



# DVI MATRIX USERS MANUAL

AT-DVI0808/AT-DVI0808-A  
AT-DVI1616/AT-DVI1616-A  
AT-DVI3232/AT-DVI3232-A  
AT-DVI3216/AT-DVI3216-A



# Safety Operation Guide:

## 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.

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This DVI Switchers User Manual can be used for other DVI 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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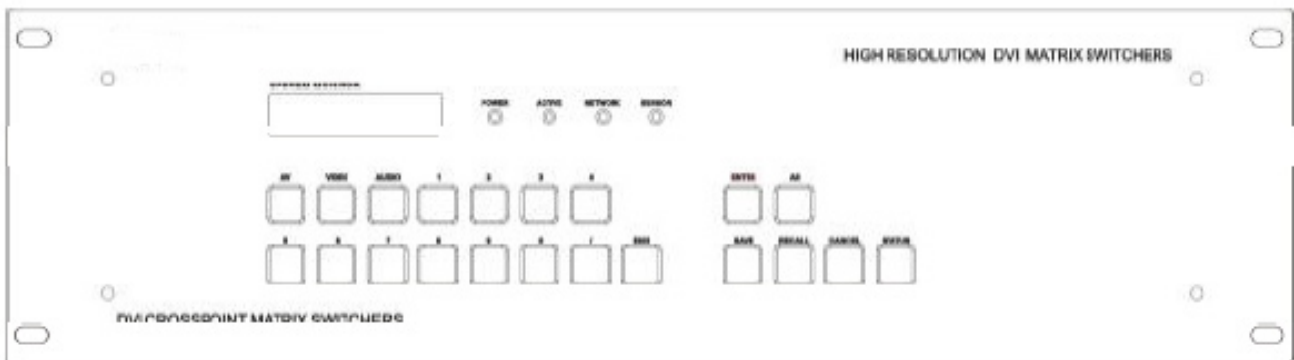
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# 1. Introduction:

## 1.1 About the DVI Matrix Switch

DVI series Matrix switcher is a high-performance professional computer and audio signal switcher that can be used for cross switching of multi computer and audio signals. Independent DVI component and balance/unbalance I/O terminals make each component signal transmit and switch separately; this design can reduce signal transmission to minimum and output the image and audio signal in high-fidelity quality.

DVI series switcher mostly apply in broadcasting TV engineering, multi-media meeting room, big screen display engineering, television education, command control center or other fields. It provides power-fail locale protection function, LCD displaying, A/V timing or separate switching function. It also has a adaptable compensation to extend the input distance to 70 feet. With RS232 interface, it can be worked with PC, remote control system and any other 3rd party control system devices. The user manual takes DVI0808-A as an example, other models can take reference from it too.



## 1.2 DVI Matrix Switch Model

Specification / Model	Video Inputs	Video Outputs	Audio Inputs	Audio Outputs	RS232
AT-DVI0808-A	8	8	8	8	✓
AT-DVI1616-A	16	16	16	16	✓



## 2. Package Contents



RS232 Communication Cable



Power Supply Cable



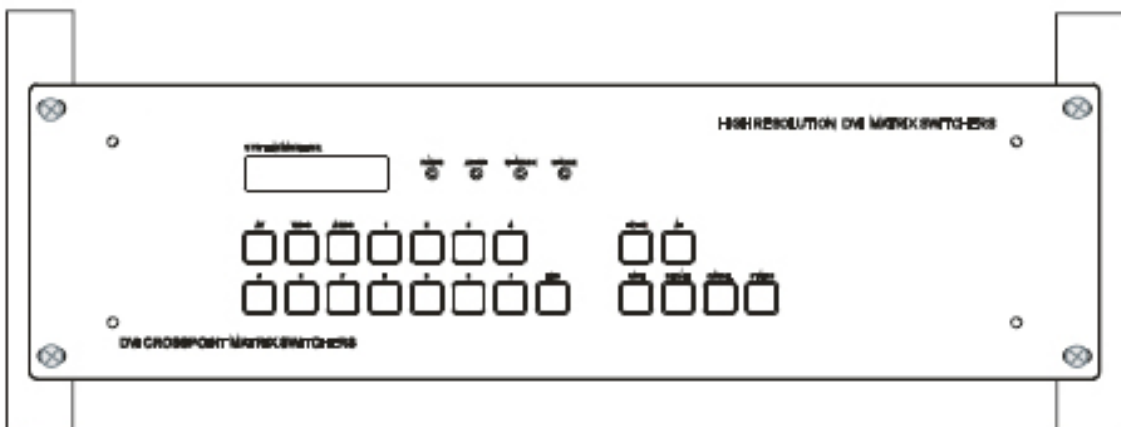
User Manual and Quality Guarantee



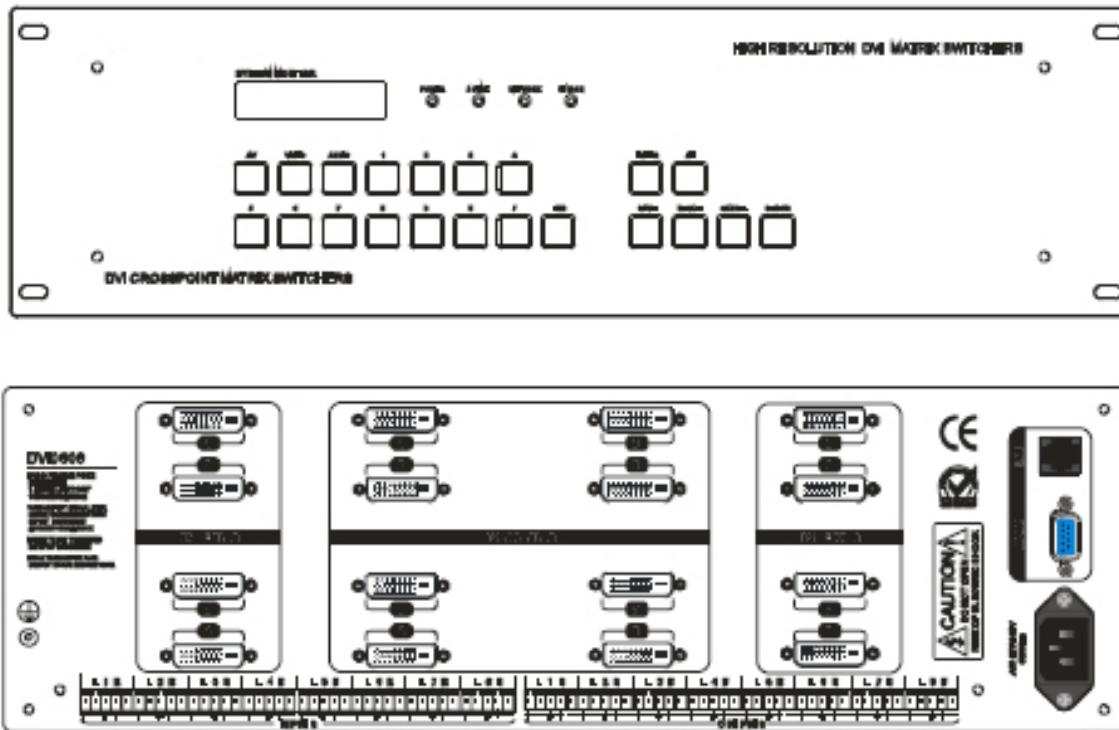
CD with Application Software for DVI Switch

## 3. Installation

DVI matrix switchers adopt metal shell and can be stacked with other devices. They are rack-mountable and can be installed on a standard 19 inches rack. It is recommended to leave a 1U space between the units to have easy access for installation of the cables.



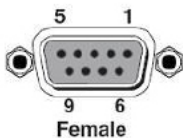
## 4. Front and Rear View on the Product



## 5. Operation and Control

### 5.1 RS232, LAN and 3rd Party Control

The Switchers can be controlled by front controls or PC, CRESTRON control system, AMX control system, ) or through the Ethernet control via the RS-232 communication port. The RS232 is female 9-pin D connector. It can be switched by several control systems. When the switcher connects to the COM1 or COM2 of the computer with control software, users can control it by that computer. To control the switcher, users may use the application SWITCHER 2.0 in the supplied CD or develop their own control software.

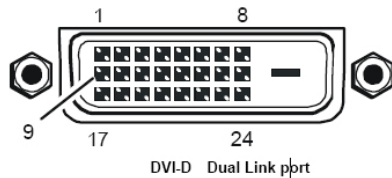


This RS-232 communication port is a female 9-pin D connector. The definition of its pins is as the table below.

No.	Pin	Function
1	N/u	Unused
2	Tx	Transmit
3	Rx	Receive
4	N/u	Unused
5	Gnd	Ground
6	N/u	Unused
7	N/u	Unused
8	N/u	Unused
9	N/u	Unused

## 5.2 Connecting using Input and Output Terminals

The DVI matrix switch may take DVD players, computers, graphic workstations and other digital NON HDCP SIGNALS as their input signal source. The switch can out to projectors, video recorders, displays and other DVI NON HDCP displays depending on the application.



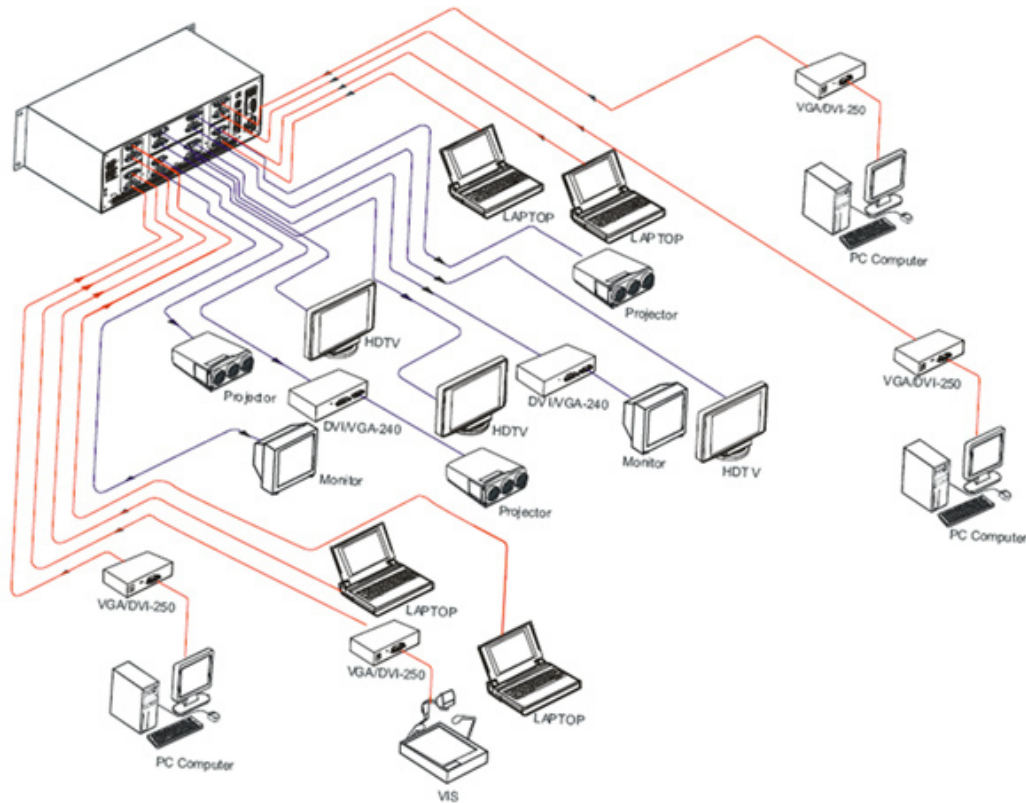
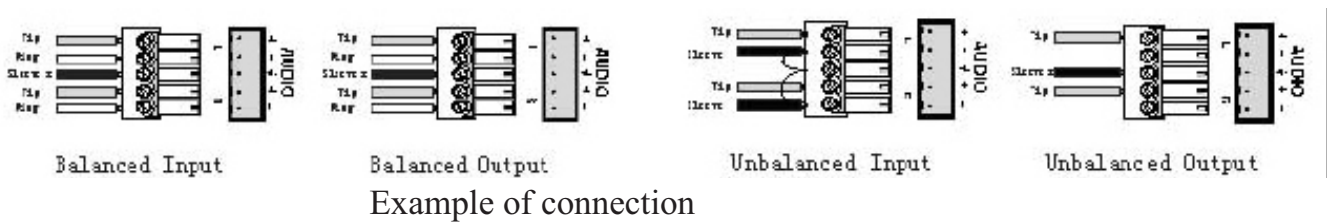
PIN	function	PIN	function
1	T.M.D.S.Data••	13	T.M.D.S.Data3+
2	T.M.D.S.Data•+	14	+5V Power
3	T.M.D.S. Data •/4 Shield	15	Ground (for +5V)
4	T.M.D.S. Data ••	16	Hot Plug Detect
5	T.M.D.S. Data ••	17	T.M.D.S. Data 0 –
6	DDC Clock	18	T.M.D.S. Data 0+
7	DDC Data	19	T.M.D.S. Data 0/5 Shield
8	No Connect	20	T.M.D.S.Data5 –
9	T.M.D.S.Data1•	21	T.M.D.S.Data5 +
10	T.M.D.S.Data1+	22	T.M.D.S. Clock Shield
11	T.M.D.S.Data1/3 Shield	23	T.M.D. S. Clock +
12	T.M.D.S.Data3•	24	T.M.D.S. Clock –

## 5.3 Connecting and Setting up Audio

“AUDIO INPUTS”, “AUDIO OUTPUTS” audio network interface in DVI 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 connecting, please read the command or relevant demand in the user manual carefully. In some cases, 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 for unbalanced end. But if in a standard one, the converter must be used to switch the signals as the same, balanced or unbalanced.



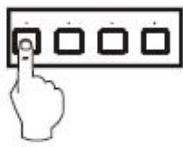


## 5.4 Front Control/ Operation

LCD display: Real time monitor of the operations and status

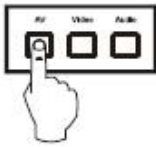
- “0, 1,9” Keypad: Keys to select I/O channels and save/recall preset commands
- “AV” AV synchronal button: To transfer video and audio signal synchronously by the switcher.  
Example: To transfer both the video and the audio signals from input channel No.3 to output channel No.6.  
Operation: Press buttons in 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: Use when the command input has been finished.
- “ENTER” Execute Command: To perform a command after inputting it
- “ALL” All button: To transfer an input channel to all output channels or switch off all output channels.  
Example 1: 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: Commands “END” & “ENTER” do not need to be used after this command.  
Example 2: 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”  
Example 3: 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 the “CANCEL” button 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 the following order “7”, “STATUS”  
 Example2: To inquire the status of all the output channels one by one  
 Operation: Press the “STATUS” button.
- “UNDO” Undo button: To resume to the previous status of the command.
- “PROGRAM” Group programming button: To define, recall and clear a group of output channels.  
 Example 1: To group the output channels No.1, 2,3,4,5 under the Group 1  
 Operation: Press buttons in the following order “1”, “Program”, “Program”, “1”, “2”, “3”, “4”, “5”  
 Example 2: To transfer signal from input channel No.1 to Group 2  
 Operation: Press buttons in the following order “1”, “Program”, “2”  
 Example 3: To clear the output channels under Group 1  
 Operation: Press buttons in the following order “1”, “Program”, “0”  
 Note: Please clear the group to be set before grouping it.
- “ ← ” Backspace button: To erase the last input entry that was entered.
- “THROUGH” Through button: To transfer signals directly to the corresponding output channels.  
 Example: To transfer signals from input channels No.1, 2, 3 to their corresponding output channels.  
 Operation: Press buttons in the following 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 the following order “1”, “END”, “2”, “END”, “CLOSE”
- “LOCK” Lock button: To lock buttons on the front control panel hold it for 3 seconds.  
 Note: When the control panel is being locked, the switcher still can be controlled via RS232 port. To unlock it, a password is needed.
- “DEMO” Demo button: To demonstrate the commands one by one every 3 seconds.  
 The Switch can be controlled directly by entering the following command:  
 “Input Channel” + “Switching Mode” + “Output Channel” + “END”+ “ENTER”



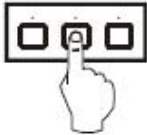
Input Command:  
1

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)



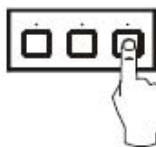
Input Command:  
1B3

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



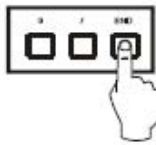
Input Command:  
1B3.

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



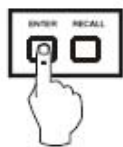
Input Command:  
1B3. 4

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: "."

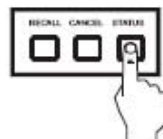
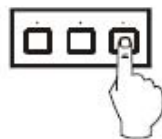


1B3,4.  
Switch OK

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

## 5.5 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.

## 5.6 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

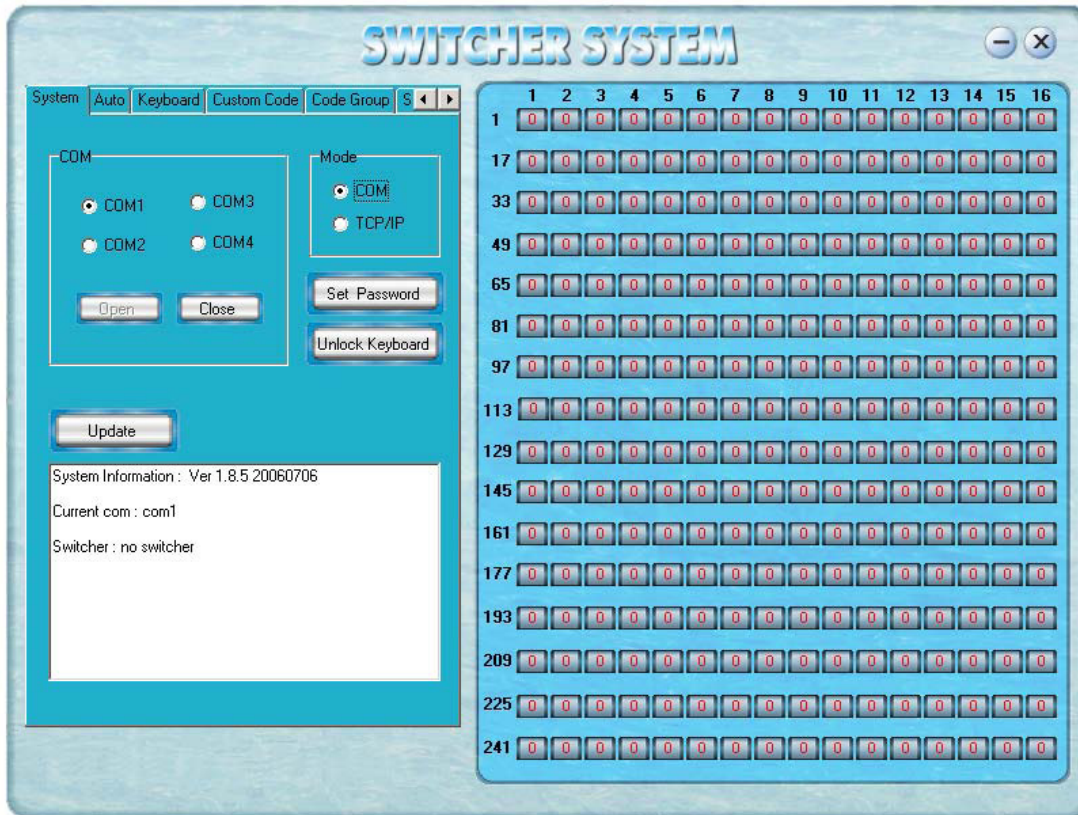
Memory: At least 32mb

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”

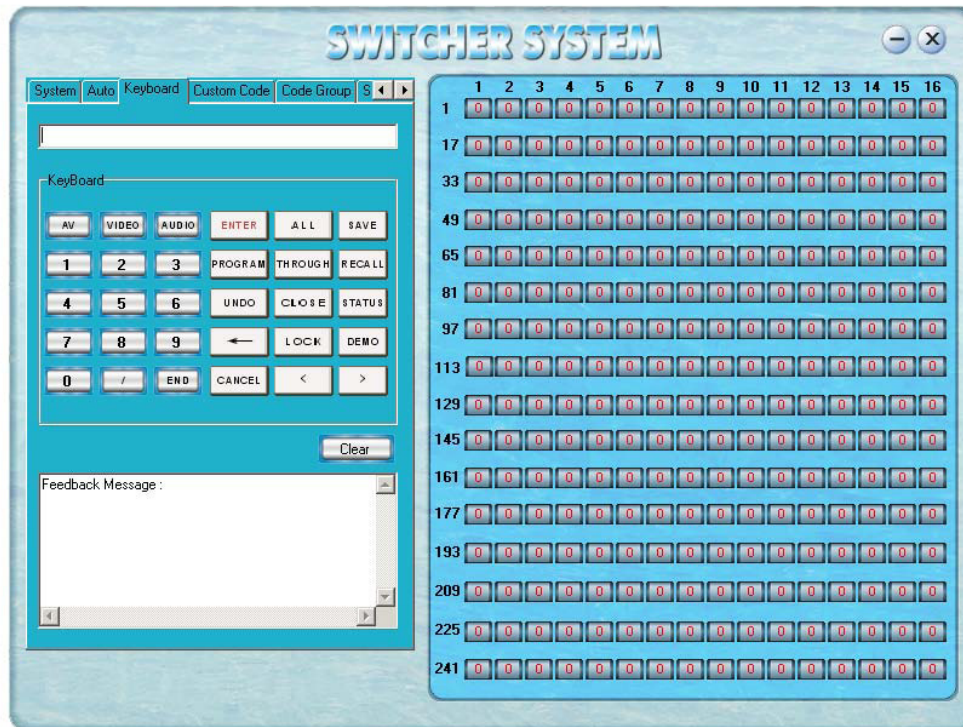


- “MODE”: Select the communication mode between “COM” or “TCP/IP”
- “COM”: Select a COM port to control the switcher (if selecting “TCP/IP” as the communication mode, a sub-page will appear to input the IP address of the switcher)
- “Set Password”: Set the password for the control panel on the Matrix (The password must be an 8 digit number)
- “Unlock Keyboard”: Unlock the keyboard of the control panel on the Matrix.



## 5.7 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



## 5.8 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 DVI32X32 matrix switcher, the Auto Tab is set as below after finishing all the connection.

Switch Mode: "AV"

INPUT: From 1 to 32

OUTPUT: From 1 to 32

Delay: 1000ms (1 second)

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

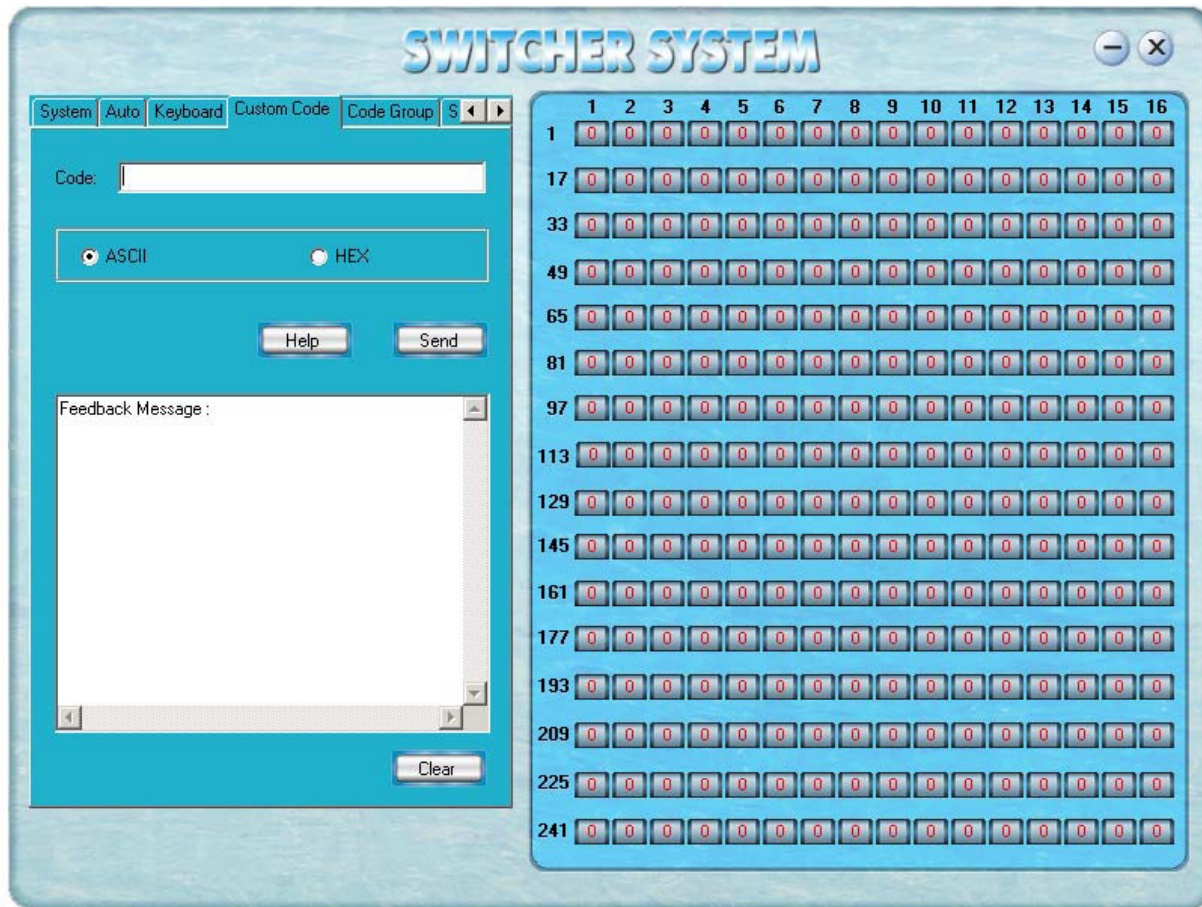
Transfer the signals from input channel No.1 to output channel No.1-32;

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

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

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

## 5.9 Cusome Code Tab



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

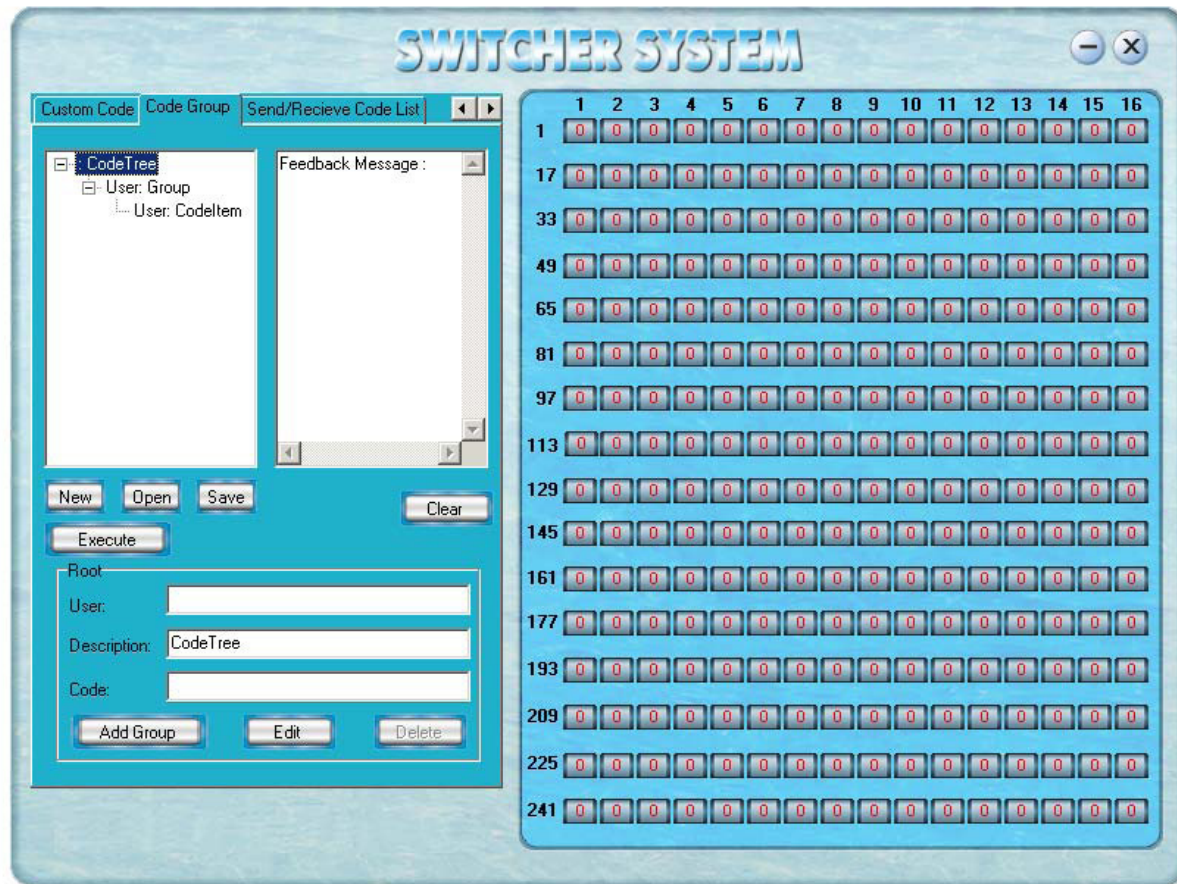
Help: Displays the list of command codes.

Send: Sends out the typed command 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.

## 5.10 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: Executes a selected preset command or a selected group of preset commands

Clear: Clears the feedback window

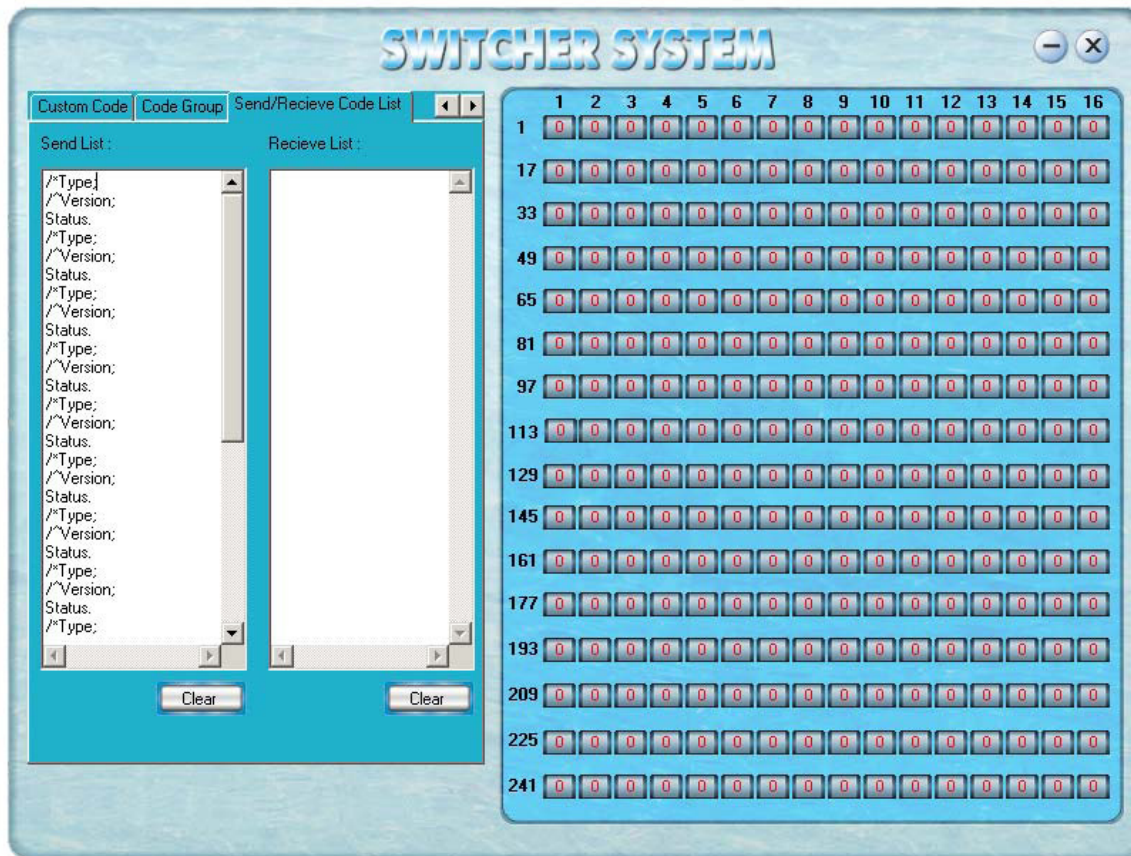
Add Code Item: To add another new group of preset commands

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

Delete: Deletes the selected group.



## 5.11 Send/Receive 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. Operation of RS232

Command Types	Command Codes	Functions
System Command		
	/*Type;	Acquires the models information.
	/+xxxxxxx;	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
/		
	[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].

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].
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].

## 7. Technical Specifications

Mode Specification	DVI0808-A
<b>Video</b>	
Gain	0 dB
Bandwidth	165MHz, All digital
Max resolution	1920x1200
Clock Jitter	<0.15 Tbit
Rise time	<0.3Tbit (20%--80%)
Fall time	<0.3Tbit (20%--80%)
Max transfer delay	5nS(±1nS)
Switching speed	200 ns(Longest time)
Signal type	DVI-D digital T.M.D.S signal
<b>Video input</b>	
Port	DVI-D female port
Signal strength	T.M.D.S +/- 0.4Vpp
Maximum/Minimum level	T.M.D.S 2.9V/3.3V
Resistance	50 Ω
Input EDID	Default EDID
Max error in DC offset	15mV
Max distance	Less than 36 meters, 1920x1200
<b>Video output</b>	
Port	DVI-D female port
Maximum/Minimum level	T.M.D.S 2.9V/3.3V
Impedance	50 Ω
Max distance	Less than 7 meters, 1920x1200
<b>Audio signal</b>	
I/O port	5 3.8mm screw connector
Gain	0dB
Frequency	20 Hz ~ 20 kHz,
Noise	0.03% @ 1 kHz (rating voltage)
S/N	>90dB
Stereo separate	>80dB @ 1 kHz
CMRR	>75dB @: 20 Hz ~ 20 kHz
Signal type	Stereo, balance or unbalance
Resistance	Input: >10 kΩ (balance or unbalance) Output: 50 Ω (unbalance) , 100 Ω (balance)

Mode Specification	AT-DVI0808/A	AT-DVI1616/A	AT-DVI3232/A
Max input level	+19.5dBu, (balance or unbalance)		
Gain offset	±0.1dB		
Max output level	+19.5dBu, (balance or unbalance)		
<b>Control</b>			
Serial control port	RS-232, 9-pin female D		
Baud rate and protocol	Baud rate: 9600 Data bit: 8 Stop bit: 1 Parity bit: none		
Serial control polling protocol	2 = TX, 3 = RX, 5 = GND		
Connector	RJ-45 Female(Optional accessory)		
Protocol			
Speed	Full/half-duplex 10/100M		
Control application	《Switch 2.0》		
<b>Features</b>			
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 (mm)	430(L)X260(W)X133.5 (H)	266(L)x485(W)x311(H)	266(L)x485(W)x620(H)
weight	4.2kg		
MTBF	30,000 hours		
Warranty	3 Year Warranty		

## 8. Troubleshooting

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 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 switcher cannot be controlled by front panel keys, RS-232 port or remote control	The unit may be broken, contact dealer for repair.

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