AV SWITCHER USER GUIDE

AT-AV0404 to AV128128

Contents

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 AV 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 AV 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.
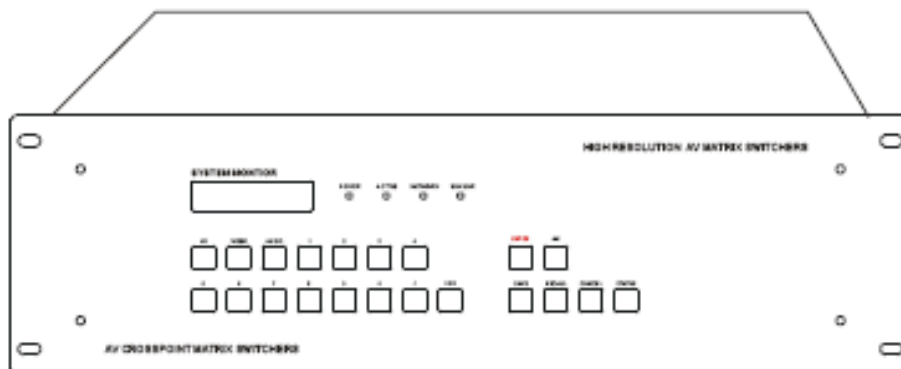

Specifications Models	A/V Input	A/V Output	RS232 Interface	LCD Display
MATRIX AV0404	4	4	√	×
MATRIX AV0802	8	2	√	√
MATRIX AV0804	8	4	√	√
MATRIX AV0808	8	8	√	√
MATRIX AV1604	16	4	√	√
MATRIX AV1608	16	8	√	√
MATRIX AV1616	16	16	√	√
MATRIX AV2408	24	8	√	√
MATRIX AV2416	24	16	√	√
MATRIX AV2424	24	24	√	√
MATRIX AV3208	32	8	√	√
MATRIX AV3216	32	16	√	√
MATRIX AV3224	32	24	√	√
MATRIX AV3232	32	32	√	√
MATRIX AV4832	48	32	√	√
MATRIX AV4848	48	48	√	√
MATRIX AV6432	64	32	√	√
MATRIX AV6448	64	48	√	√
MATRIX AV6464	64	64	√	√
MATRIX AV9664	96	64	√	√
MATRIX AV9696	96	96	√	√
MATRIX AV12864	128	64	√	√
MATRIX AV12896	128	96	√	√
MATRIX AV128128	128	128	√	√

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
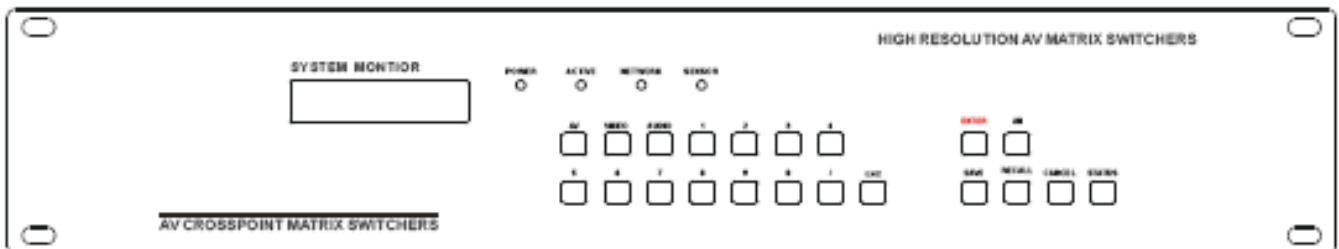- User Manual and Quality Guarantee
- Remote Control
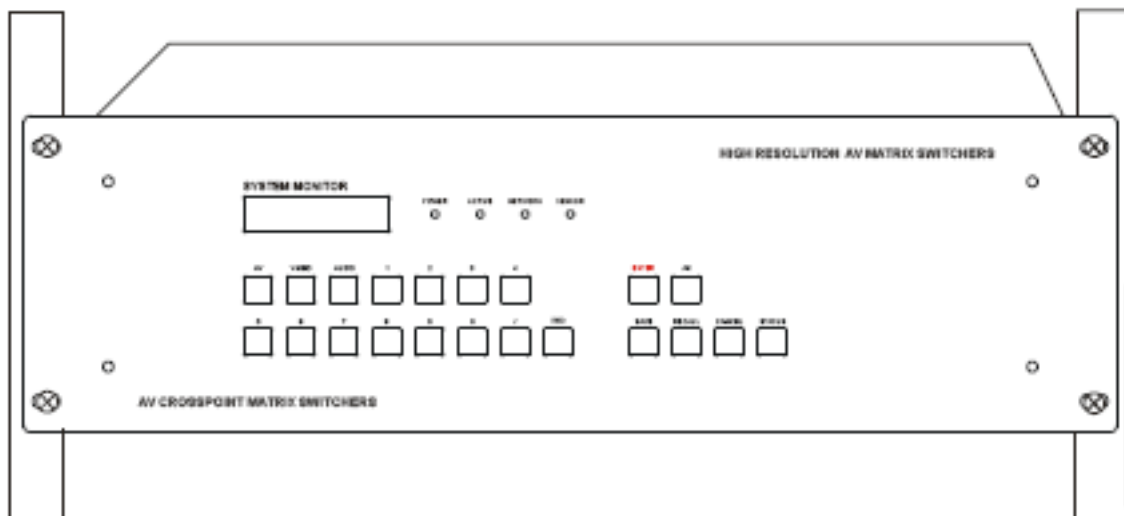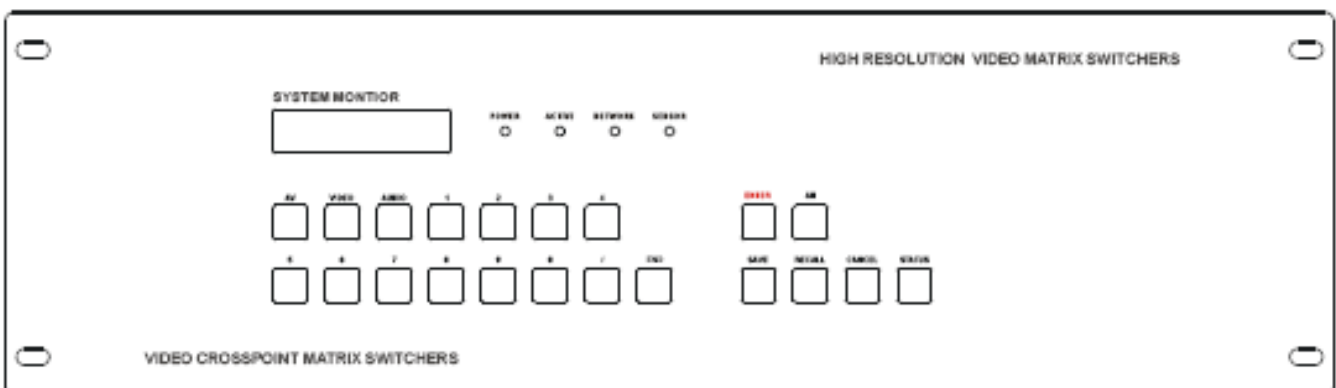
Front View of the Product
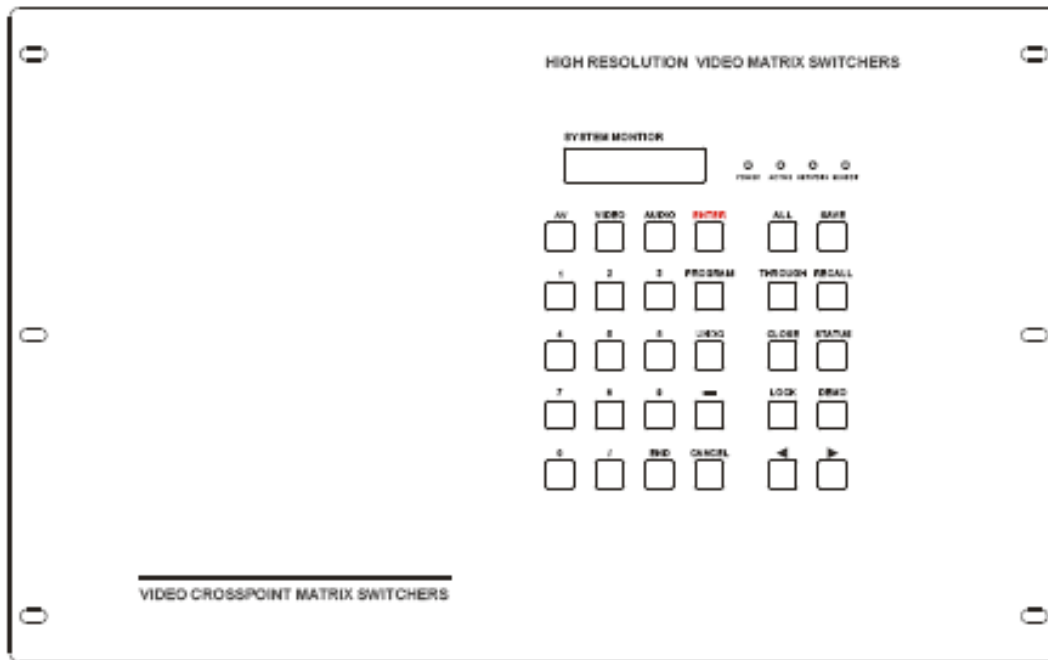
Front View of the AV0404 Series
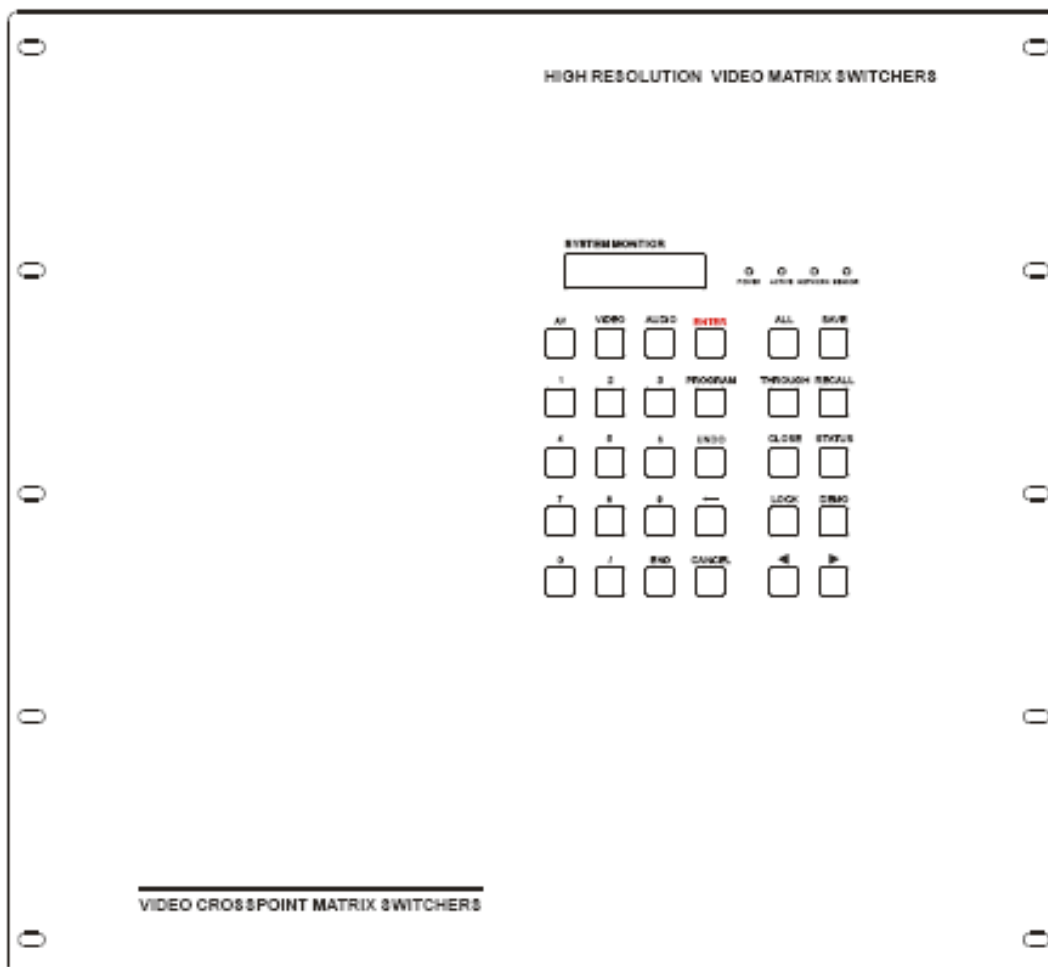
Front View of the AV8 Series

Front View of the AV16 Series

Front View of the AV24, 32 Series

Front View of the AV48, 64 Series

Front View of the AV96, 128 Series

HIGH RESOLUTION AV MATRIX SWITCHERS

SYSTEM MONITOR

AV CROSSPOINT MATRIX SWITCHERS
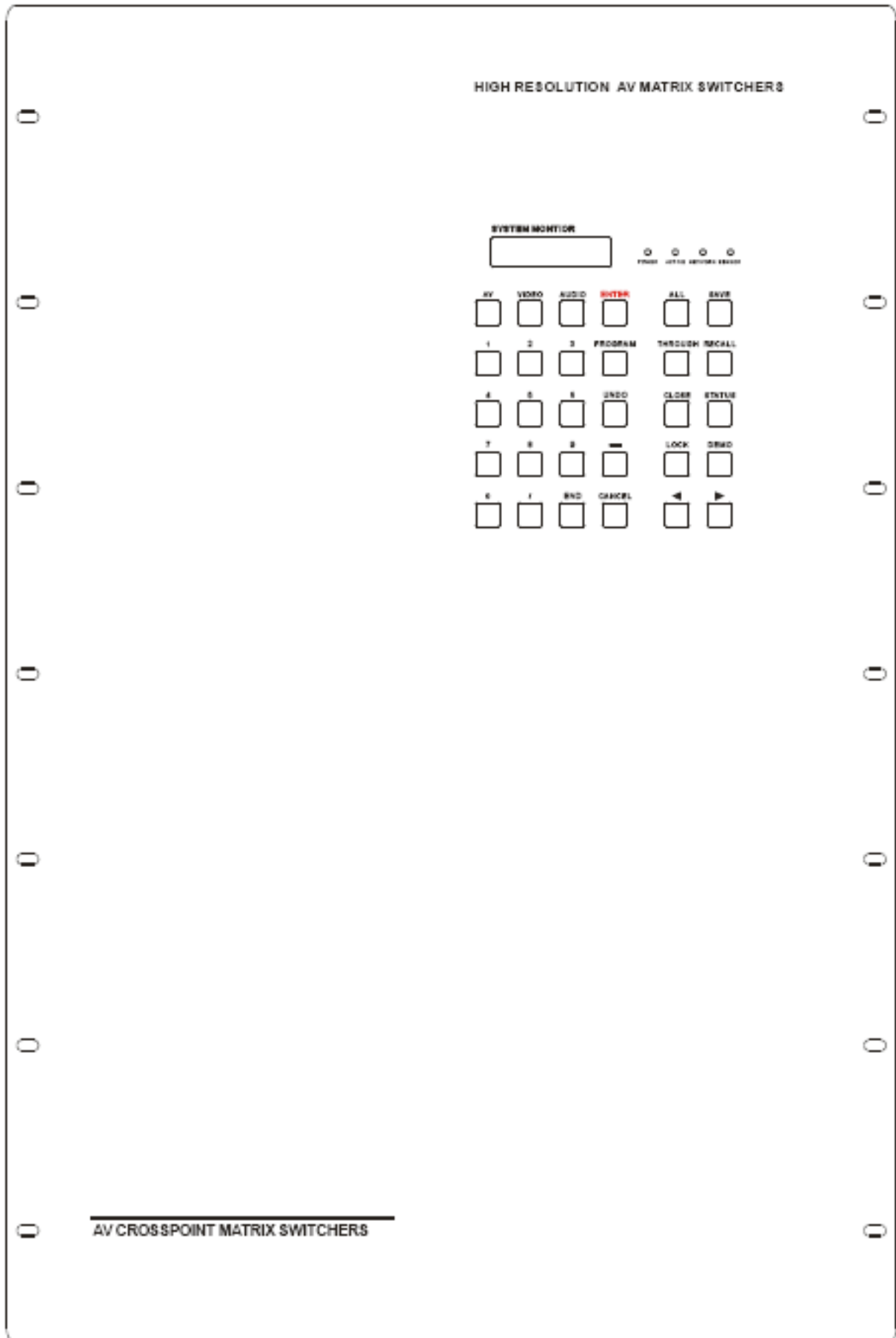
Rear View of the Product

Rear View of the AV4X4 Series
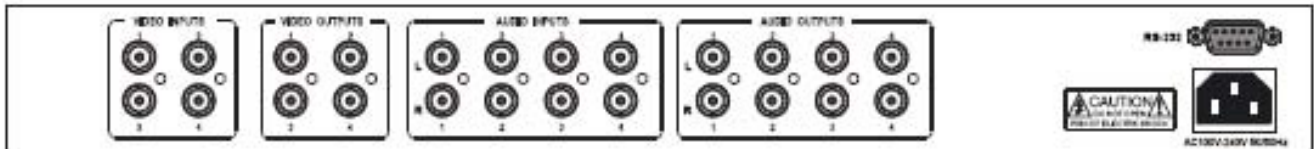
Rear View of the AV8 Series

Rear View of the AV16 Series

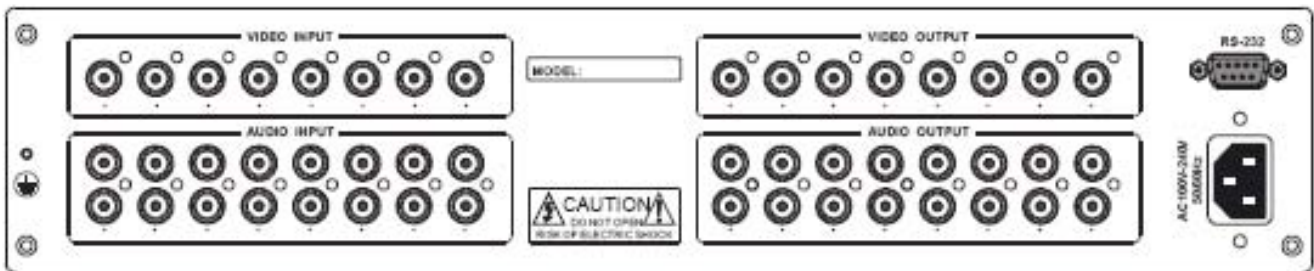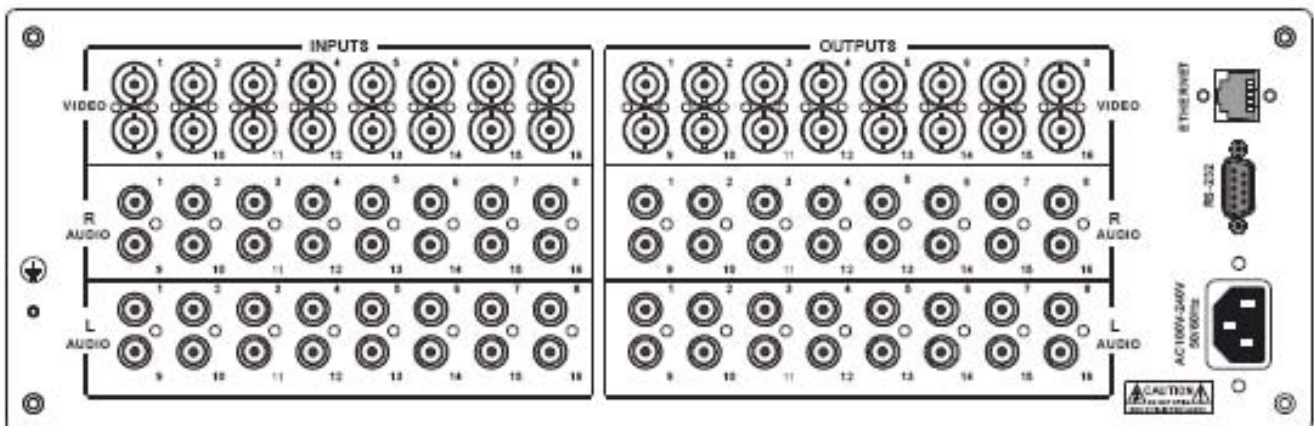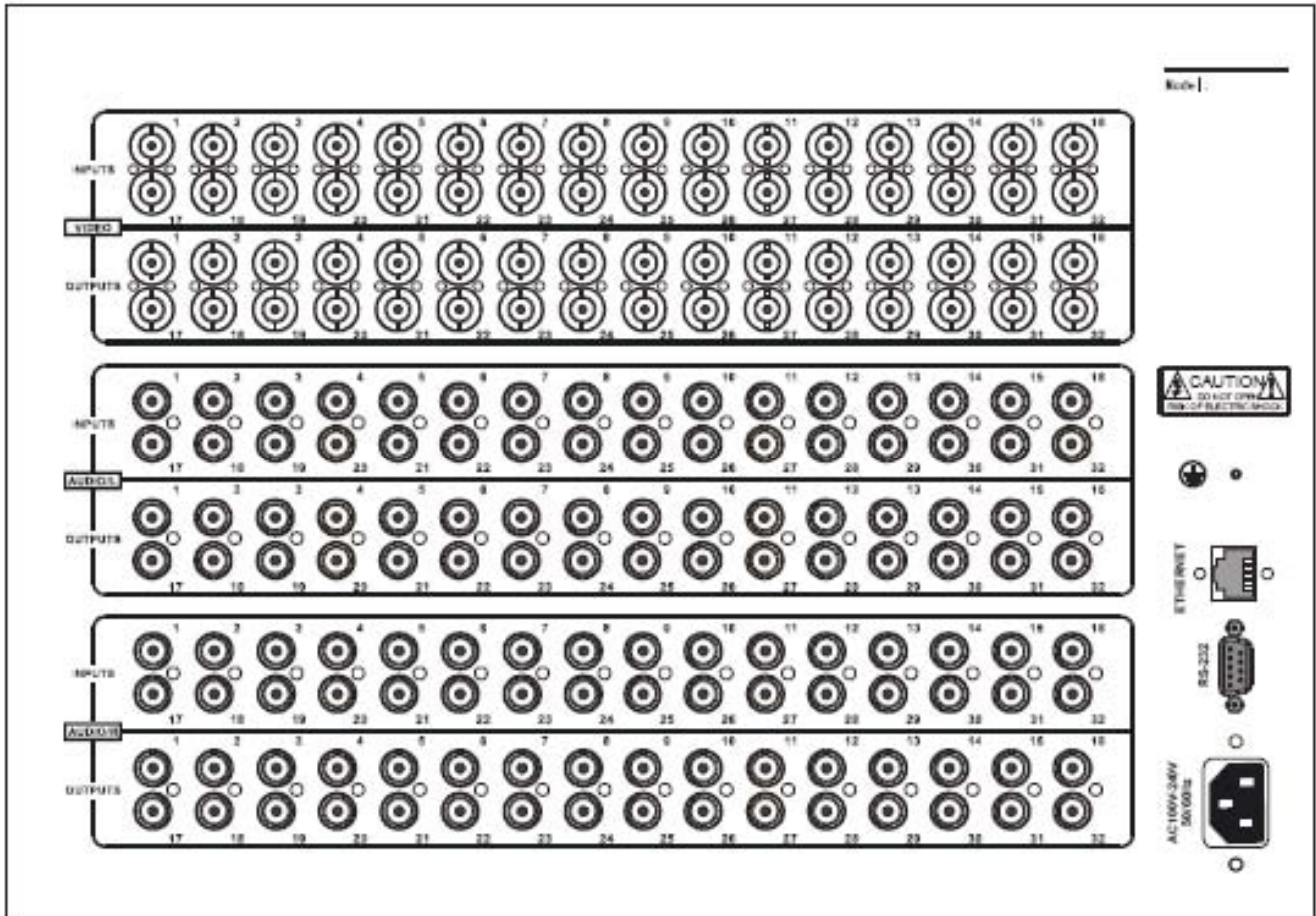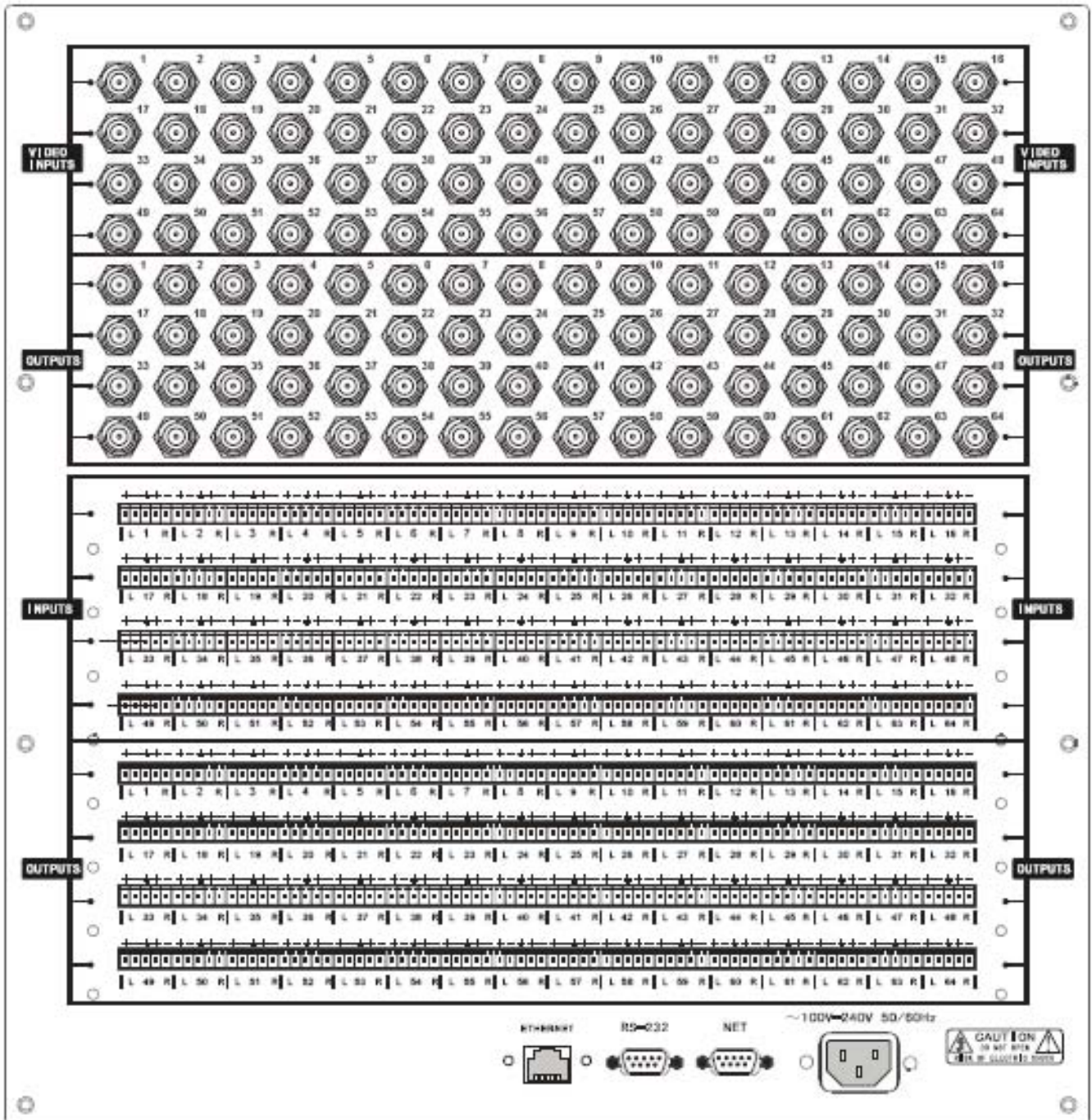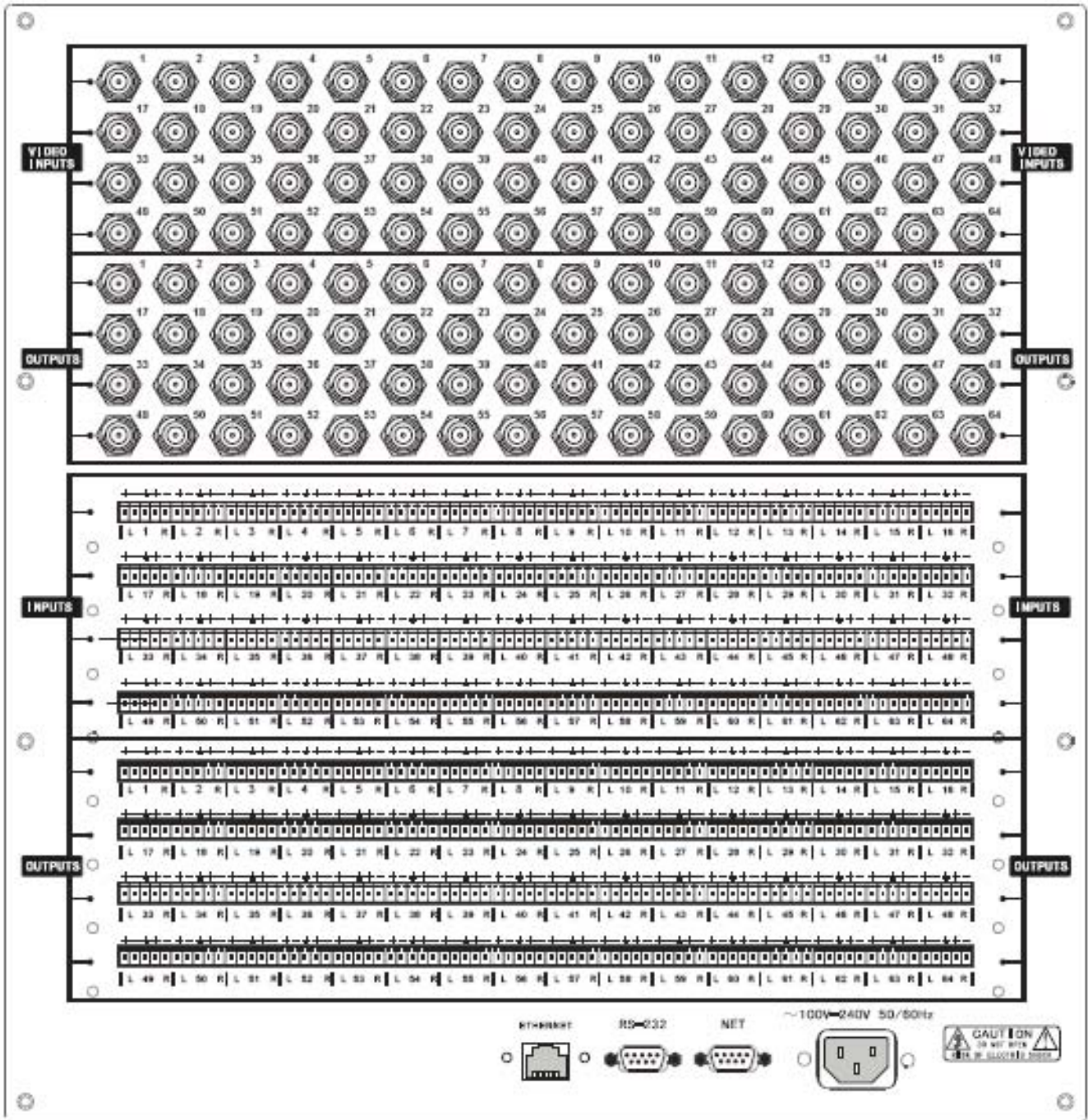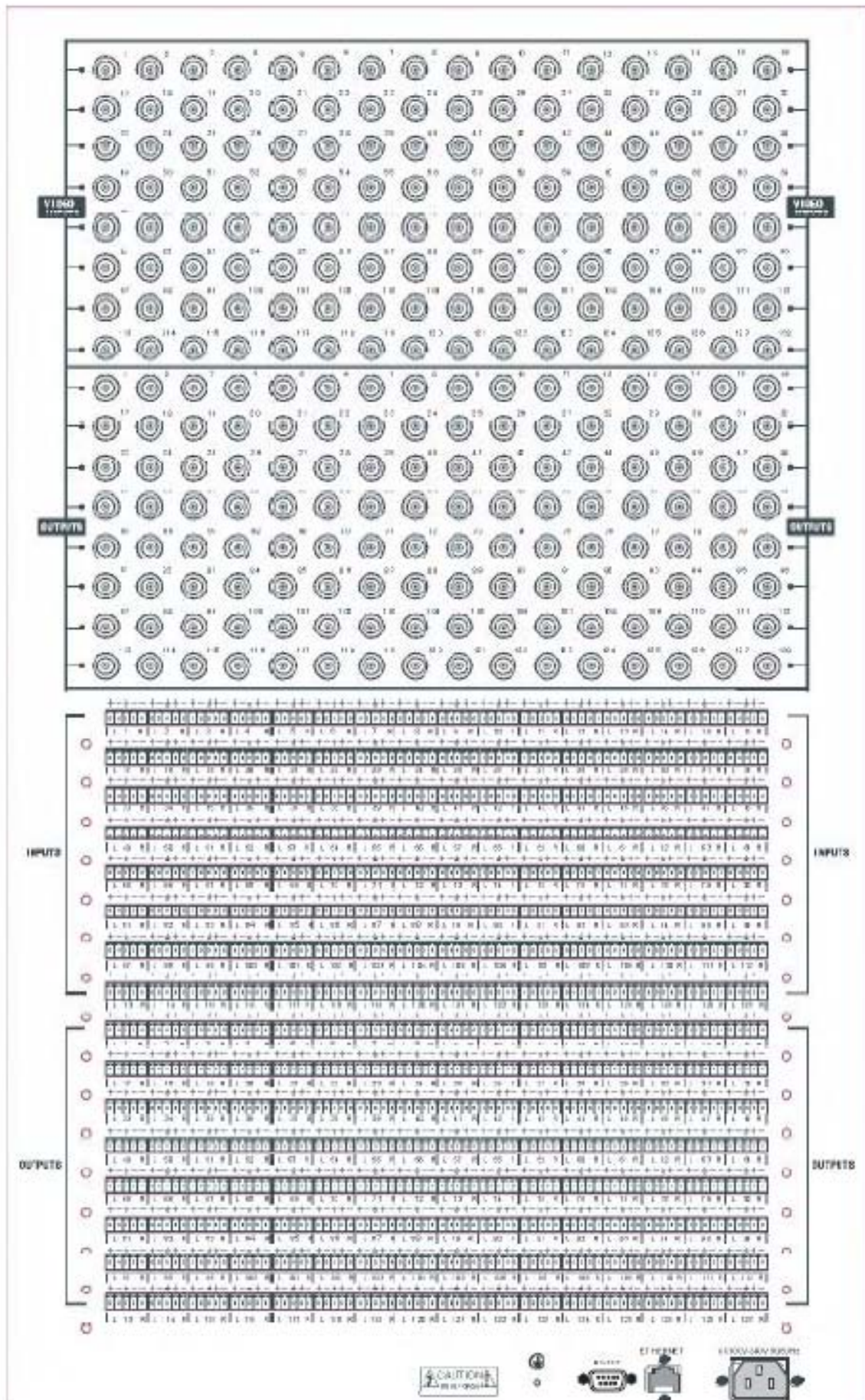## Rear View of the AV24, 32 Series

Rear View of the AV48,64 Series

Rear View of the AV48,64 Series

Rear View of the AV96,128 Series

3.0 Connector Types

The AV matrix swticher uses 2 types of Video Connectors for 4 Channel and 8 Channel RCA terminals are used. For 16 Channel, 24 Channel, 32 Channel, 48 Channel, 64 Channel, 96 Channel, 128 Channel BNC female terminals are use. Audio signal I/O terminals make up of 2 Channel, 4 Channel, 8 Channel, 16 Channel, 24 Channel, 32 Channel, 48 Channel, 64 Channel, 96 Channel 128 Channel with 3.8mm captive screw connectors(or RCA terminals). The AV1616 switcher signal I/O terminals are form Channel 1 to Channel 8 and Channel 9 to Channel 16 (form left to right, display in two rows), The interfaces are video terminals (BNC), audio left state terminals (white RCA), audio right state terminals (red RCA). The AV 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.
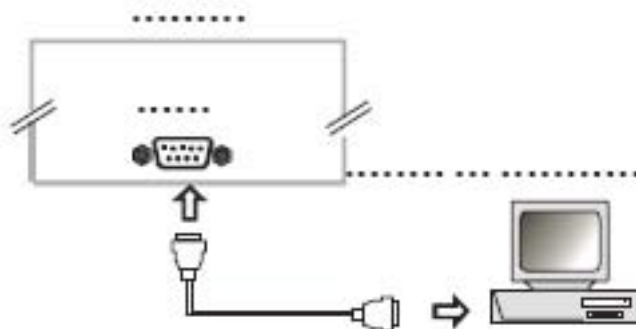
3.1 Connecting the AV Switcher

The VGA matrix switchers may take laptops, DVD players, video tape recorders, camcorders, cable TV and video their input signal source. Projectors, RP TVs, displayers and amplifiers can be connected on the output signal .

RCA Connector

BNC Connector
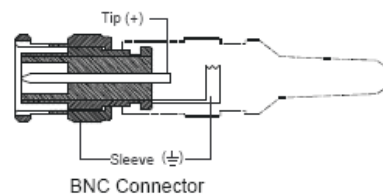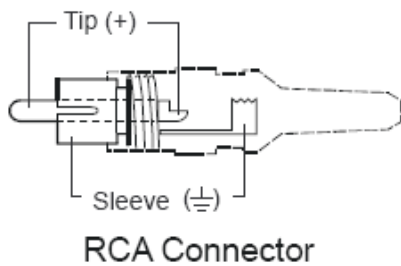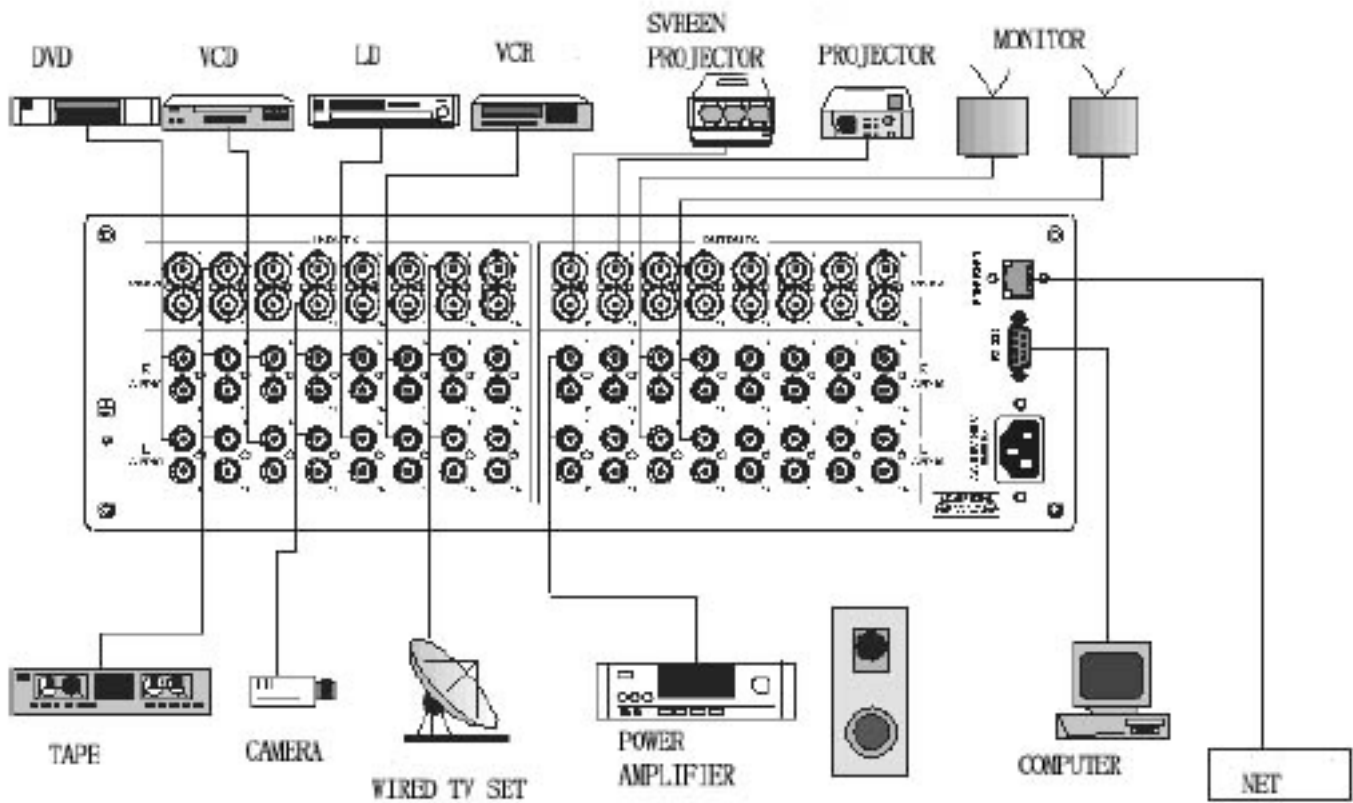
3.2 Audio signal connection:

"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.

Connection of captive screw audio connectors (unbalanced/balanced)

Unbalanced Input   Unbalanced Output   Balanced Input   Balanced Output

4.0 Operation Controls for AV0404

"AV" AV   Synchronal button: To transfer video and audio signal synchronously by the switcher
               Example: To transfer both the video and the audio signals from input channel No.3 to
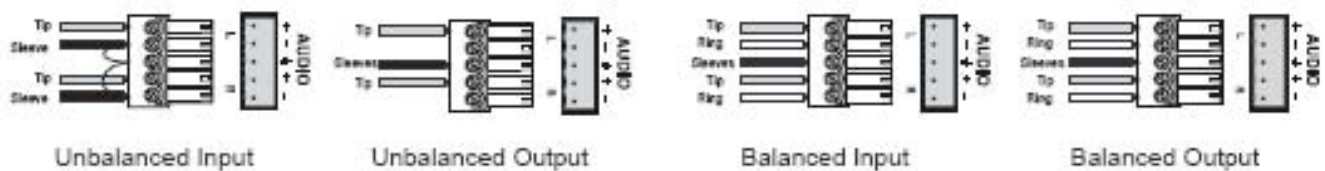   output channel No.4.
               Operation: Press buttons in this order "3", "AV", "4"".

"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.4.
               Operation: Press buttons in this order "3", "VIDEO", "4".

"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.3.
               Operation: Press buttons in this order ""2", "AUDIO", "3"".

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

Example: To transfer input channel No.3 to output channel No.1

Operation: Press buttons in this order : "3" in IN PUT area, "1" in OUT PUT area.

4.1 Operation Controls for AV1616

"1,2,3,4"   Keypad: Keys to select I/O channels and save/recall preset commands

"AV" AV   Synchronal button: To transfer video and audio signal synchronously by the switcher
Example: To transfer both the video and the audio signals from input channel No.3 to output channel No.6.
Operation: Press buttons in this 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 this 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 this 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 this order "1", "AV", "2", "/", "1","3", "/", "6", "END", "ENTER"

"END"   Ending command button: To finish inputting a command

"ENTER"   Performance 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

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

channels

Operation: Press buttons in this order "7", "ALL"

Note: This command need not follow by "END" & "ENTER"

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

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

Operation: Press buttons in this order "ALL", "1"

Example3: To switch off all the output channels

Operation: Press buttons in this 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 this 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 this order "RECALL", "2"

"CANCEL"   Cancel button: To return to the standby status without performing any command

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

Operation: Just press button"CANCEL" after the above inputs

"STATUS"   Inquiring status button: To inquire the present status

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

Operation: Press buttons in this order "7", "STATUS"

Example2: To inquire the status of all the output channels one by one
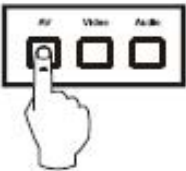
Operation: Press only the button "STATUS"

4.2 Additional Controls for AV32, AV48, AV64, AV96, AV128

"UNDO"   Undo button: To resume to the status before the command just performed

"PROGRAM"   Group programming button: To define, recall and clear a group of output channel

Example1: To group the output channels No.1,2,3,4,5 under the Group1

Operation: Press buttons in this order "1", "Program", "Program", "1", "2", "3", "4", "5"

Example2: To transfer signals from input channel No.1 to Group2

Operation: Press buttons in this order "1", "Program", "2"

Example3: To clear the output channels under Group1

Operation: Press buttons in this order "1", "Program", "0"

Note: Please clear the group to be set before grouping it.

" ← "   Backspace button: To backspace the latest input button

"THROUGH" Through button: To transfer the signals directly to the corresponding output channels

Example: To transfer the signals from input channels No.1,2,3 to their corresponding output channels

Operation: Press buttons in this order "1", "/", "2", "/", "3", "THROUGH"

"CLOSE"   Close button: To switch off the output channels

Example: To switch off the output channels No.1,2

Operation: Press buttons in this order "1", "END", "2", "END", "CLOSE"

"LOCK"   Lock button: To lock buttons on the front control panel by pressing it for 3 seconds

Note: When the control panel is being locked, the switcher still can be control via the RS232 port. To unlock it, a password is needed.

"DEMO"   Demo button: To demonstrate the commands one by one every 3 seconds.
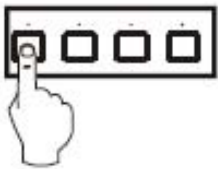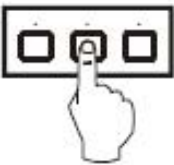
	Input Command: 1	1、Press the button for input channel number "1" Display feedback on LCD: "1"
	Input Command: 1B	2、Press the button for switching mode "AV" Display feedback on LCD: "B" for the switching mode of video and audio ("A" for the switching mode of audio only; "V" for the switching mode of video 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 "/" 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"
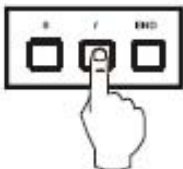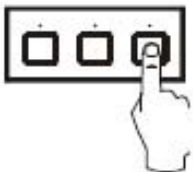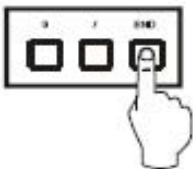
Example 2: To inquire the status on the output channel No.4
Operation: Press buttons in this order "4", "STATUS"
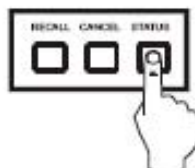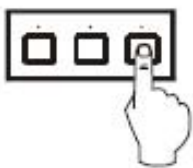
		VIDEO: 3 → 4 AUDIO: 2 → 4

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

4.3 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.

5.0 Operation of Application Software

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

Requirments 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.
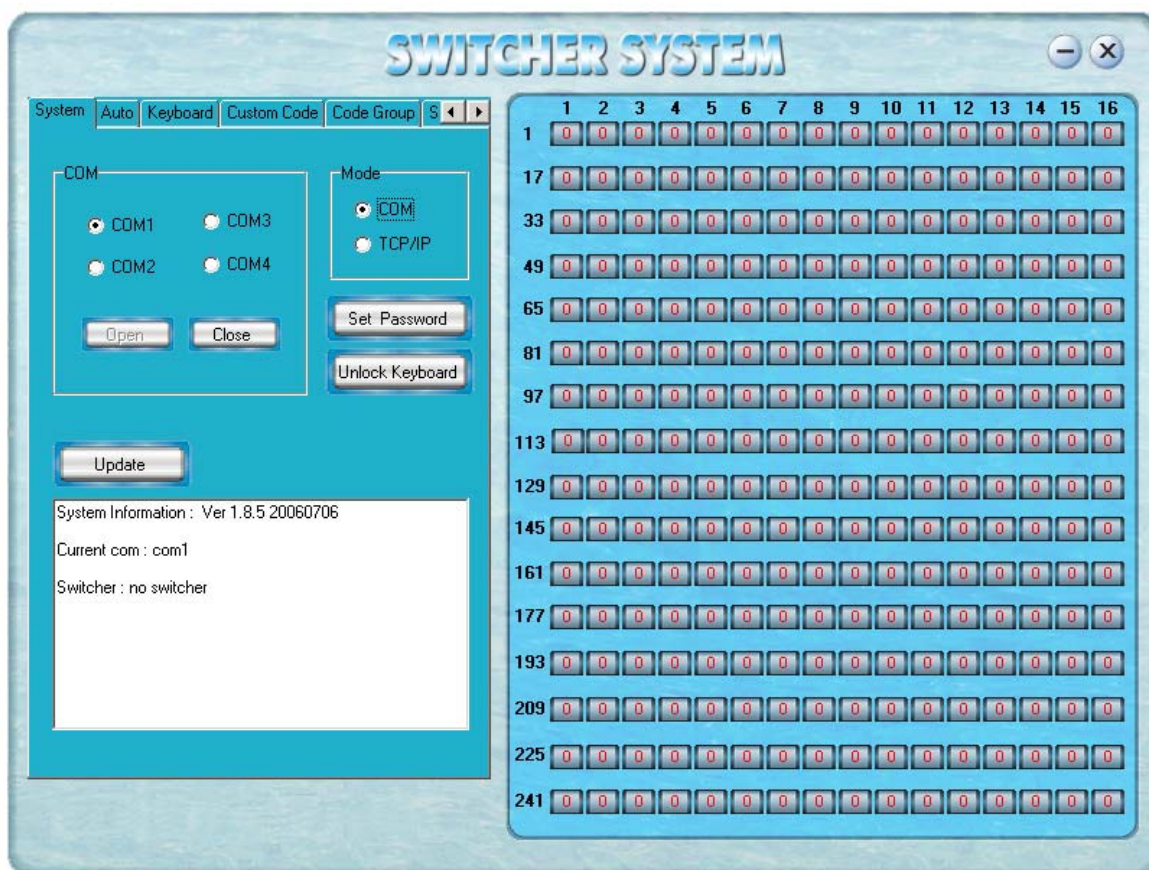
On the right hand side of the main window, there are 256

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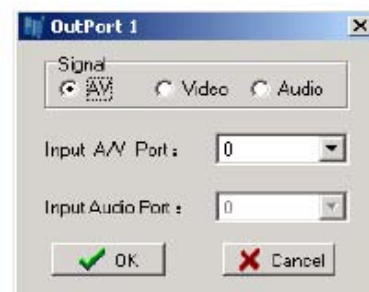
"MODE": Select the communication mode between "COM" or "TCP/IP"

"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.

5.1 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
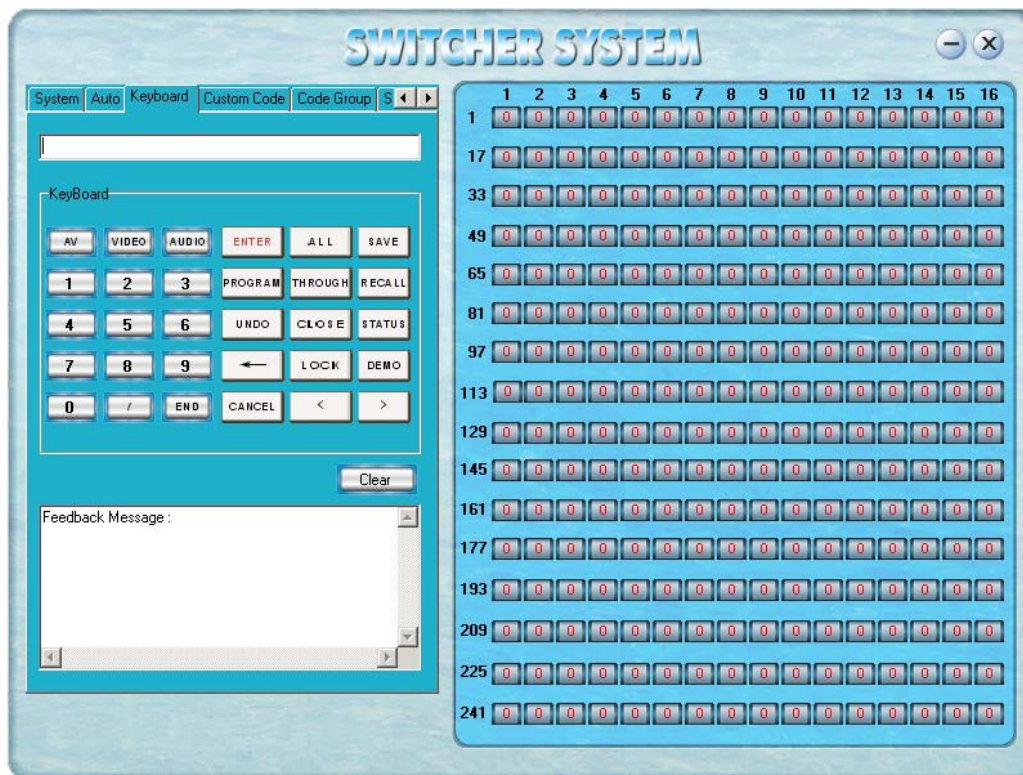
5.2 Auto Tab

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.

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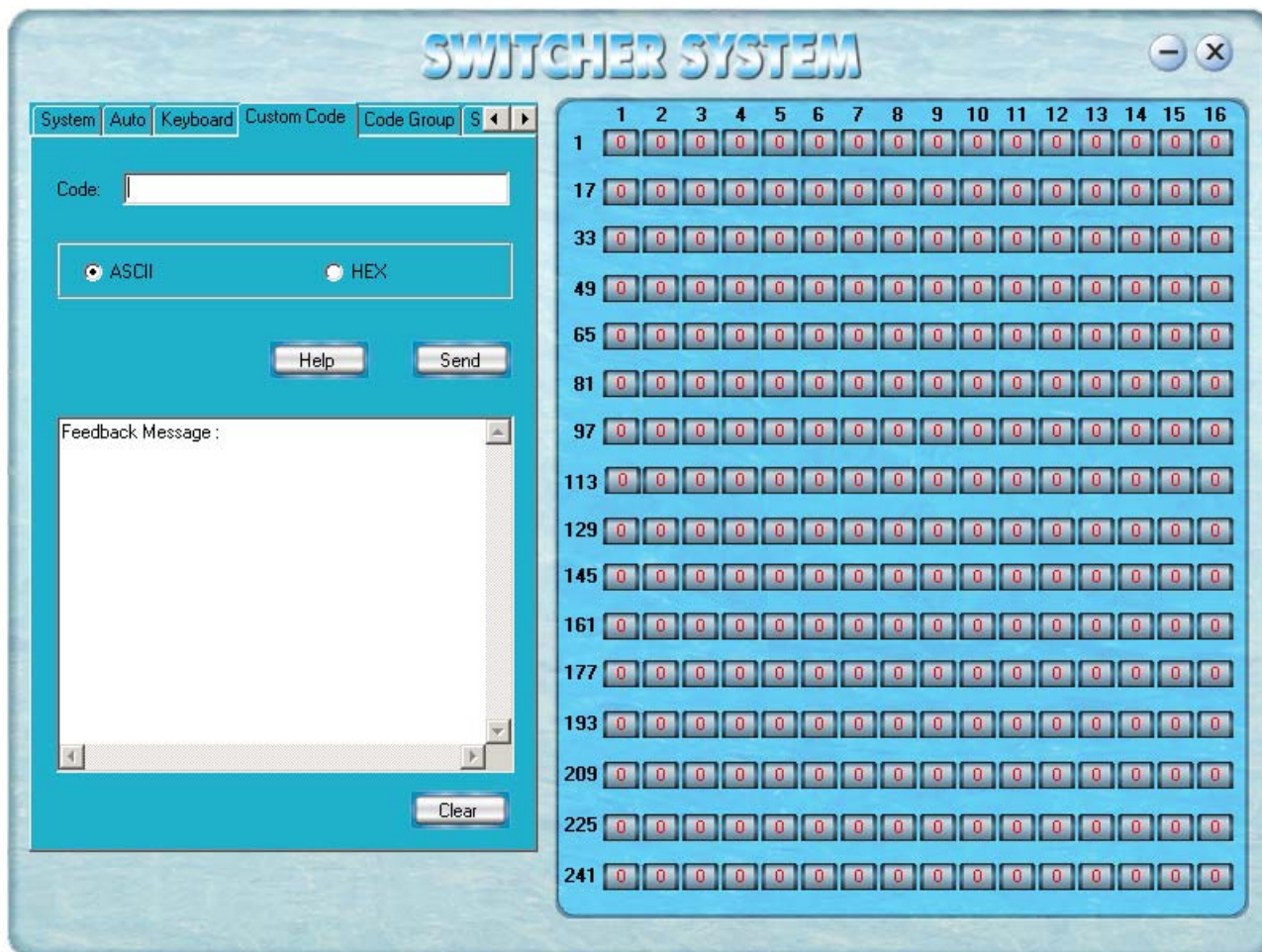
Select between ASCII and HEX format command codes (for command details, please refer to section)

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.

5.4 Code Group Tab
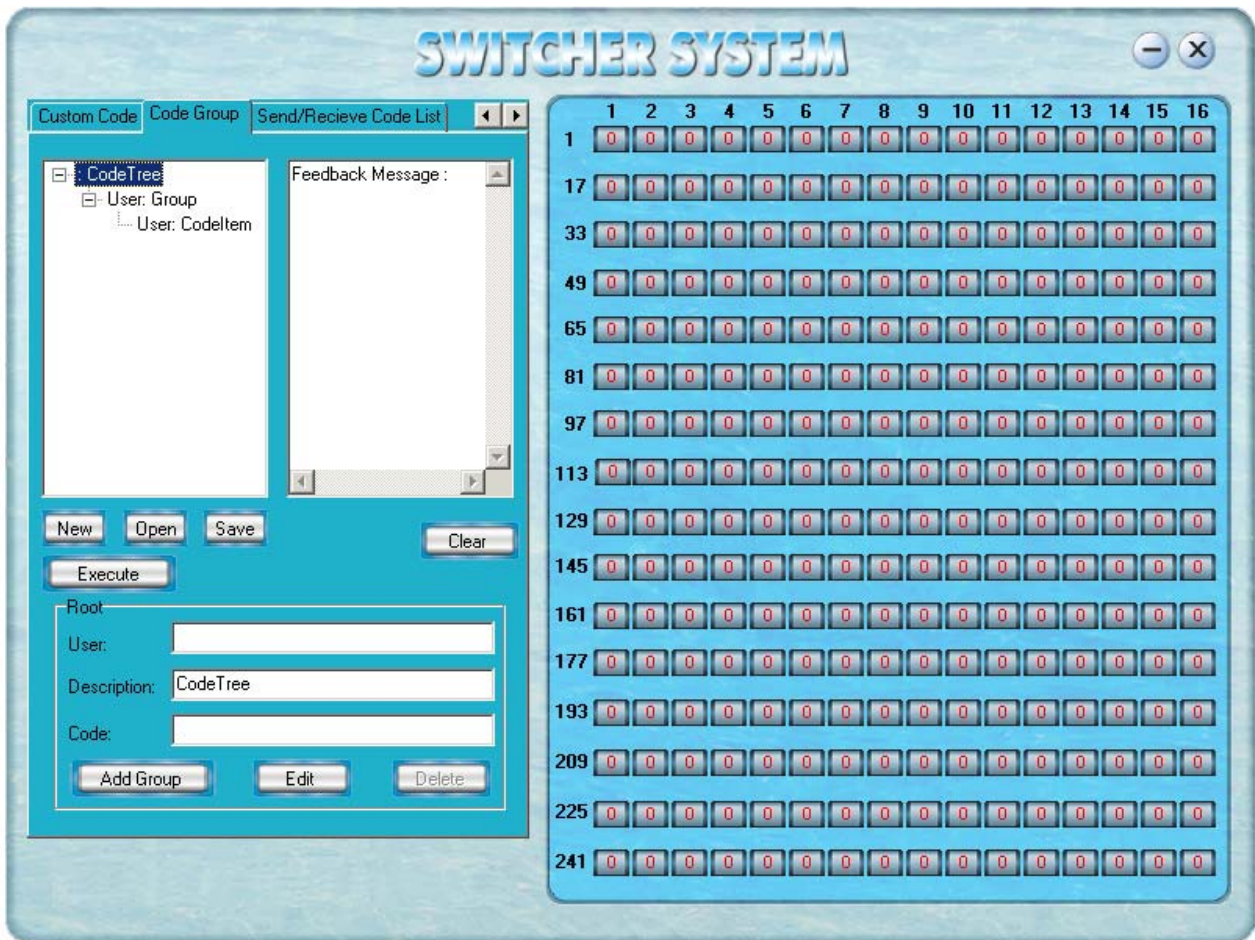
New: Creat new a group of preset commands

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 ltem: To add another new group of preset commands

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

Delete: Deletes the selected group.

5.5 Send / Recieve Code List Tab
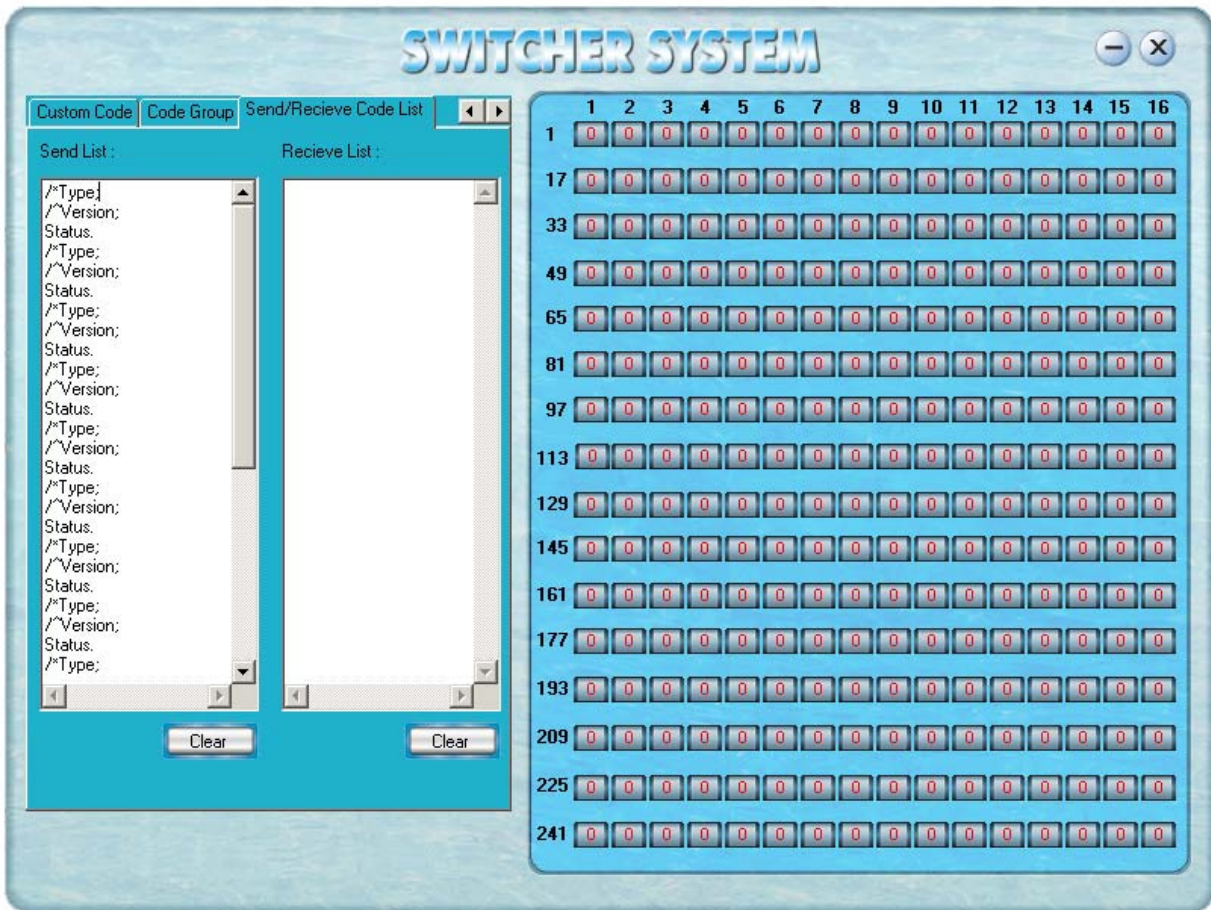
Send List window: Lists sent command code

Received List window: Lists feedback from the switcher

Clear: Clears either of the two lists

6.0 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]!	Transfer both video and audio signals from input channel [x1] to output channel [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].

7.0 Technical Specifications

Series Specifications	AV0404	AV8 Series	AV16 Series	AV24 Series	AV32 Series	AV48, 64 Series	AV96, 128 Series
Video							
Models Included	AV0404	AV0802 AV0804 AV0808	AV1604 AV1608 AV1616	AV2408 AV2416 AV2424	AV3208 AV3216 AV3224 AV3232	AV4832 AV4848 AV6432 AV6448 AV6464	AV9664 AV9696 AV12864 AV12896 AV128128
Gain	0 dB						
Bandwidth	100MHz (-3dB) , fully loaded 0 -10MHz:≤+/- 0.1dB 0 -30MHz:≤+/- 0.5dB			150MHz (-3dB) , fully loaded 0 -10MHz:≤+/- 0.1dB 0 -30MHz:≤+/- 0.5dB			
Cross Talk Sum	-50dB @ 5 MHz, -45dB @ 10 MHz						
Differential Phase I/0S	<1.28°, 3.58MHz						
Differential Phase Error	0.1%, 3.58-4.43MHz						
Differential Gain Error	0.1°, 3.58-4.43MHz						
Maximum Transfer Delay	5nS(±1nS)						
Switching Speed	200 ns (Max)						
Signal Type	Composite video						
Input Video							
Connector	RCA	RCA	BNC female	BNC female	BNC female	BNC female	BNC female
Maximum/ Minimum level	Analog signals: 0.5V ~ 2.0V p-p						
Impedance	75 Ω						
Echo Loss	-30dB@5MHz						
Genlock	0.3V-0.4Vp-p						
Max error in DC offset	15mV						

Series Specifications	AV0404	AV8 Series	AV16 Series	AV24 Series	AV32 Series	AV48, 64 Series	AV96, 128 Series
Output Video							
Connector	RCA		RCA				
Maximum/ Minimum level	Analog signals: 0.5V ~ 2.0V p-p						
Impedance	75 Ω						
Echo Loss	-30dB @ 5MHz						
DC Offset	±5mV (Maximum)						
Transition Type	Vertical Interval						
Sync Signal							
Input Connector	RCA		3.8mm with screw , 5 pole				
Output Connector	RCA		3.8mm with screw , 5 pole				
Gain	0dB						
Frequency Response	20 Hz - 20 kHz,						
General Harmonic Distortion + Noise	0.03% @ 1 kHz (under rating voltage)						
S/N	>90dB						
Segregation Rate	>80dB @ 1 kHz						
Y/C Interferer	<-80dB @ 1 kHz, fully loaded						
CMRR	>75dB @: 20 Hz ~ 20 kHz						
Signal	Stereo ,balanced /unbalanced						
Impedance	Input >10 kΩ (balanced /unbalanced) Output 50 Ω (unbalanced), 100 Ω (balanced)						
Maximum Input level	+19.5dBu, (balanced /unbalanced)						
Gain Error	±0.1dB @20 Hz ~ 20 kHz						
Max Output Level	+19.5dBu, (balanced /unbalanced)						
Control Type							
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						

Series Specifications	AV0404	AV8 Series	AV16 Series	AV24 Series	AV32 Series	AV48, 64 Series	AV96, 128 Series
Ethernet	Connector		RJ-45 Female(Optional accessory)				
	Protocol		TCP/IP				
	Speed		Full/half-duplex 10/100				
Control Application	Switch 2.0						
Features							
Power Supply	100VAC ~ 240VAC, 50/60 Hz, universal international power supply						
Temperature	Storing and operating temperature: -20° ~ +70°C						
Humidity	Storing and operating temperature: -20° ~ +70°C						
Size	485(L)X245(W)X50mm(H)	485(L)X245(W)X100mm(H)	485(L)X245(W)X150mm(H)	485(L)X245(W)X285mm(H)	485(L)X245(W)X285mm(H)	485(L)X265(W)X465mm(H)	485(L)X265(W)X920mm(H)
Weight	1.8kg	3.5kg	4.6 kg	9.0 kg	9.0 kg	16.8 kg	29.5kg
MTBF	30,000 hours						
Quality Guarantee	2 Year Warranty						

8.0 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 switcher 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 immeditaly 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.