



# VGA SWITCHER USER GUIDE

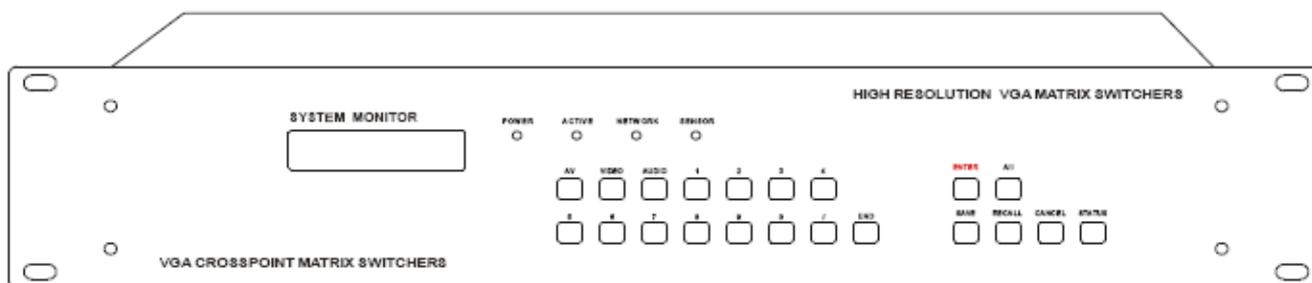
VGA SWITCHERS: AT-VGA0801 TO AT-VGA9601

VGA SWITCHERS W/AUDIO: AT-VGA802 TO AT-VGA1608



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## 1.0 Safety Operation Guide

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In order to ensure the credibility and the user's safety, please comply with the following items during installation, maintenance and operation of the switch.

- 1) The switch must be in stable position. Use only the power supply that comes with unit. Do not use an alternate as it may damage it.
- 2) Do not place the switcher near hot or cold surfaces or sources.
- 3) To avoid any damage by over heating, please keep the environment in good ventilation to radiate the heat when running the switcher.
- 4) The switcher should be turned off when it is not used.
- 5) Please do not attempt to take cover off the switcher for there is a high-voltage component inside that could cause electric shock.
- 6) Do not splash any liquid or chemical on or near the equipment.
- 7) Please make sure all the wiring are in working condition and are not cut or damaged.

## 1.1 Notice

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This VGA Switchers User Manual can be used for other VGA matrix switcher models. This manual is only an instruction for operators, not for any maintenance usage. Any changes of functions and parameters since then will be informed separately. This manual is copyright Atlona Technologies. All rights reserved. No part of this publication may be copied or reproduced without the prior written consent of Atlona Technologies.

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## 2.0 Introduction

The VGA series switcher is a high-performance professional computer and audio signal switcher that can be used for cross switching multiple computer and audio signals. The VGA series switcher mostly apply in broadcasting TV engineering, multi-media meeting room, big screen display engineering, television education, command control center or for other like applications. It provides power-fail locale protection function, LCD displaying, shortcut selecting and saving function. With RS232 interface, it can be controlled with PC, remote control system and any other 3rd party control systems. This user manual takes VGA0808 as the example; other models can take reference from it too.

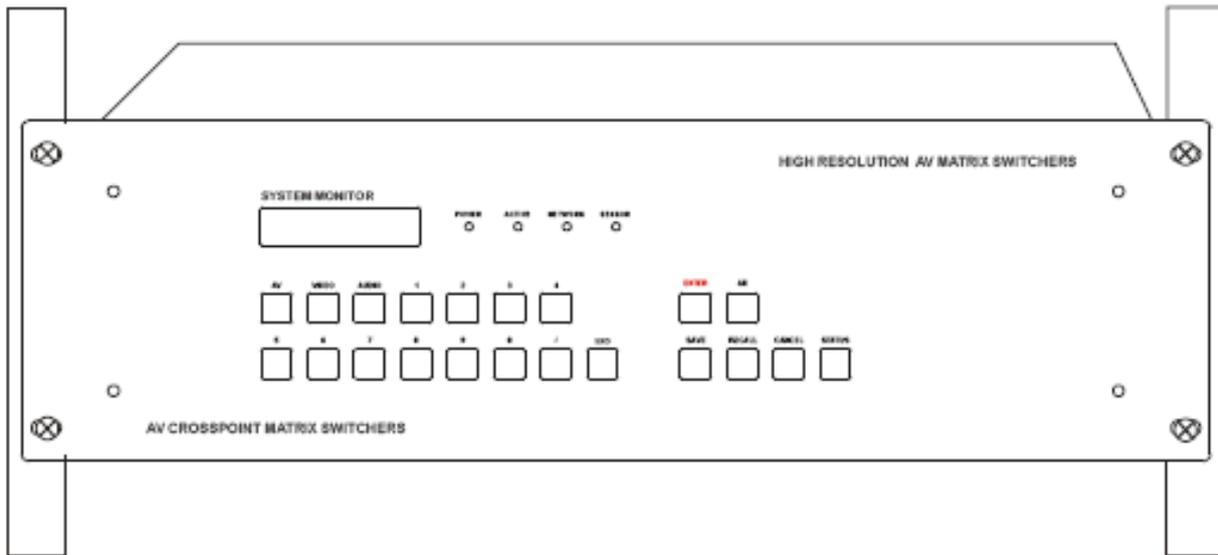
Specifications Model	Video Inputs	Video Output	RS232 Interface	Audio I/O
MATRIX VGA0801	8	1	√	×
MATRIX VGA1601	16	1	√	×
MATRIX VGA3201	32	1	√	×
MATRIX VGA0404-A	4	4	√	√
MATRIX VGA0802	8	2	√	×
MATRIX VGA0802-A	8	2	√	√
MATRIX VGA0804 8	4	√	×	
MATRIX VGA0804-A	8	4	√	√
MATRIX VGA0808	8	8	√	×
MATRIX VGA0808-A	8	8	√	√
MATRIX VGA1604 16	4	√	×	
MATRIX VGA1604-A	16	4	√	√
MATRIX VGA1608	16	8	√	×
MATRIX VGA1608-A	16	8	√	√

## 2.1 Installation

The VGA Switchers can be easily rack mounted using the rack mount ears located in the front of the unit. Secure the Switch with standard rack-hole screws. It is recommended to leave a 1U space between the units to have easy access for installation of the cables. When connecting the cables make sure all cables are connected correctly if not it could cause color loss or will not output a display signal.

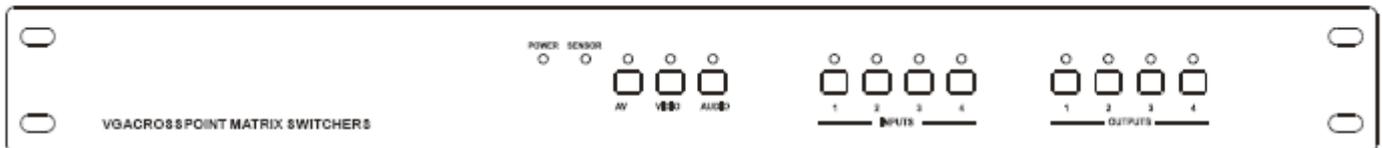
### Packaging Includes

- VGA Matrix Switcher
- RS-232 Communication Cord
- Power Supply Cord
- CD with Application SWITCHER 2.0
- User Manual and Quality Guarantee
- Remote Control

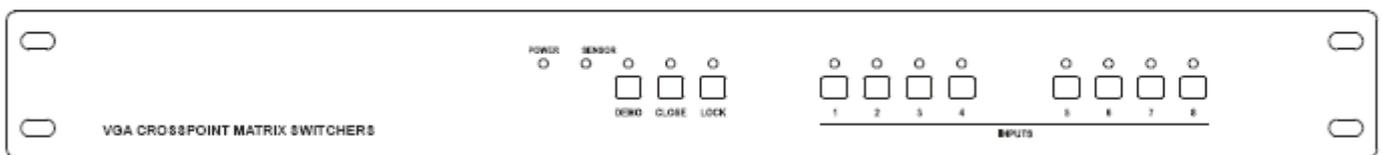


## Front View of the Product

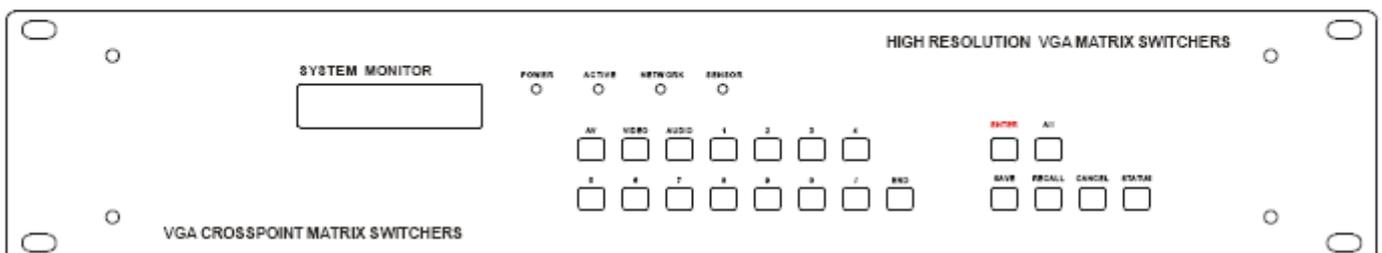
### Front View of the VGA0404-A



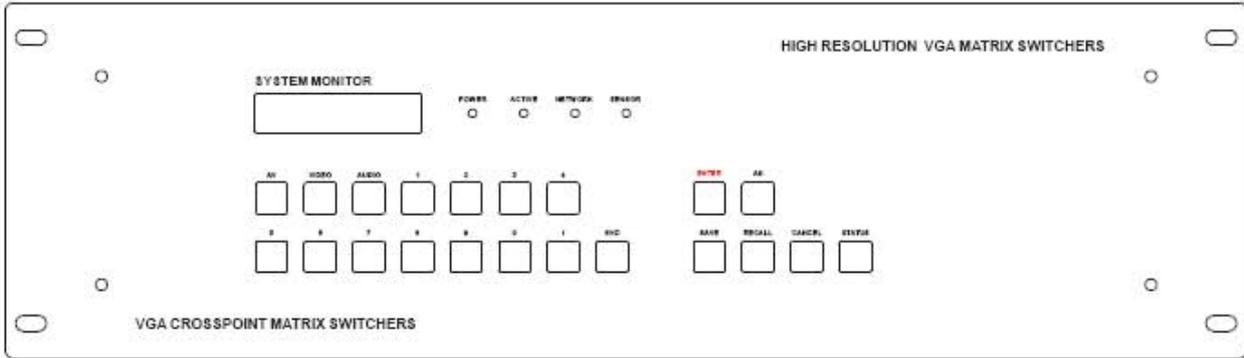
### Front View of the VGA0801



### Front View of the VGA1601, VGA3201

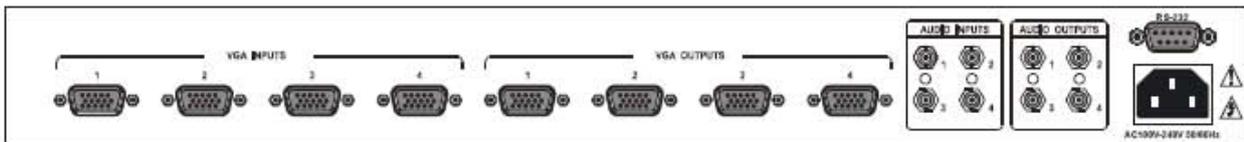


## Front View of the VGA1604-A,VGA1608-A

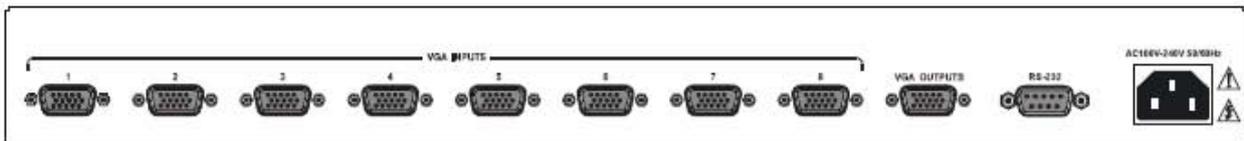


## Rear View of the Product

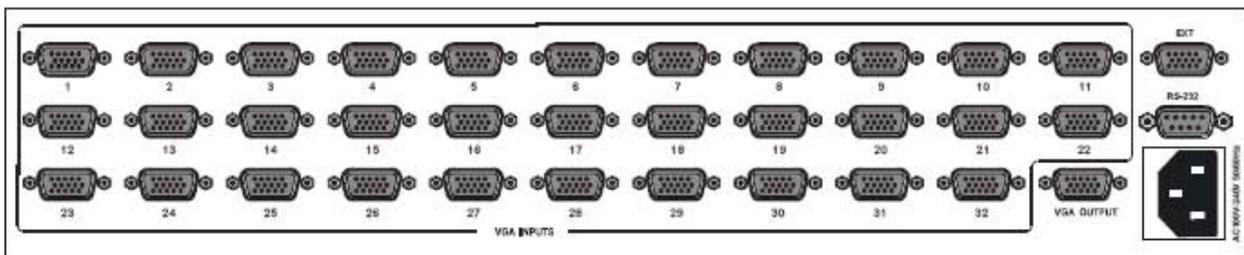
### Rear View of the VGA0404-A



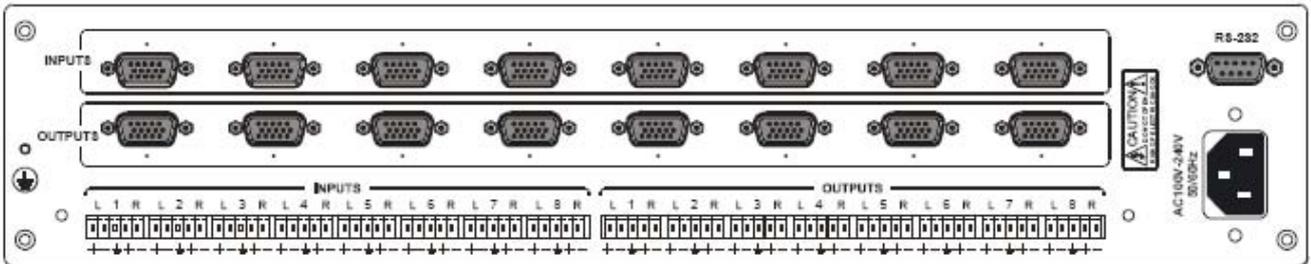
### Rear View of the VGA0801



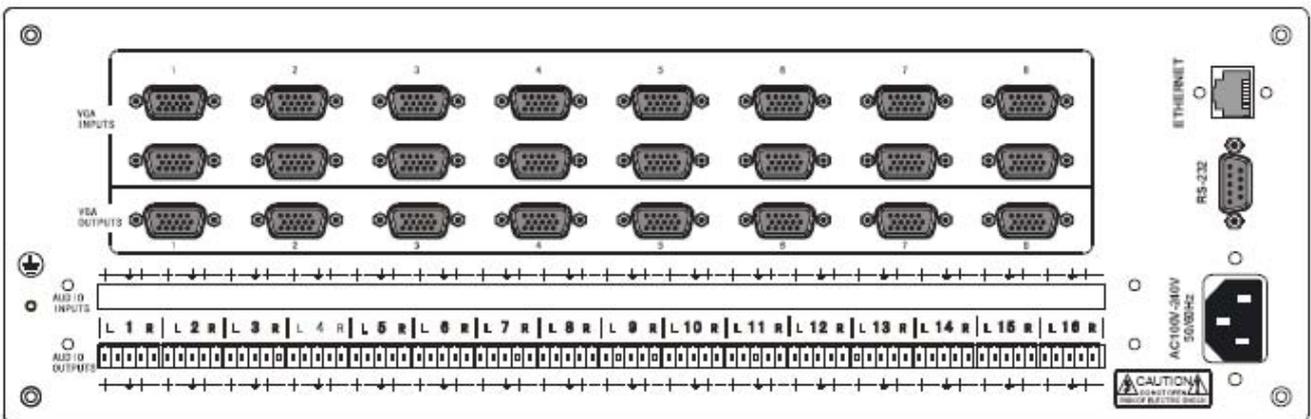
### Rear View of the VGA1601,VGA3201



## Rear View of the VGA0802-A, VGA0804-A, VGA0808-A



## Rear View of the VGA16040-A, VGA1608-A

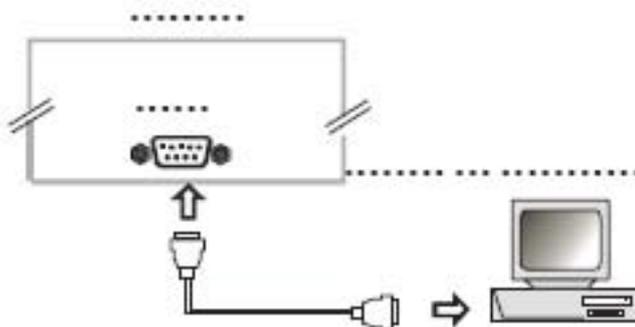


### 3.0 Connecting the Swticher

The VGA matrix switchers connect using female 15-pin HD connectors for the video signal I/O interface, and captive screw connectors for the audio signal I/O interface. The swticher has front control panel, infra-red remote controller (Optional) and the Ethernet control (Optional), The VGA switcher can also be controlled via the RS-232 communication port. This RS-232 communication port is a female 9-pin D connector. The definition of its pins is shown in the table below.

Pin	RS-232	Description
1	N/u	Not used
2	Tx	Transmit data
3	Rx	Receive data
4	N/u	Not used
5	Gnd	Signal ground
6	N/u	Not used
7	N/u	Not used
8	N/u	Not used
9	N/u	Not used

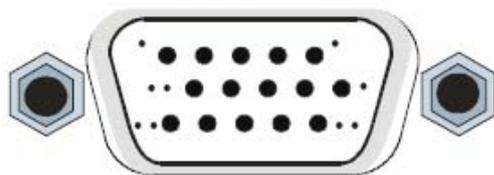
The switcher can also be controlled through COM1 or COM2 ports on the computer, To control the switcher, users may use the application SWITCHER 2.0 in the supplied CD or develop their own control software with the protocol and control codes.



### 3.1 Connecting with inputs and output terminals

The VGA matrix switchers may take laptops, desktop computers, graphic workstations and document cameras as their input signal source. Projectors, RP TVs, displays and amplifiers can be connected on the output signal .

VGA Connection: The VGA matrix switchers support all kinds of the RGB and VGA signal sources with 15-PIN HD VGA connectors.



Pin	RGB	YcbCr
1	R	Cr
2	G	Y
3	B	Cb
4	Not used	
5	Ground	
6	R ground	Cr ground
7	G ground	Y ground
8	B ground	Cb ground
9	Not used	
10	Sync signal ground	
11	Not used	
12	Not used	
13	H or H/V	
14	V	
15	Not used	

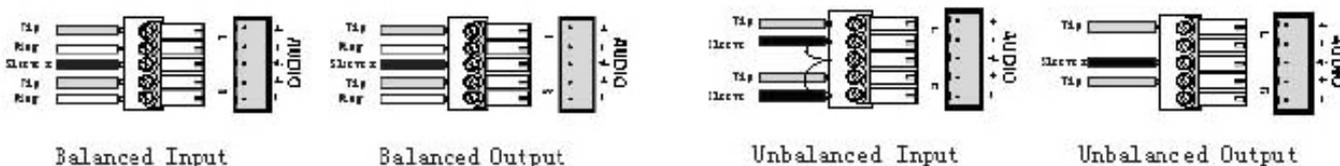
If the RGB source does not have VGA output terminals, please convert the signals with an RGB to VGA converter for getting high quality VGA output. Please use the special VGA cable to connect the input and output devices. Connect the 15-Pin HD connectors carefully.

### 3.2 Audio signal connection:

“AUDIO INPUTS”, “AUDIO OUTPUTS” audio network interface in RGB matrix switchers can be connected to the audio signal and amplify sources. Audio connection is little more complicated than video. It has two types of connection: balanced and unbalanced. The balanced connection transmits a pair of balanced signals with two cables. Because Interferences will have the same intensity and the opposite phases on the two cables; it will be counteracted in the end. For the low frequency extent of the audio signal, it would be easily interfered under long distance transmission. Therefore as an anti-interference connection, it is mostly used in Audio connection of special high end devices.

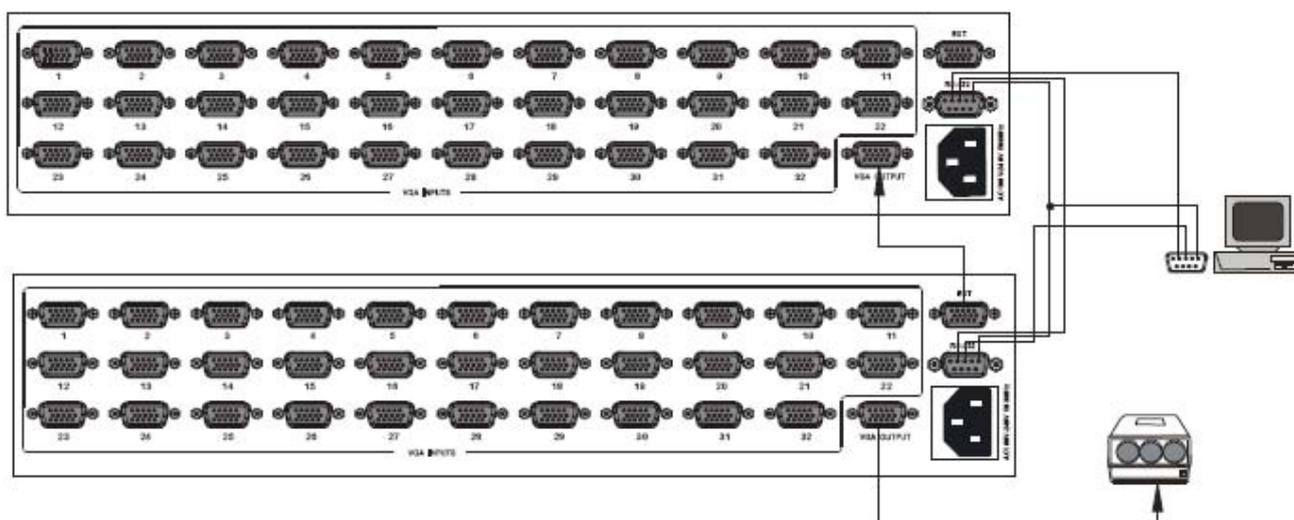
The unbalanced connection transmits signals only with one cable. Without counteraction, it can be interfered more easily. Accordingly, it is adopted for household appliance or some cases with low technical demand. Take the audio signal line for example: 1.Unbalanced: pin “G” connect to SLEEVE, pin “+” connect to TIP, pin “-” connect to pin “G”; 2.Balanced: pin “G” connect to SLEEVE, pin “-” connect to RING, pin “+” Connect to TIP.

To select which connection is up to the interface of the device. When available, the balanced connection is the first choice. Before connection, please read the command or relevant demand in the user manual carefully. In some cases, maybe there is balanced in source signal end but unbalanced in the destination end. If in a nonstandard case, it is done to connect balanced for the balanced end and unbalanced



## 4.0 Stacking The Switcher

When stacking the vga matrix switchers the slave matrix inputs 1-32 become inputs 33-64, that also goes for the 3rd matrix slave making inputs 1-32 to 65-96. If all 3 matrix switchers are stacked it would make the unit 96x1.



## 5.0 Operation Controls For VGA0404-A

“AV” AV synchronal button: To transfer video and audio signal synchronously by the switcher  
Example: To transfer both video and audio signal from input channel No.3 to output channel No.2.

Operation: Press buttons in the following order “3”, “AV”, “2”

“VIDEO” Video button: To transfer only video signals from input channel to output channel  
Example: To transfer video signals from input channel No.2 to output channel No.1.

Operation: Press buttons in the following order “2”, “VIDEO”, “1”

“AUDIO” Audio button: To transfer only audio signals from input channel to output channel  
Example: To transfer audio signals from input channel No.2 to output channel No.4.

Operation: Press buttons in the following order “2”, “AUDIO”, “4”

“1,2,3,4” I/O Keypads: Keys to select I/O channels.

## 5.1 Operation Controls For VGA0801

“DEMO” Demo button: Press it to auto-switch all the input channels to output channel.

“CLOSE” Close button: Press it to switch off the output channel.

Example: To switch off the output channel

Operation: Press buttons in the following order “1”, “CLOSE”.

“LOCK” Lock button: Press down for 5 seconds to lock the front controls.

Note: Press it for 5 seconds again to unlock the control panel.

“1,2...8” Input Keypads: Keys to select input channels.

## 5.2 Operation Controls For VGA3201, VGA0808-A, VGA1608-A

VGA8X8 V2.0 LCD display: Real time monitor of the operations and status

“1,2...8” Input Keypads: Keys to select input channels.

“AV” AV Synchronal button: To transfer video and audio signal synchronously by the switcher

Example: To transfer both video and audio signals from input channel No.3 to output channel No.6.

Operation: Press buttons in the following order “3”, “AV”, “6”, “END”, “ENTER”

“VIDEO” Video button: To transfer only video signals from input channel to output channel

Example: To transfer video signals from input channel No.3 to output channel No.10.

Operation: Press buttons in the following order “3”, “VIDEO”, “1”, “0”, “END”, “ENTER”

“AUDIO” Audio button: To transfer only audio signals from input channel to output channel

Example: To transfer audio signals from input channel No.12 to output channel No.6.

Operation: Press buttons in the following order “1”, “2”, “AUDIO”, “6”, “END”, “ENTER”

“ / ” Break button: To break different channels in a command

Example: To transfer video and audio signals from input channel No.1 to output channel No.2,13,6 at the same time

Operation: Press buttons in the following order “1”, “AV”, “2”, “/”, “1”, “3”, “/”, “6”, “END”, “ENTER”

“END” Ending command button: To finish inputting a command.

“ENTER” Execute button: To perform a command after inputting it.

“ALL” All button: To transfer an input channel to all output channels or switch off all the output VGA Matrix Switcher System channels

Example1: To transfer video and audio signals from input channel No.7 to all output channels

Operation: Press buttons in the following order “7”, “ALL”

Note: This command does not need follow by “END” & “ENTER”

Example2: To transfer all input signals to the corresponding output channels

In another word, to switch to this status: 1->1, 2->2, 3->3, 4->4.....16->16.

Operation: Press buttons in the following order “ALL”, “1”

Example3: To switch off all the output channels

Operation: Press buttons in the following order “ALL”, “2”

“SAVE” Save button: To save the present operation to a preset command

Example: To save the present operation to the preset command No.2

Operation: Press buttons in the following order “SAVE”, “2”

Note: There are altogether 10 preset commands ranged from No.0 to No.10.

“RECALL” Recall button: To recall the preset command

Example: To recall the preset command No.2

Operation: Press buttons in the following order “RECALL”, “2”

“CANCEL” Cancel button: To return to the standby status without performing any commands

Example: To cancel the input instructions “1”, “AV”, “2”, “END”

Operation: Just press button“CANCEL” after the above inputs

“STATUS” Acquire status button: To Acquire the present status

Example1: To Acquire the status of output channel No.7

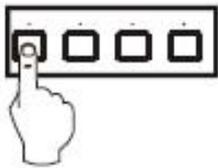
Operation: Press buttons in the following order “7”, “STATUS”

Example2: To Acquire the status of all the output channels one by one

Operation: Press only the button “STATUS”

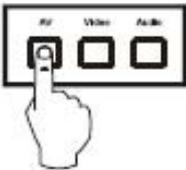
With the front control panel, the switcher could be control directly and rapidly by pressing the button under below format.

“Input Channel”+“Switching Mode”+“Output Channel 1”+“/”+“Output Channel 2”+“END”+“ENTER”



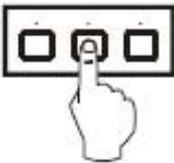
Input Command:  
1

1, Press the button for input channel number "1"  
Display feedback on LCD: "1"



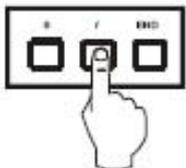
Input Command:  
1B

2, Press the button for switching mode "AV"  
Display feedback on LCD: "B" for the switching mode of video and audio ("A" for the switching mode of audio only; "V" for the switching mode of video only)



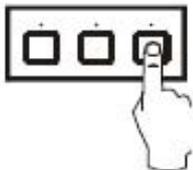
Input Command:  
1B3

3, Press the button for the first output channel number "3"  
Display feedback on LCD: "3"



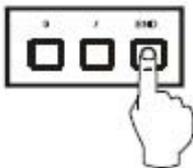
Input Command:  
1B3.

4, Press the break button "I"  
Display feedback on LCD: ".", " " for a break between two channels in a command



Input Command:  
1B3. 4

5, Press the button for the second output channel number "4"  
Display feedback on LCD: "4"



Input Command:  
1B3. 4.

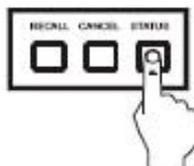
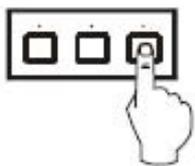
6, Press the button "END" to finish the command  
Display feedback on LCD: "."



1B3.4.  
Switch OK

7, Press the button "ENTER" to perform this command  
Display feedback on LCD: "Switch OK"

**Example 2:** To inquire the status on the output channel No.4  
Operation: Press buttons in this order "4", "STATUS"



VIDEO: 3 → 4  
AUDIO: 2 → 4

Display feedback on LCD: The video signal of output channel No.4 is transferred from the input channel No.3 and the audio signal is from the input channel No.2

## 5.3 Remote Control Operation



The Matrix can be controlled with the infrared remote control. The function buttons on the remote are the same as the ones on the front control panel, the remote uses the same commands and in the same order you would input them.

## 6.0 Operation of Application Software

Switcher 2.0 is a switcher control application compatible with switchers with different inputs and outputs.

Requirements to run the software

Operating System: Window98/2000/NT/XP

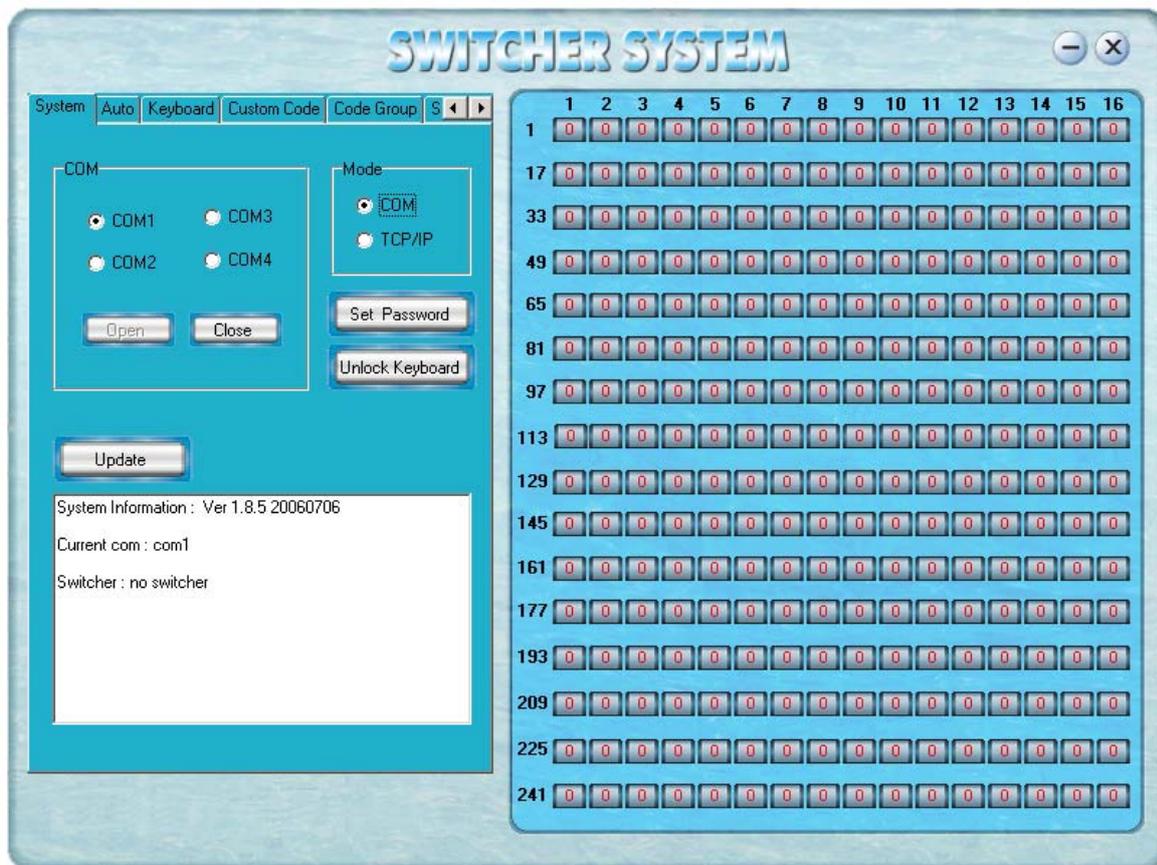
Memory: At least 32M

Space in hard disk: At least 10M

CD-ROM

COM Port

According to practical needs, user can select and operate at different function tabs such as SYSTEM, AUTO, KEYBOARD, CUSTOM CODE, CODE GROUP and SEND/RECEIVE CODE LIST.



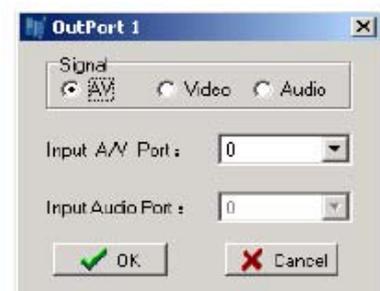
On the right hand side of the main window, there are 256 buttons representing for the 256 output channels. When clicking on the button output 1, the text OutPort 1 will appear

“SIGNAL”: Select the switching mode “AV”, “VIDEO” and “AUDIO”

“INPUT A/V PORT”: Select an input A/V channel

“INPUT AUDIO PORT”: Select an input audio channel\

Once the selections have been entered, click “OK”



“MODE”: Select the communication mode between “COM” or “TCP/IP”

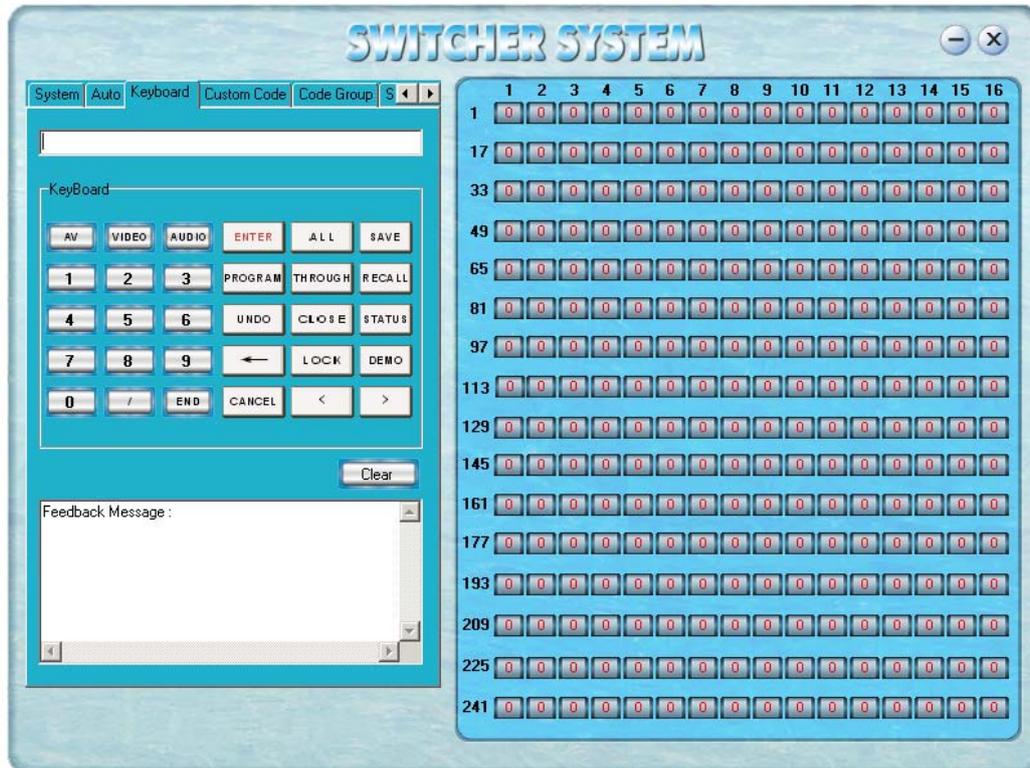
“COM”: Select a COM port to control the switcher (if selecting “TCP/IP” as the communication mode, a sub-page will appear to inpute the IP address of the swticher)

“Set Password”: Set the password for the control panel on the Matrix (The password must be an 8 digit number)

“Unlock Keyboard”: Unlock the keyboard of the control panel on the Matrix.

## 6.1 Keyboard Tab

Because the function buttons on this tab are the same with the ones on the front control panel, it shares the same control operation and command format with the control panel. Please refer the details in Chapter 7 Operation of the Control Panel



## 6.2 Auto Tab

This tab is used to test the switcher after connecting it to all the input and outputs device. For example, to test the function of an RGB64X32 matrix switcher, the Auto Tab is set as below after finishing all the connection.

Switch Mode: "AV"

INPUT: From 1 to 64

OUTPUT: From 1 to 32

Delay: 1000ms (1 second)

Click on the button "START" to perform the test, the matrix switcher will:

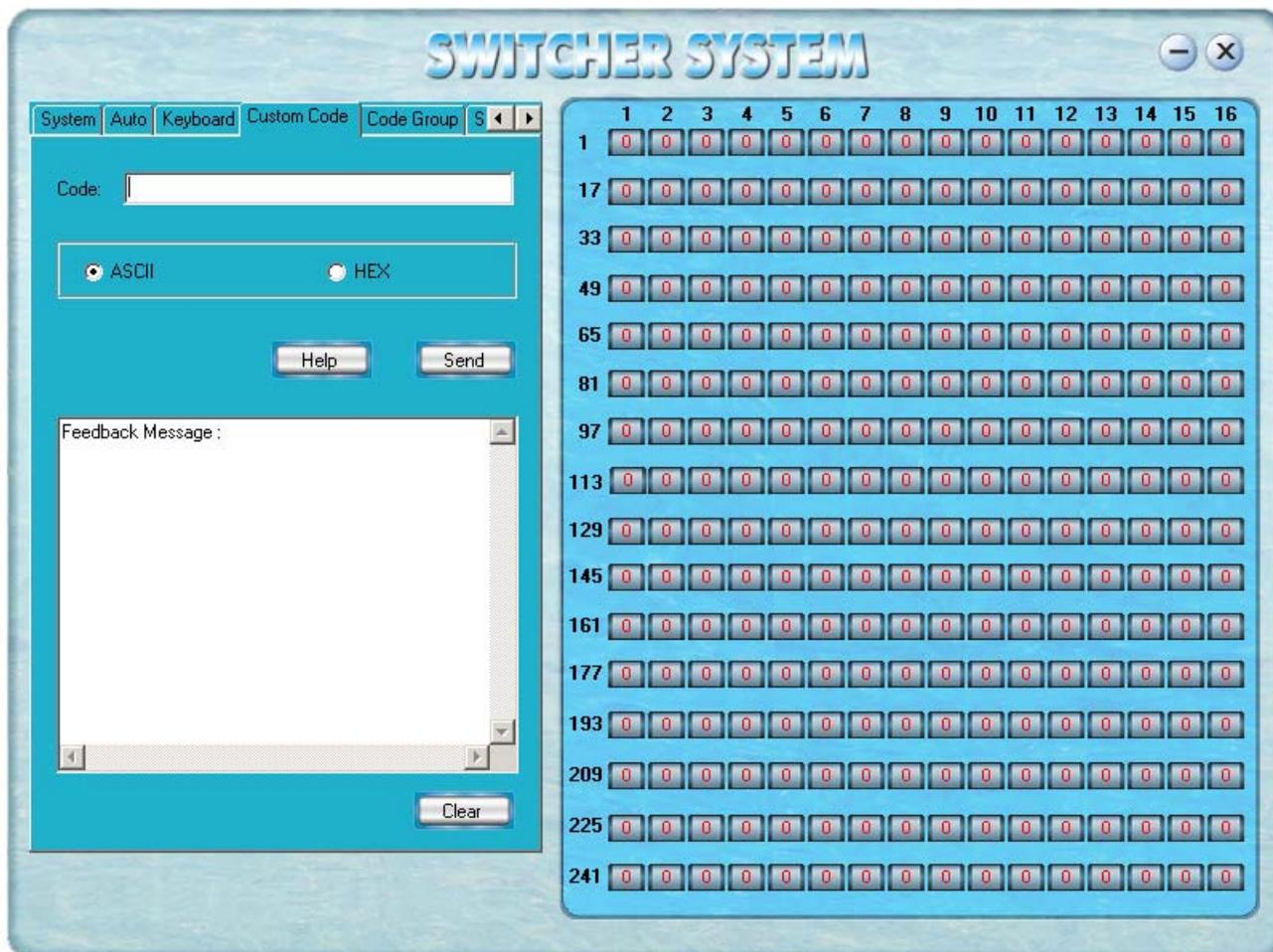
Transfer the signals from input channel No.1 to output channel No.1-32;

Transfer the signals from input channel No.2 to output channel No.1-32;

Transfer the signals from the input channel No.64 to the output channel No.1-32;

This switching test will perform this way one by one every second until the test is over.

## 6.3 Custom Code Tab



Select between ASCII and HEX format command codes ( for command details, please refer to section)

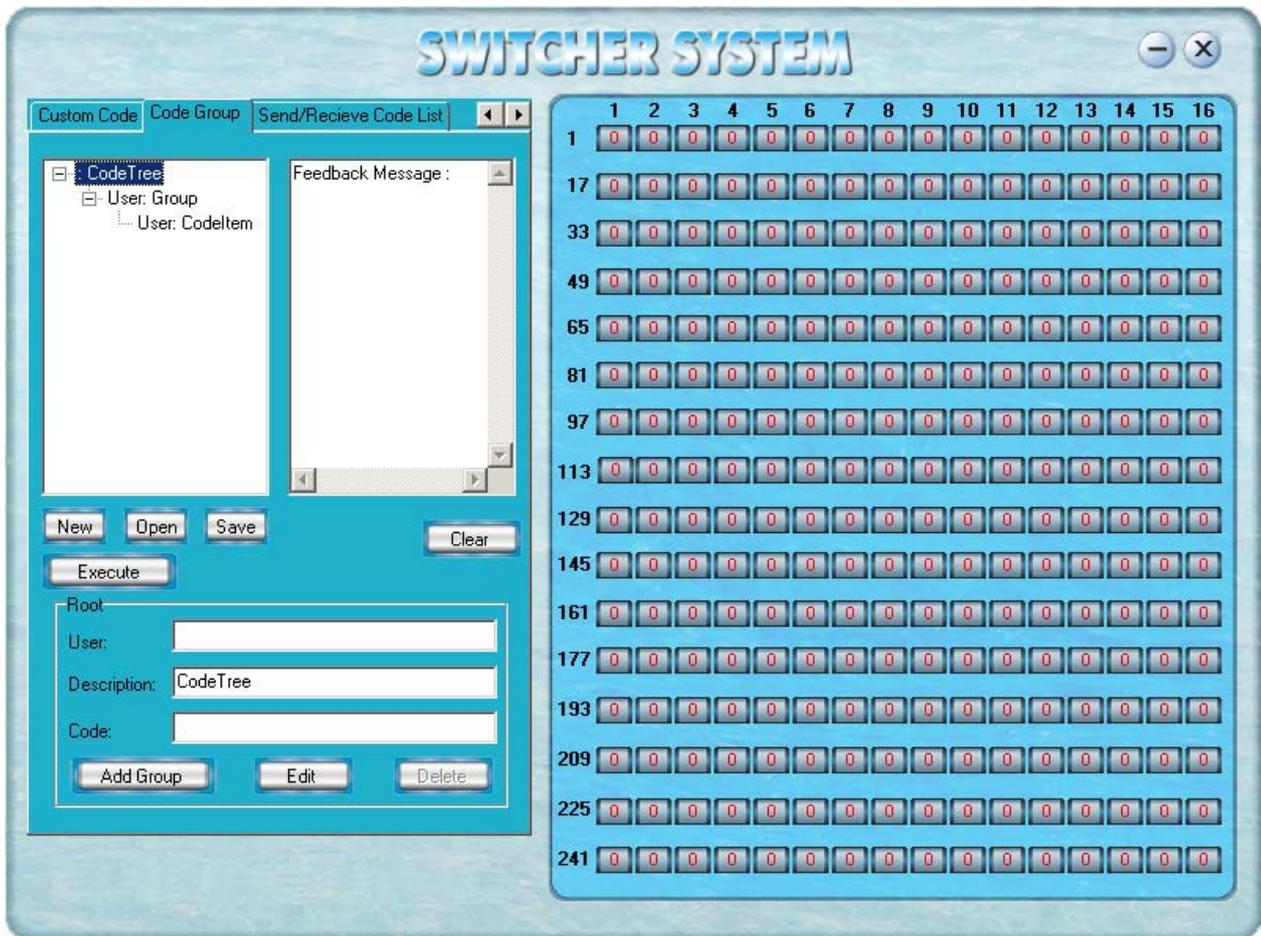
Help: Displays the list of commans codes.

Send: Sends out the typed commans codes.

For example, to transfer the video and audio signals from the input channel No.1 to the output channel No.7, and the audio signals from the input channel No.2 to the output channel No.4, just perform the following steps below.

1. Select the "ASCII" as the command codes format;
2. Input the command codes "1B7.2A4." at the blank of Codes;
3. Click the button "Send" to perform the commands.

## 6.4 Code Group Tab



New: Create new a group of preset commands

Open: Opens a group of preset commands

Save: Saves the present group of preset commands

Execute: Executse a selected preset command or a selected group of preset commands

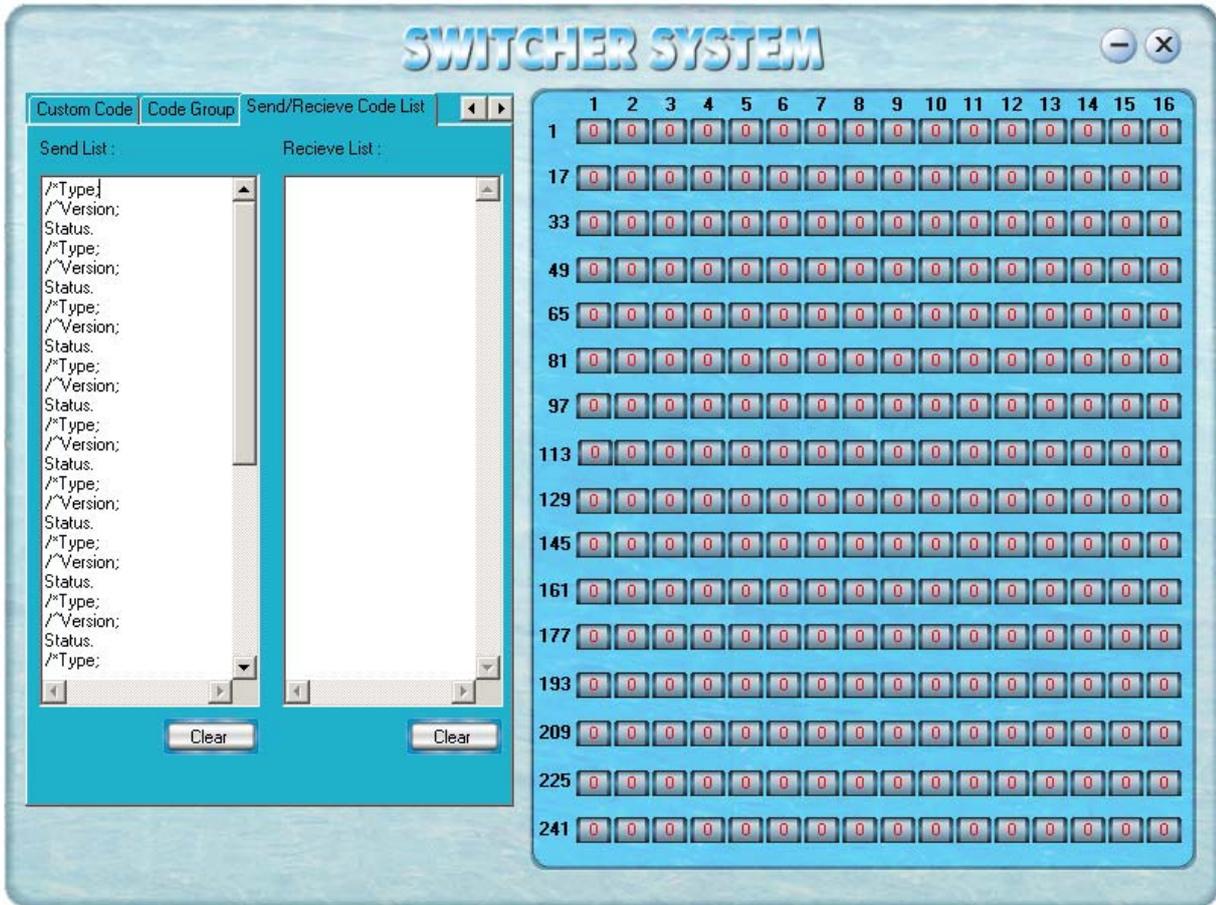
Clear: Clears the feedback window

Add Code Item: To add another new group of preset commands

Edit: To edit the User's name (User),

Delete: Deletes the selected group.

## 6.5 Send / Recieve Code List Tab



Send List window: Lists sent command code

Received List window: Lists feedback from the switcher

Clear: Clears either of the two lists

## 7.0 RS-232 Operation

With the application “Switcher 2.00” one is able to control and operate the RGB Matrix remotely

Communication protocol:

Baud rate: 9600 Data bit: 8 Stop bit: 1 Parity bit: none

Command Types	Command Codes	Functions
System Command		
	/*Type;	Acquires the models information.
	/+xxxxxxxx;	Rewrites the passwords: must be 8 digits.
	/%Lock;	Locks the keyboard.
	/%Unlock;	Unlocks the keyboard.
	/:BellOff;	Turn off the buzzer.
	/:BellOn;	Turn on the buzzer.
	/^Version;	Acquires the version of software
	/~CREATOR20;	Switch to CREATOR2.0 command system.
[x1]All	Transfer signals from input channel [x1] to all output channels	
Operation Command		
	All#	Transfer all input signals to matching output channels.
	All\$	Switch off all output channels.
	[x1]#	Transfer signals from input channel [x1] to output channel [x1].
	[x1]\$	[x1]\$. Switch off output channel [x1].
	[x1] V[x2]	Transfer the video signals from input channel [x1] to output channel [x2].
	[x1] V[x2],[x3],[x4]	Transfer the video signals from input channel [x1] to output channels [x2], [x3] and [x4].
	[x1] A[x2]	Transfer the audio signals from input channel [x1] to output channel [x2].
	[x1] A[x2],[x3],[x4]	Transfer the audio signals from input channel [x1] to output channels [x2], [x3] and [x4].
	[x1] B[x2]	Transfer both video and audio signals from input channel [x1] to output channel [x2].
	[x1] B[x2],[x3],[x4]	Transfer both video and audio signals from input channel [x1] to output channels [x2], [x3] and [x4].
	[x1]P[x2]	Transfer signals from input channel [x1] to all output channels in group [x2].
	[x1]PP[x2],[x3],[x4]	Group output channels [x2], [x3] and [x4] under group [x1].
	S[x]	Acquires the output channels in Group[x].
	Status[x1]	Acquires the input channel to the output channel [x1].
	Status	Acquires the input channel to the output channels one by one.
	Save[Y]	Save the present operation to the preset command [Y]. [Y] ranges from 0 to 9.
	Recall[Y]	Recall the preset command [Y].
	Clear[Y]	Clear the preset command [Y].
		[X1]*[X2]!

Command Types	Command Codes	Functions
	[X1]*[X2]\$	Transfer audio signals from input channel [x1] to output channel [x2].
	[X1]*[X2]%	Transfer video signals from input channel [x1] to output channel [x2].
	[X1]*[X2]&	Transfer video signals from input channel [x1] to output channel [x2].

## 8.0 Technical Specifications

Series	VGA0404-A	VGA8 series	VGA16 series	VGA0801	VGA3201 series
Specifications					
<b>Video</b>					
Models Included	VGA0404-A	VGA0802-A VGA0804-A VGA0808-A	VGA1604-A VGA1608-A	VGA0801	VGA3201 VGA6401 VGA9601
Gain	0 dB				
Bandwidth	250MHz (-3dB), fully loaded				
Cross talk sum	60dB @ 10 MHz -39dB @ 100 MHz				
Switching speed	200 ns (Max)				
Signal type	VGA, VGAS, RGsB, RsGsBs, HDTV, Component video, S-video, Composite video				
<b>Input Video</b>					
Connector	Female 15-pin HD				
Signal Strength	1V p-p Y component video,S-video, composite video; 0.7V p-p VGA;0.3V p-p R-Y & B-Y component video, S-video				
Maximum/Minimum Level	Analog signals: 0.5V ~ 2.0V p-p				
Impedance	75 Ω				
Echo Loss	<-40dB@5MHz				
Horizontal Frequency Response	15 kHz ~ 145 kHz				
Vertical Frequency Response	30 Hz ~ 170 Hz				
Max Error in DC Offset	15mV				
<b>Output Video</b>					
Connector	Female 15-pin HD				
Maximum/Minimum Level	2.0V p-p				
Impedance	75 Ω				
Echo Loss	<-40dB@5MHz				
Max compensation in Dc offset	±5mV				

Series	VGA0404-A	VGA8 series	VGA16 series	VGA0801	VGA3201 series
Specifications					
<b>Sync Signal</b>					
Input/Output Signals	RGBHV, RGBS, RGsB, RsGsBs, Component video, Composite video				
Video System	NTSC 3.58,NTSC 4.43,PAL,SECAM				
Input Level	0.5V- 5.0V p-p,: 4.0V p-p normal				
Output Level	AGC-TTL: 5Vp-p, unterminated				
Input Impedance	510 $\Omega$				
Output Impedance	75 $\Omega$				
Maximum Transmission Delay	Horizontal:90ns Vertical:160ns				
Maximum ascending/dscending time	4ns				
Polarity	Straight or subtractive according to input				
<b>Audio Signal</b>					
I/O Connector	3.8mm with screw , 5 pole				
Gain	0dB				
Frequency Respond	20 Hz ~ 20 kHz,				
General Harmonic Distortion + Noise	0.05% @ 1 kHz ,under rating voltage,				
S/N	>90dB				
Segregation Rate	>80dB @ 1 kHz				
CMRR	>75dB @: 20 Hz ~ 20 kHz				
Signal	Stereo ,balanced /unbalanced				
Impedance	Input:>10 k $\Omega$ ,balanced /unbalanced, Output:50 $\Omega$ ,unbalanced,, 100 $\Omega$ ,balanced,				
Maximum Input Level	+19.5dBu, ,balanced /unbalanced,				
Gain Error	$\pm$ 0.1dB @20 Hz ~ 20 kHz				
Max Output Level	+19.5dBu, alanced /unbalanced,				
<b>Control type</b>					
Serial Control Port	RS-232, 9-pin FD connector				
Baud Rate and Protocol	Baud rate: 9600 Data bit: 8 Stop bit: 1 Parity bit: none				
Serial Control Poling Protocol	2 = TX, 3 = RX, 5 = GND				
Control Application	Switch 2.0				

Series	VGA0404-A	VGA8 series	VGA16 series	VGA0801	VGA3201 series
Specifications					
Features					
Power Supply	100VAC ~ 240VAC, 50/60 Hz, Universal International Power Supply				
Temperature	Storing and Operating Temperature: -20° ~ +70°C				
Humidity	Storing and Operating Humidity: 10% ~ 90%				
Size	485(L)X245(W) X445mm(H)	485(L)X260(W) X90mm(H)	485(L)X260(W) X140mm(H)	485(L)X245(W) X445mm(H)	485(L)X260(W) X90mm(H)
Weight	1.8kg	3.5kg	4.3kg	1.8kg	3.5kg
MTBF	30,000 hours				
Quality Guarantee	2 Year Warranty				

## 9.0 Troubleshooting

Problem	Solution
Output image is displayed with a ghost	Check display settings, try another high quality cable
Color loss or no video on output signal	Check both the input and output connections
Remote control doesnt work	Check batteries, If borken, contact dealer
The swticher cannot be controlled by computer through COM port.	Check the COM pot in the software. Make sure the COM is working
NO sound when switching with I/O signal.	Make sure the beeper is switched on. If it is it may be broken inside, contact dealer
NO image on output signal	Check the Input and Output connectors they may be lose. Check the connection cord it may be borken. Check the output device and make sure it is connected to the output channel.
Power Indicator doesnt work, no display on LCD no response to any operation.	Check the power cord to see it is connected and not damaged.
Interference in the output image	Check to see if the unit is well grounded.
Static gets stronger when connecting BNC connectors	The unit is not grounded correctly. Correct issue immediatly or damage may be caused to the switch.
Beepr makes sound. LCD is displaying normally and there is a returning code. But there isnt any Video or Audio out.	Check connections, and replace if are damaged
The swticher cannot be controlled by front panel keys, RS-232 port or remote control	The unit may be broken, contact dealer for repair.

### ATLONA

2151 O'toole Ave, Ste D

San Jose CA 95131

Toll Free: 1-877-536-3976

International: 408-954-8782

FAX: 408-954-8792

Website: [www.atlona.com](http://www.atlona.com)

E-MAIL: [info@atlona.com](mailto:info@atlona.com)

Atlona Technologies

[www.atlona.com](http://www.atlona.com)