

MX-1003B

Dual-View Video Processor

User Manual





Safety and Notice

The **MX-1003B Dual-View Video Processor** has been tested for conformity to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the MX-1003B 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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Introduction

General

The **MX-1003B Dual-View Video Processor** is an advanced video processor for multimedia presentations. It is an ideal solution for applications where two video signals must be displayed on a single display. It supports up to four video inputs, of which two can be outputted simultaneously in Picture-In-Picture (PIP) or Picture-Aside-Picture (PAP) modes. The MX-1003B allows you to manipulate output images, wherever position and whatever sizes you want for viewing two computers or two video signals or a combination.

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.

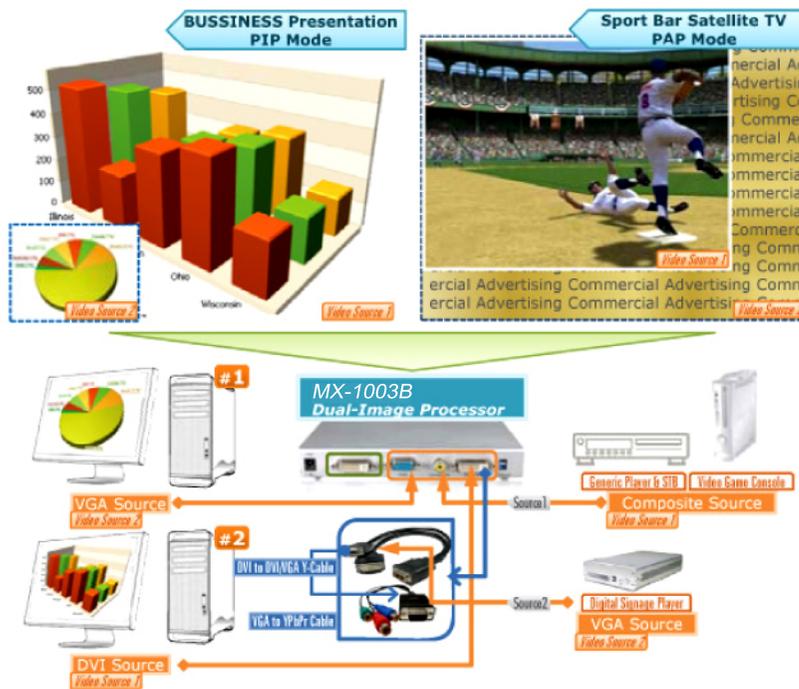


Figure 1: Configuration Diagram

Features

- Three graphic (DVI / VGA) and two video (Component / Composite) Inputs, from 640x480 to 1920x1200, interlaced or progressive.
- Dual outputs (DVI / VGA), 640x480 to 1920x1200.
- PIP, PAP, Full screen modes and adjustable size& position through software.
- Titles, borders and colored backgrounds.
- Resize, position, flip, zoom& pan and blend output video.
- Can be cascaded to obtain more images.
- 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.
- IR control and software control through RS-232.
- Portable size.
- Automatically power-saving mode.

Specifications

Model Name		MX-1003A	MX-1003B
Technical			
Role of usage		Multiplexer / video processor	
Dual output support		Yes [DVI + VGA]	
HDCP compliance		No	
Video bandwidth		DVI [Single-link 4.95Gbps] Component [30MHz]	VGA [165MHz] Composite [13.5MHz]
Video support		480i / 480p / 720p / 1080i / 1080p60 / 1920x1200@75 / 1600x1200@60	
Audio support		No	
Control		RS-232 and IR	
PIP / PAP		Yes	
Cascadable		Yes	
Input TMDS signal		1.2 Volts [peak-to-peak]	
ESD protection		Human body model — ±15kV [air-gap discharge] & ±8kV [contact discharge]	
PCB stack-up		6-layer board [impedance control — differential 100Ω; single 50Ω]	
Input		2x VGA + 2x DVI + 1x component + 1x composite + 1x RS-232	2x VGA + 1x DVI + 1x component + 1x composite + 1x RS-232
Output		1x DVI + 1x VGA	
IR remote control		Electro-optical characteristics: $\tau = 25^\circ$ / Carrier frequency: 38kHz	
DVI connector		DVI-I [29-pin female, digital only]	
VGA connector		HD-15 [15-pin D-sub female]	
RS-232 connector		DE-9 [9-pin D-sub female]	
RCA connector		75Ω female	
Mechanical			
Housing		Metal case	
Dimensions (L x W x H)	Model	180 x 103 x 23mm [7.1"x4"x0.9"]	
	Package	330 x 200 x 95mm [1'1"x7.9"x3.7"]	
	Carton	495 x 440 x 380mm [1'7.5"x1'5.3"x1'3"]	
Weight	Model	480g [1.1 lbs]	
	Package	1345g [3.0 lbs]	
Fixedness		Wall-mounting case or wall hanging holes upon request	
Power supply		5V 4A DC	
Power consumption		10 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-1003A or MX-1003B 1x DVI to DVI&VGA breakout cable 1x VGA to component breakout cable 1x VGA to DVI adapter	1x 5V power adapter 1x IR remote controller 1x Installation software CD 1x User Manual

Package Contents

1. MX-1003B



2. DVI to DVI / VGA breakout cable (DDVY01)



3. VGA to YPbPr breakout cable (VYPBA01)



4. DVI to VGA adapter (DVA01)



5. 5V DC power adapter



6. IR remote controller

7. Installation software CD

8. User Manual

Inputs and Outputs

The MX-1003B has four inputs and accepts both graphics and video signals, which come from computers and NTSC/PAL video sources respectively. There is a concept of main channel and sub channel for this device. You can pick up two of the four inputs, one is for main channel and the other is for sub channel, and then display two of them simultaneously on the same screen. Figure 2 shows the rear panel connectors of a MX-1003B and Table 1 illustrates how you can connect video devices and display to the MX-1003B.

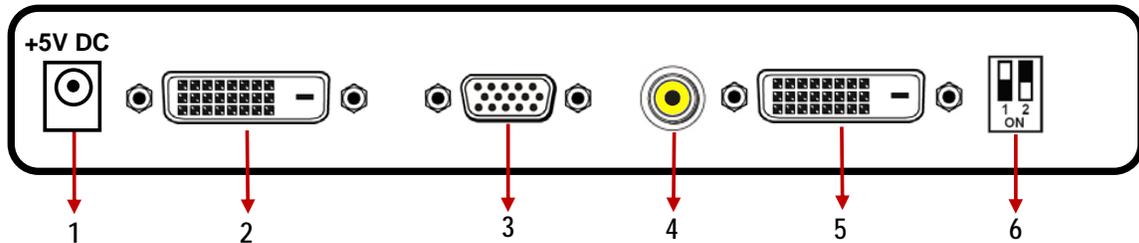


Figure 2: Rear Panel

- | | |
|---------------------|--|
| 1. Power connector | 4. Composite input |
| 2. DVI / VGA output | 5. DVI / VGA / Component input |
| 3. VGA input | 6. DIP switch* (for firmware & system reset) |



***Default: Turn on the MX-1003B then switch both two DIP switchers 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: I/O Connectors

Input Connector	Video Source
DVI-IN	[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] 1x DVI + 1x VGA — with a DVI-to-DVI/VGA breakout cable (DDVY01)
	[5] 1x DVI + 1x Component (YPbPr) — with a DVI-to-DVI&VGA breakout cable (DDVY01) and a VGA-to-component breakout cable (VYPBA01)
VGA	[1] With a VGA cable
Composite	[1] With a RCA cable
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)

Hardware Installation

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-1003B 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

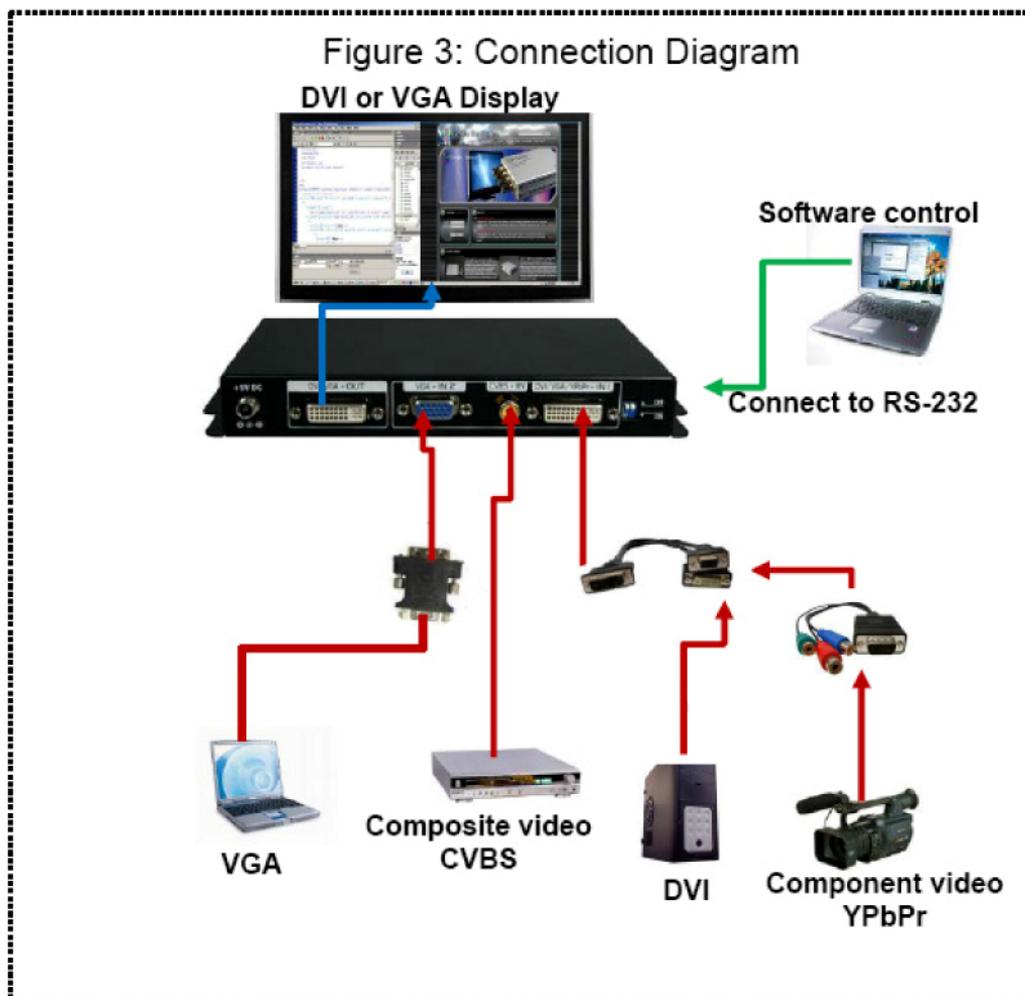
The unit uses convection to cool. A fan is not needed, so do not block the sides of this device or stack another device on the top or bottom of the MX-1003B.

Connections

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

1. Switch off the MX-1003B and all devices that you want to connect.
2. Connect a monitor, a projector or other displays that comes with DVI and/or VGA inputs by using 1 male-to-male DVI (VGA) cable to MX-1003B 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-IN and plug in VGA to component breakout cable (**VYPBA01**) to the VGA connector of the breakout cable.
4. Connect a device equipped with DVI output (such as PC) to the DVI connector of the breakout cable.

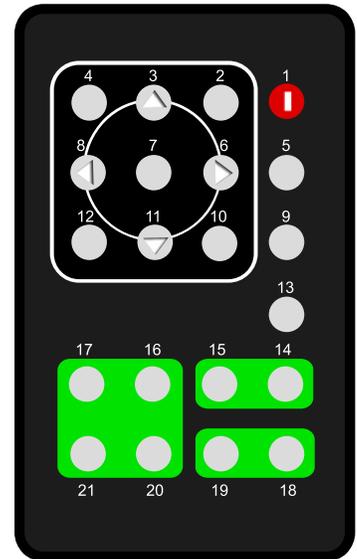
5. Connect a device equipped with component video output (YPbPr such as DVD player or camera) to the 3-RCA jack of the VYPBA01.
6. Connect a device equipped with VGA output (such as laptop) to the VGA connector of MX-1003B.
7. Connect a device equipped with composite video output to composite input of the MX-1003B.
8. Connect your computer with the MX-1003B by a 9-pin RS-232 cable and then install the software.
9. Plug in power adapter cable into 5V DC power jack.
10. Switch on all devices connected and then switch on the video processor and then press "menu" to display OSD menu.
11. Press down arrow key dropping down sub-menu to select the first channel (Main Channel) video / graphic source.
12. Once the Main Channel has a video selected, press "exit" key to exit the sub-menu, and then move right to the next item of OSD menu, which allows you to select the second channel (Sub Channel).
13. For detailed IR remote control operation, please refer to the On Screen Display menu and IR operating instruction.



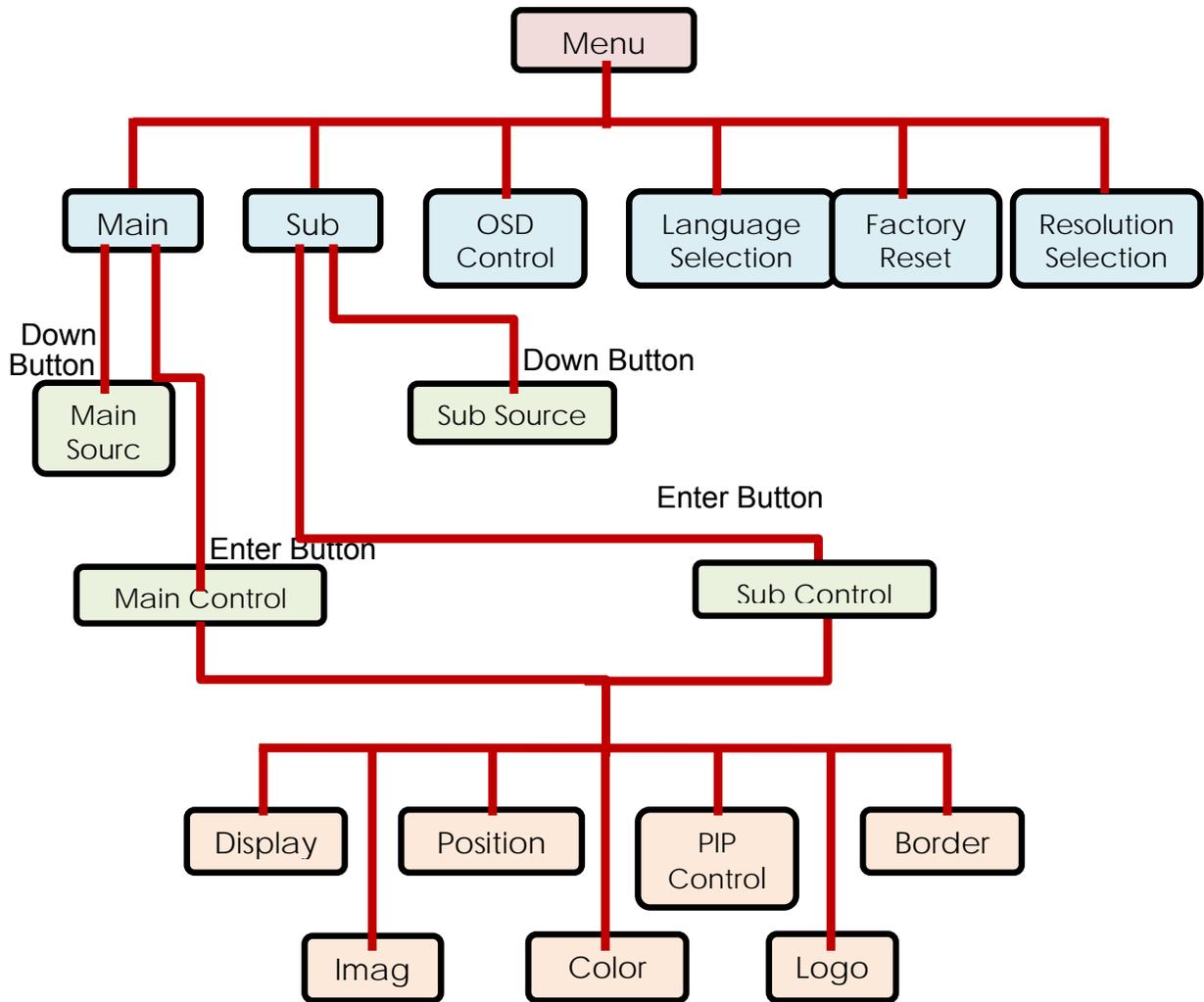
IR Remote Control

The MX-1003B is now shipped with a compact remote control that allows for direct access to most commands used to control the video processor.

(1)	Power	Power on/off the device
(2)	PIP Border	Display the border of small image (under PIP mode)
(3)	Up Button	Move to the upper titles
(4)	Source	Press to select a source for main channel
(5)	Reset	Factory Reset
(6)	Right Button	Move to the right titles
(7)	Menu	Display OSD menu
(8)	Left Button	Move to the left titles
(9)	Logo	Display a logo
(10)	Exit	Move back to previous option or exit OSD menu
(11)	Down Button	Move to the lower titles
(12)	Enter	Press to drop down sub-menus or confirm the selection
(13)	Blank	Blank out the screen
(14)	Color	Automatically configure the main channel color
(15)	Auto	Automatically configure the main channel position
(16)	V Flip	Flip vertically
(17)	H Flip	Flip horizontally
(18)	SWAP	Swap between main channel and sub-channel (only works in PIP or PAP mode)
(19)	PIP	Change modes among full screen, PIP, PAP
(20)	Sub Pause	Freeze sub-channel
(21)	Main Pause	Freeze main channel



On Screen Display Menu



Main Source: Select an input source for the main channel (VGA / YPbPr, DVI, Composite, VGA)

Main Control:

Display

Brightness (Slider) Hue (Slider) Saturation (Slider)
Contrast (Slider) Flesh-tone (Button: Off, Weak, Soft, Strong)

Image

Scaling (1:1, Fill, Aspect, Panor) Angle Filtering (Button: Off, On)
Adaptive Deinterlacing (Button: Off, Level 1, Level 2, Level 3) Film Mode Detect (Button: Off, On)
Noise Reduction (Button: Off, Low, Med, High) Sharpness (Slider)

Position

Zoom(Button: In, Out) Zoom Vertical Pan (Button: Down, Up)
Zoom Horizontal Pan (Button: Left, Right) Vertical (Slider) Horizontal (Slider)

Color

sRGB (Button: Off, On CI.BA) Red (Slider)
Gamma Correction (Button: Off, 2.2, 2.4) Green (Slider)
Color Temperature (Button: User, 6500K, 9300K) Blue (Slider)

PIP Control

PIP Mode (Off, Single, PAP) Vertical (Slider) Blend (Slider)
PIP Size (Small, Medium, Large) Horizontal (Slider)

Logo (Off, On)

Border (Off, On)

Red (Slider) Green (Slider) Blue (Slider) Width (Slider)

Sub Source: Select an input source for sub-channel (VGA/component, DVI, composite, VGA)

Sub Control: The same as Main Control

OSD Control: Vertical (Slider) Horizontal (Slider) Blend (Slider)
Time out (Slider) OSD Zoom (On, Off)

Language Selection: English and Traditional Chinese

Factory Reset: Reset the device to default

Resolution Selection: Press Down Button to select an output resolution and then press enter to confirm that selection.

800×600 @60Hz	1280×768 @60Hz	1440×900 @60Hz	1920×1080
@50Hz			
1024×768 @60Hz	1280×1024 @50Hz	1400×1050 @50Hz	1920×1080
@60Hz			
1152×864 @75Hz	1280×1024 @60Hz	1400×1050 @60Hz	1920×1200
@50Hz			
1280×720 @50Hz	1366×768 @60Hz	1600×1200 @60Hz	1920×1200
@60Hz			
1280×720 @60Hz			

Operation Software

System Requirement and Precautions

1. The MX-1003B provides a software control program which runs under Microsoft Windows 98, 2000, XP 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-1003B and switched on the MX-1003B with green LED light.
3. The MX-1003B has remote control and software control. To make sure all information shown in the software is synchronized with those in the device, please click "Connect" to acquire the latest data from the MX-1003B after you press any key on the remote control.

Instruction of Software Connection

1. Power up the MX-1003B and you can see both red and green LEDs on the front panel blink. Make sure the serial port (RS-232) connection secure.
2. The first step after running the software is to automatically detect if the device responses correctly through RS-232 port. The process takes 15-20 seconds. If the response is not accurate, a warning window will show up as the figure below.

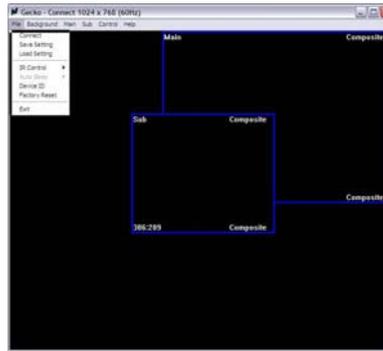


The possible reasons causing this failure could be:

- **The MX-1003B is not supplied with power or the MX-1003B enters deep sleep state. Please check the current status, and reboot the MX-1003B**
 - **The serial connection through RS-232 is not well established or some other software has taken the available serial ports. Please make sure the RS-232 cable is well connected and the available serial port is free to be used by the MX-1003B.**
3. If the serial connection is well established, you can see similar work window as below.



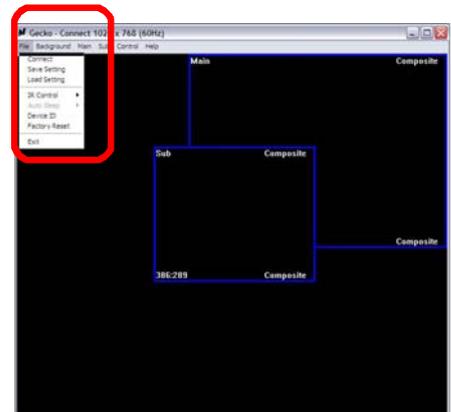
4. While you move the mouse's cursor near the borders, in either red or blue, the icon of the cursor will change as the figure below.



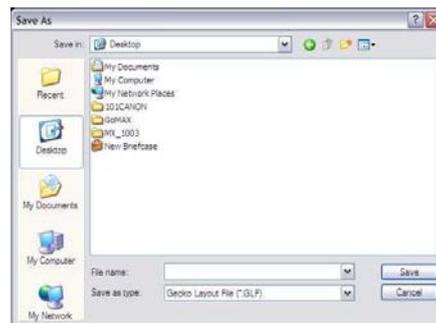
Instruction of Software Operation

File

- a. **Connect:** This will synchronize the status of the MX-1003B with that of the software, especially after IR commands sent.
- b. **Save Setting:** This will save current user preferred settings such as the positions and sizes of the videos, the width or color of border etc. into your favorite setting files.



- c. **Load Setting:** The function will load the favorite settings from the previously saved file.



- d. **IR Control:** This will enable or disable the IR remote control.
- e. **Auto Sleep:** This decides if the MX-1003B enters the deep sleep mode if the video signal cannot be detected in the main channel.
- f. **Device ID:** This is for identifying the MX-1003B while multiple devices are cascaded by RS-232 over CAT5 module.

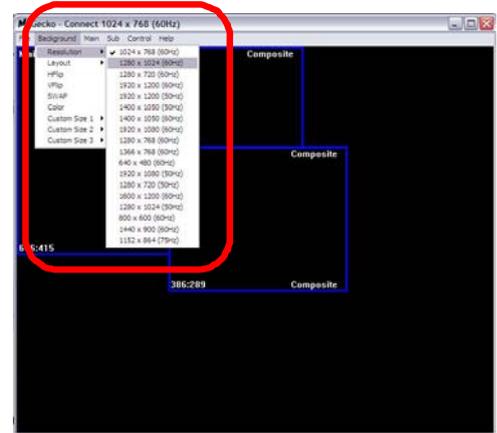


1. **Assign an ID for the connected MX-1003B:** type a number in the “ID Number” of the device ID setting area and then click “Write”.
2. **Read the ID of the connected MX-1003B:** click “Read” and the ID will show up.
3. **Super Control:** all devices cascaded will receive and respond the same way when you are operating the control software.
4. **Single Device Control:** remove the check beside the “Super Control” and type a number that represent a specific MX-1003B and then click “Apply”. Exit the “Device ID Setting” and click “Connect”.

- g. **Factory Reset:** This will restore all the system values back to the factory default.
- h. **Exit:** Quit the software.

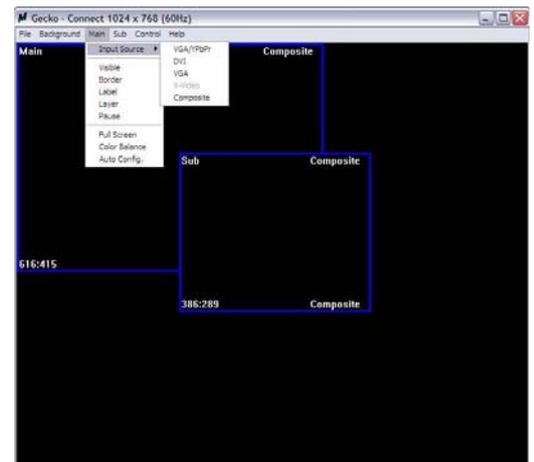
Background

- a. **Resolution:** Change the output resolution.
- b. **Layout:** The preset layout for main & sub channels.
- c. **HFlip:** Horizontally flip the output video.
- d. **VFlip:** Vertically flip the output video.
- e. **SWAP:** Swap the main and sub channel.
- f. **Color:** The background color selection.
- g. **Custom Size 1-3:** Save or read main/sub channel size, position, visible and Layer.



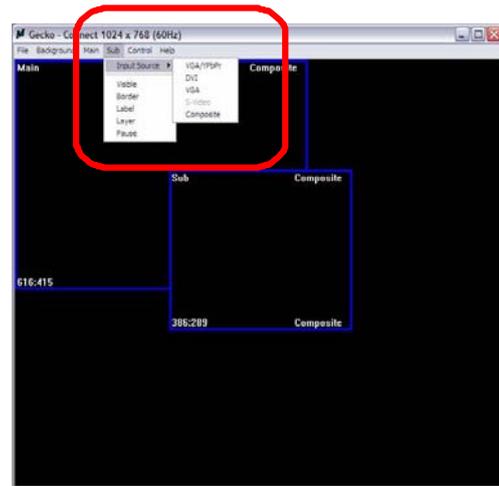
Main

- a. **Input Source:** Select a video/graphic input of the main channel.
- b. **Visible:** Display the main channel or not.
- c. **Border:** Display the main channel’s border.
- d. **Label:** Display the main channel’s label. Users can define the content of the label.
- e. **Layer:** This will make the main channel overlays the sub channel.
- f. **Pause:** Freeze the display of the main channel.
- g. **Full Screen:** Display the main channel full screen.
- h. **Color Balance:** Automatically do the color balance while the main channel’s input is from VGA/component.
- i. **Auto Config.:** Automatically do the auto adjustment while the main channel’s input is from VGA/component.



Sub

- Input Source:** Select a video/graphic input of the sub-channel.
- Visible:** Display the sub-channel or not.
- Border:** Display the sub-channel's border.
- Label:** Display the sub-channel's label. Users can define the content of the label.
- Layer:** This will make the sub-channel overlays the main channel.
- Pause:** Freeze the display of the sub channel.



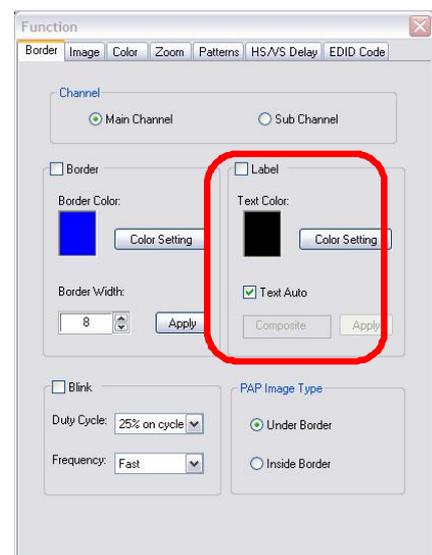
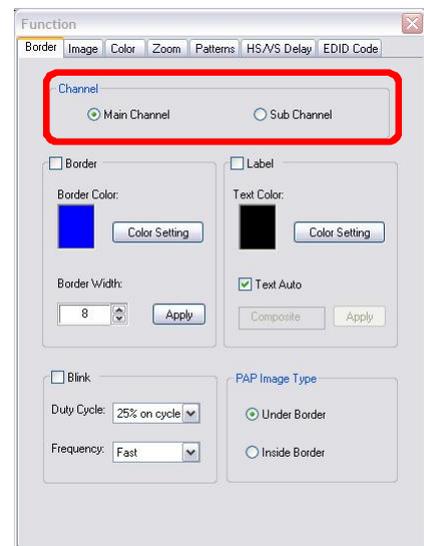
Control- Setting Dialog

Border

Select main or sub channel for further setting.

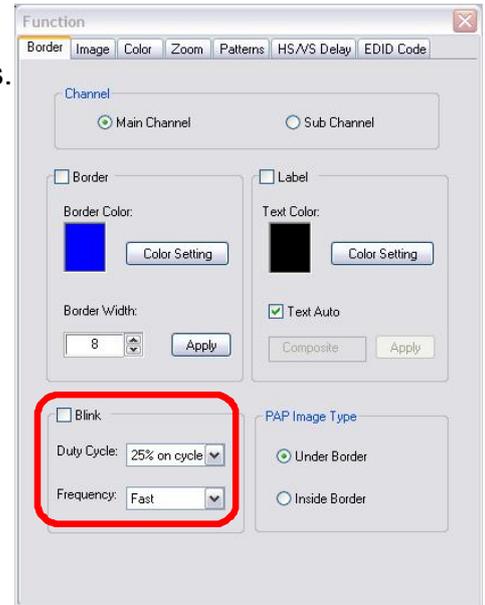


- Border Color:** Setup border's color by clicking on "Color setting".
- Border Width:** Input border's width.
- Text Color:** Select the color of the label by clicking on "Color Setting" button.
- Text Auto:** While selecting "Text Auto", the label on the screen for each channel will display its corresponding input channel type. While unselecting "Text Auto", users can input the desired string to be displayed.



6. **Duty Cycle:** The duty cycle of blinking of OSD borders and labels.

7. **Frequency:** How fast the blink.



Image

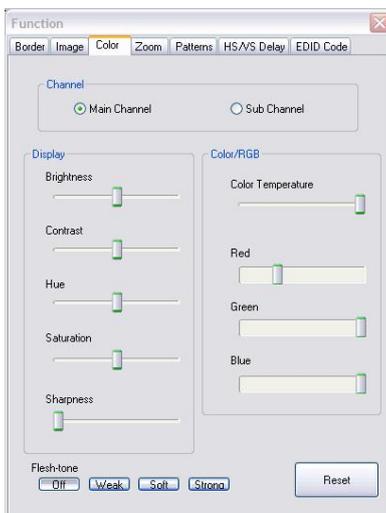


1. Choose the scaling type for the main channel at full screen display.
2. While Blend is selected, users can use the slider to control the degree of blending.



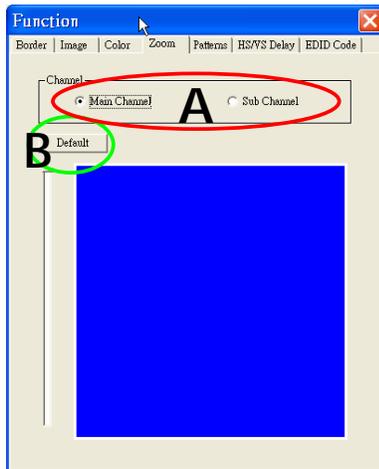
There is a short period of slight blinking while the MX-1003B processes the blending of the two input videos.

Color



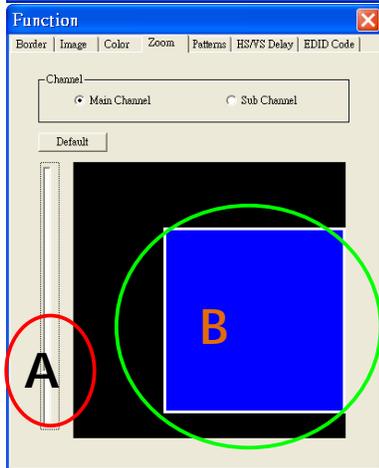
1. Select the main or sub channels.
2. Reset: Restore all the setting on this page back to their default values.

Zoom



A. Select the main or sub channel.

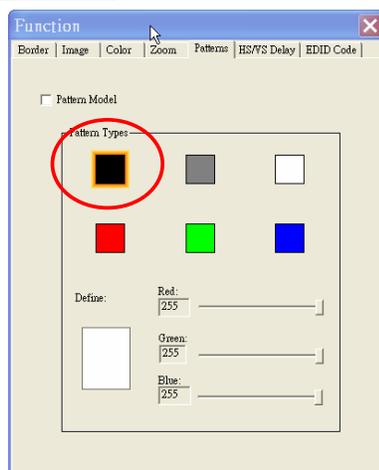
B. Default: Restore the selected channel without zoom effect.



A. This slider controls the ratio of Zoom.

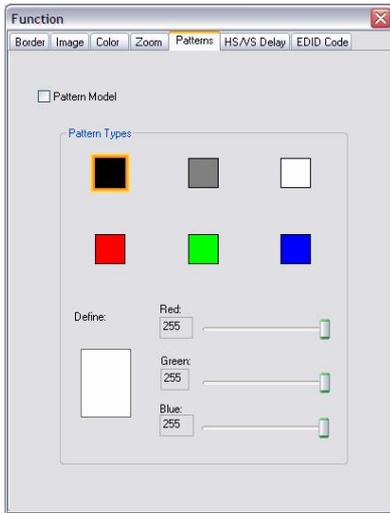
B. The workplace for controlling the displayed area after zooming the selected video.

Pattern



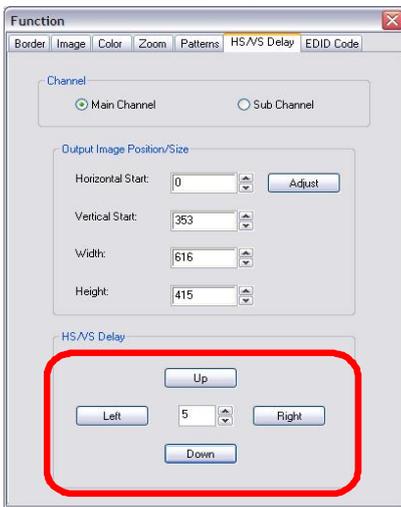
1. While “Pattern Model” is chosen, the output will display the selected pattern. While unselecting this item, the output display works normally.

2. The orange border indicates which pattern is currently selected. Users can choose one of the provided patterns by moving cursor and clicking at the desired one.



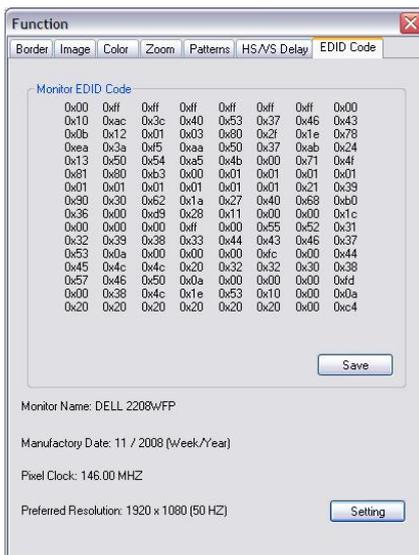
3. Define the pattern's color by clicking at the rectangle inside the ellipse, and then use the sliders for choosing R, G, B depths.

HS / VS Delay



1. Select the main or sub channel.
2. The fine movement of the selected channel.

EDID Code



1. **Save:** Save the read back EDID Content in PC.
2. **Setting:** Automatically setup the output resolution according to the content of EDID.



This setting is according to the content of EDID, and the optimum resolution for the monitor might be different because of the limited information of the acquired EDID info.

Troubleshooting

Problem	Recommendations
No power	<ul style="list-style-type: none">✓ Check if you are using 5V DC adapter and it is firmly plugged into the MX-1003B✓ If you are recovering from power outage, accidentally unplug the adapter or other power surge conditions, leave the device off for a while and then power it on again.
No/ Erratic video	<ul style="list-style-type: none">✓ Make sure all cables are in good working condition and properly connected to the MX-1003B 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 a video source is selected to the main channel. (press "Menu" and check if the first item has a video source selected or press "Source" to select a video source for the main channel)
Poor quality	<ul style="list-style-type: none">✓ 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.
Image position shifted	<ul style="list-style-type: none">✓ Press "Auto" key on the remote control. <div style="border: 1px solid gray; padding: 5px;"> <i>Auto color configuration only works at VGA and component inputs.</i></div>
Wrong color	<ul style="list-style-type: none">✓ Press "Color" key for auto color configuration. <div style="border: 1px solid gray; padding: 5px;"> <i>Auto color configuration only works at VGA and component inputs.</i></div>

Limited Warranty

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-1003B features and specifications is subject to change without further notice.

Appendix – Supported Resolution

[DVI-I IN] 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		

[VGA] Socket

Supported Mode	Resolution
VESA	640x480 @60Hz
VESA	800x600 @60Hz
VESA	1024x768 @60Hz
VESA	1280x1024 @60Hz
VESA	1600x1200 @60Hz
VESA	1920x1200 @60Hz

[DVI-I Out] Socket

Supported Mode	Resolution
(HDTV) 720p	1280x720 @50Hz
(HDTV) 720p	1280x720 @60Hz
(HDTV) 1080p	1920x1080 @60Hz
VESA	640x480 @60Hz
VESA	800x600 @60Hz
VESA	1024x768 @60Hz
VESA	1152x864 @75Hz
VESA	1280x1024 @60Hz
VESA	1280x1024 @50Hz
VESA	1280x768 @60Hz
VESA	1366x768 @60Hz
VESA	1400x1050 @60Hz
VESA	1400x1050 @50Hz
VESA	1152x864 @75Hz
VESA	1600x1200 @60Hz
VESA	1920x1200 @50Hz
VESA	1920x1200 @60Hz