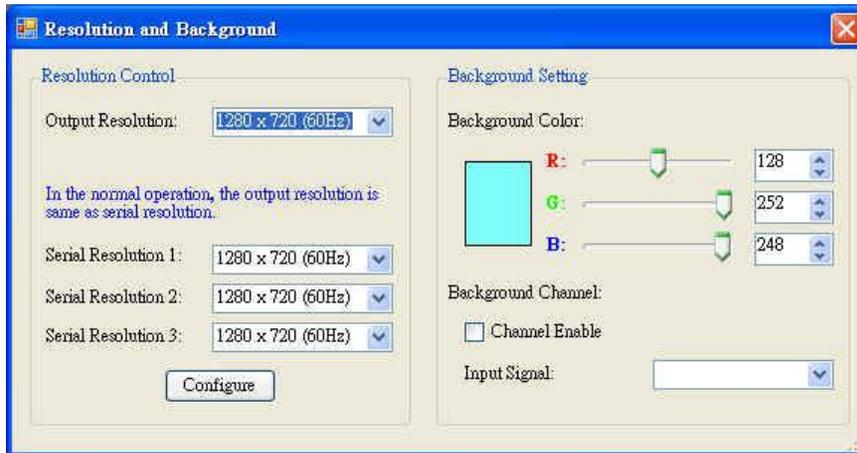
Supported Mode	Resolution	Supported Mode	Resolution
(HDTV) 720p	1280x720 @60Hz	VESA	1280x768 @60Hz
(HDTV) 1080p	1920x1080 @60Hz	VESA	1366x768 @60Hz
VESA	800x600 @60Hz	VESA	1400x1050 @60Hz
VESA	1024x768 @60Hz	VESA	1600x1200 @60Hz
VESA	1280x1024 @60Hz	VESA	1920x1200 @60Hz

3 Background Color

Click on this button will show the color dialog for background color adjustment.

4 Background Setting

MX-1004K offers the video background to make this advanced unit actually working like 5 channel video mixer! The default background video must work as full screen! Users can choose between color and video background through the following control window. Click on this button will show the dialog for output resolution, background color and background channel setting.



5 Display / Layout Mode

Set signal channel full screen or all channel Notice that the input sources will not be changed. Only positions and sizes will be affected.

6 Layout Control Size

Set layout control size by percent.

7 Layout Control

Set Channel size and position.

8 Channel Control Panel

Output Window Panel: Channel visible, blend, size, position

.Input Signal Panel: Input signal type selection, signal stable, input format.

Focus Channel: Channel 4

Channel Window Visible

Blend: 100 %

Horizontal Start:

Vertical Start:

Width:

Height:

Output Window Input Signal

Focus Channel: Channel 4

Input Signal:

Signal State:

Original Input:

Horizontal Start:

Vertical Start:

Width:

Height:

Capture Input:

Horizontal Start:

Vertical Start:

Width:

Height:

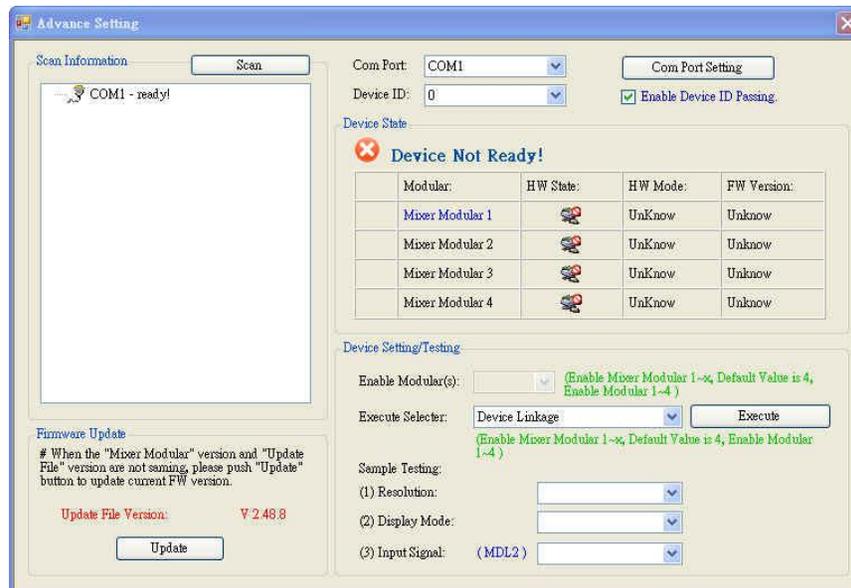
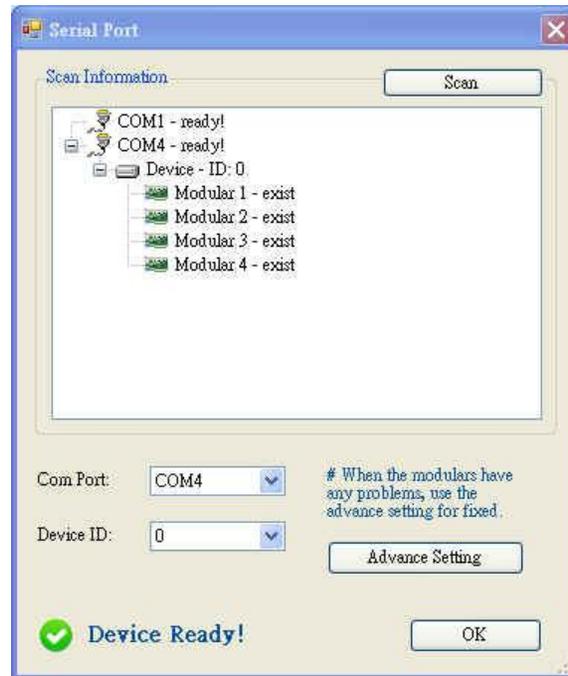
Output Window Input Signal

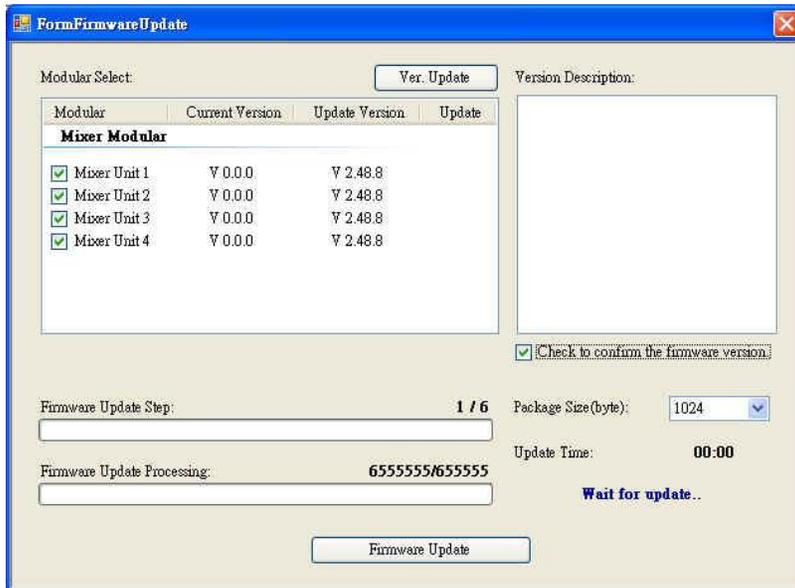
The firmware update process

Step 1: Same as the Software operation process Step 1

Step 2: Same as the Software operation process Step 2

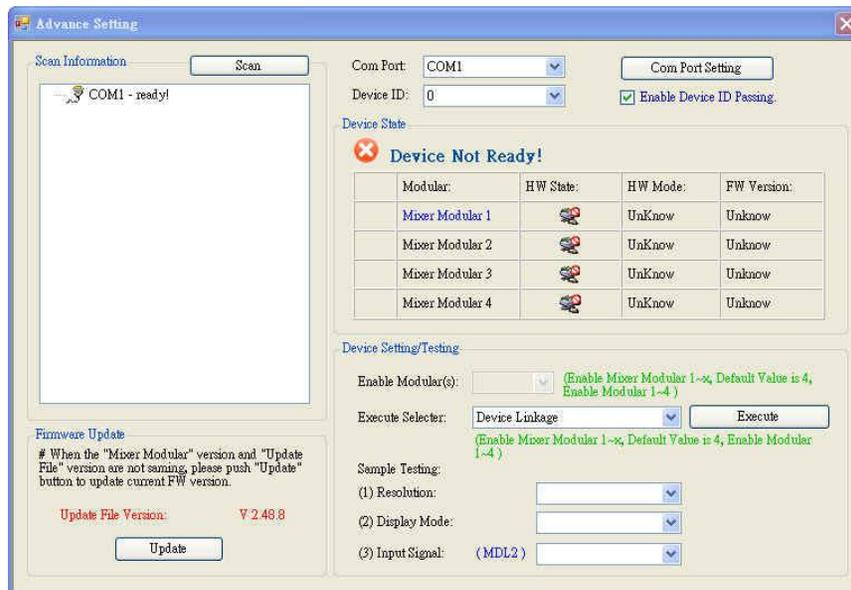
Step 3: Press “Advance Setting” Button → ”Update” Button → “Check and confirm the firmware version” → “Firmware Update” Button, then the system would do the implementation of firmware update as below chart,





Step 4:

After the firmware update is complete, please implement "Factory Reset" and "Modular Configure" and make sure each module has been successful implementation (Please refer to the green icon). If the firmware update is failed, please repeat the implementation procedures.



Problem

Recommendations

No power

- ✓ Check if you correctly and firmly plug AC power core into MX-1004K.
- ✓ If you are recovering from power outage, accidentally unplug the power core or other power surge conditions, leave the device off for a while and then power it on again.

No/ Erratic video

- ✓ Make sure all cables are in good working condition and properly connected to the MX-1004K and displays.
- ✓ Configure the output video resolution so that it doesn't exceed the native resolution of the display. (in this case, the message of "out of range" is usually showed on your screen)
- ✓ Make sure video sources are accurately selected to the right channels.

Poor quality

- ✓ We suggest that don't use T-connectors to split your video source into to images displayed on two different screens. That will lower output video quality. Use a distribution amplifier instead of T-connectors.
- ✓ Make sure the video source is not compressed and maintains the highest native resolution.

Wrong color

- ✓ Use color balance or auto configuration.



Auto color configuration only works at VGA and component inputs.

The SELLER warrants the **MX-1004K Professional Quad-View Video Processor with Keyboard & Mouse Control** to be free from defects in the material and workmanship for 1 year from the date of purchase from the SELLER or an authorized dealer. Should this product fail to be in good working order within 1 year warranty period, The SELLER, at its option, repair or replace the unit, provided that the unit has not been subjected to accident, disaster, abuse or any unauthorized modifications including static discharge and power surges.

Unit that 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 90 days from the day of reshipment to the BUYER. If the unit is delivered by mail, customers agree to insure the unit or assume the risk of loss or damage in transit. Under no circumstances will a unit be accepted without a return authorization number.

The warranty is in lieu of all other warranties expressed or implied, including without limitations, any other implied warranty or fitness or merchantability for any particular purpose, all of which are expressly disclaimed.

Proof of sale may be required in order to claim warranty. Customers outside Taiwan are responsible for shipping charges to and from the SELLER. Cables are limited to a 30 day warranty and cable must be free from any markings, scratches, and neatly coiled.

The content of this manual has been carefully checked and is believed to be accurate. However, The SELLER assumes no responsibility for any inaccuracies that may be contained in this manual. The SELLER will NOT be liable for direct, indirect, incidental, special, or consequential damages resulting from any defect or omission in this manual, even if advised of the possibility of such damages. Also, the technical information contained herein regarding the MX-1004K features and specifications is subject to change without further notice.

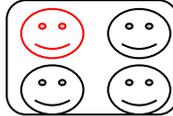
[DVI-x / YPbPr-x / VGA-x (x = 1~4)] Socket

Supported Mode	Resolution	Supported Mode	Resolution
NTSC/480I/525I	720x240 @60Hz	MAC	832x624 @75Hz
PAL/576I/625I	720x288 @50Hz	VESA	1024x768 @60Hz
480P/525P	720x483 @60Hz	MAC	1024x768 @60Hz
480P (16:9)	960x483 @60Hz	VESA	1024x768 @70Hz
576P/625P	720x756 @50Hz	IBM	1024x768 @72Hz
(HDTV) 720p	1280x720 @50Hz	VESA	1024x768 @75Hz
(HDTV) 720p	1280x720 @60Hz	MAC	1024x768 @75Hz
(HDTV) 1080i	1920x1080 @50Hz	VESA	1024x768 @85Hz
(HDTV) 1080i	1920x1080 @60Hz	VESA	1152x864 @75Hz
(HDTV) 1080p	1920x1080 @30Hz	MAC	1152x870 @75Hz
VESA	720x400 @85Hz	SUN	1152x900 @66Hz
VESA	640x350 @85Hz	SUN	1152x900 @76Hz
VESA	640x400 @85Hz	VESA	1280x960 @60Hz
IBM	720x400 @70Hz	VESA	1280x960 @85Hz
IBM	720x350 @70Hz	VESA	1280x1024 @60Hz
IBM	640x350 @70Hz	HP	1280x1024 @60Hz
IBM	640x400 @70Hz	IBM	1280x1024 @67Hz
VESA	640x480 @60Hz	HP	1280x1024 @72Hz
MAC	640x480 @67Hz	VESA	1280x1024 @75Hz
VESA	640x480 @72Hz	SUN	1280x1024 @76Hz
VESA	640x480 @75Hz	VESA	1600x1200 @60Hz
VESA	640x480 @85Hz	VESA	1920x1200 @60Hz
VESA	800x600 @56Hz		
VESA	800x600 @60Hz		
VESA	800x600 @72Hz		
VESA	800x600 @75Hz		
VESA	800x600 @85Hz		

[DVI-I OUT] Socket

Supported Mode	Resolution
(HDTV) 720p	1280x720 @60Hz
(HDTV) 1080p	1920x1080 @60Hz
VESA	800x600 @60Hz
VESA	1024x768 @60Hz
VESA	1280x1024 @60Hz
VESA	1280x768 @60Hz
VESA	1400x1050 @60Hz
VESA	1400x1050 @50Hz
VESA	1600x1200 @60Hz
VESA	1920x1200 @60Hz

Default display modes for KVM hot key control

		
Full	Quad1	Quad2

Red Icon implies the main display area.

Key Combination ¹	Function Description
Ctrl + Alt + Shift + 1	Keyboard & mouse control granted to computer #1
Ctrl + Alt + Shift + 2	Keyboard & mouse control granted to computer #2
Ctrl + Alt + Shift + 3	Keyboard & mouse control granted to computer #3
Ctrl + Alt + Shift + 4	Keyboard & mouse control granted to computer #4
Ctrl + Alt + Shift + Q	Switch Video #1 to the main display area
Ctrl + Alt + Shift + W	Switch Video #2 to the main display area
Ctrl + Alt + Shift + E	Switch Video #3 to the main display area
Ctrl + Alt + Shift + R	Switch Video #4 to the main display area
Ctrl + Alt + Shift + 9	switching Default Layout
Ctrl + Alt + Shift + 0	switching Default Layout
Ctrl + Alt + Shift + F1	Customized Quad1 ¹
Ctrl + Alt + Shift + F2	Customized Quad1 ²
Ctrl + Alt + Shift + F3	Customized Quad1 ³
Ctrl + Alt + Shift + F4	Customized Quad1 ⁴
Ctrl + Alt + Shift + F5	Customized Quad1 ⁵



1. Hotkey definitions are based on IBM PS/2 compatible keyboard and the Ctrl, Alt, and Shift keys are on the LEFT side of the keyboard.
2. Switching video source to the main display area will bring MX-1004K back to one of the video default layouts as shown above.
3. While the control software is adjusting the video layout, the keyboard and mouse control will be off.
4. User can define Quad3 through the software.