
User Manual



HIT-COMPAUD-444



HIT-COMPAUD-844



HIT-COMPAUD-888

Matrix Switching Systems

Before You Use the System

- 1、 **Read manual** – – Carefully read the manual before you use the system.
- 2、 **Installation environment** – – The system should be installed indoor only. Install either on a sturdy rack or desk in a well-ventilated place.
- 3、 **Lightning** – – Unplug the power cord during lightning or after a prolonged period of non-use to avoid damage to the equipment.
- 4、 **Maintenance** – – Only qualified technical engineers or specified distributors are permitted to repair or replace components and parts of the equipment upon failure.

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1.0 Matrix System Overview

1.0.1 Matrix System

The Matrix switcher is a high performance switching equipment for audio/video frequencies. It is used for multiple input/output cross

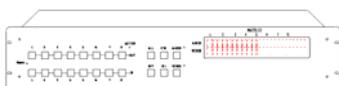
switching of audio/video signals. It provides independent YPbPr component and audio input/output terminals. Each YPbPr component signal and audio signal is transmitted separately and switched separately, thereby minimizing signal attenuation and ensuring high definition graphics and high fidelity signal output.

The Series Matrix is used mainly in TV broadcasting projects, multi-media conference halls, large display projects, TV teaching and command control centers. It boasts features of power interruption protection during power surge, LCD display and synchronous and separate audio/video switching functions. Its RS-232 and RS-485 communication ports enable convenient communication with remote control equipment. This manual describes using of the HIT-COMPAUD-888 model. Refer to the HIT-COMPAUD-888 User Manual for using of other models of matrix systems.



Figure 1-1 HIT-COMPAUD-888 Matrix

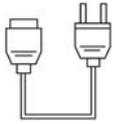
1.0.2 Matrix System Packing



Matrix Host



RS-232 Communication Connecting Cable



Power Cord



Matrix Testing and Applications Software CD



User Manual



Green Terminal(M)	Quantity
HIT-COMPAUD-444	2 Pcs
HIT-COMPAUD-844	2 Pcs
HIT-COMPAUD-888	2 Pcs

2.0 Matrix Host Installation

The Matrix Host has a black metallic housing. It can be placed on a sturdy desk or installed on a 19-in rack. See Figure 2-1 below:

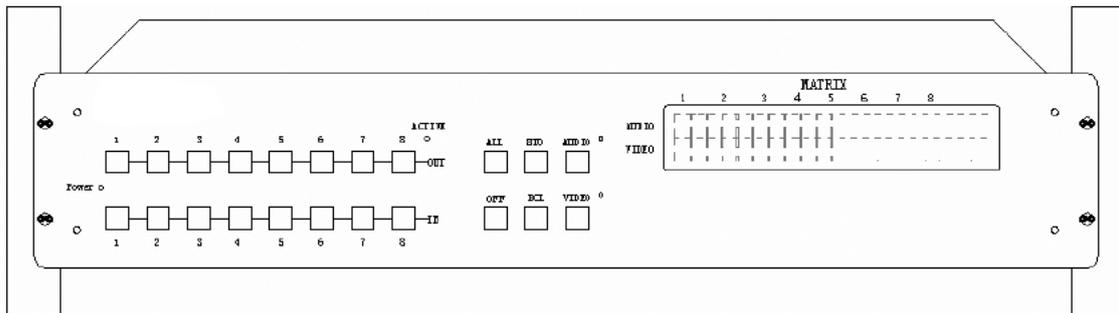


Figure 2-1 Installing the Matrix Host on a Standard Rack

3.0 Matrix System Models

The Matrix has following models to meet different requirements of different users:

Model \ Technical Parameters	Video Input Port	Video Output Port	Audio Input Port	Audio Output Port	RS-485 Connector	RS-232 Connector
HIT-COMPAUD-444	4	4	4	4	?	?
HIT-COMPAUD-844	8	4	8	4	?	?
HIT-COMPAUD-888	8	8	8	8	?	?

4.0 Matrix System Front/Rear Panels

4.0.1 HIT-COMPAUD-444 Front/Rear Panels



Figure 4-1 HIT-COMPAUD-444 Front Panel



Figure 4-2 HIT-COMPAUD-444 Rear Panel

4.0.2 HIT-COMPAUD-844 Front/Rear Panels

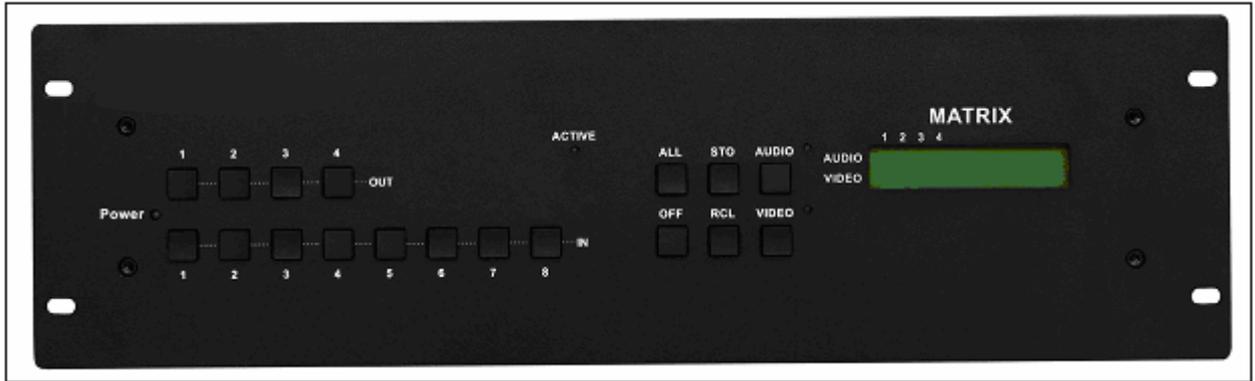


Figure 4-3 HIT-COMPAUD-844 Front Panel

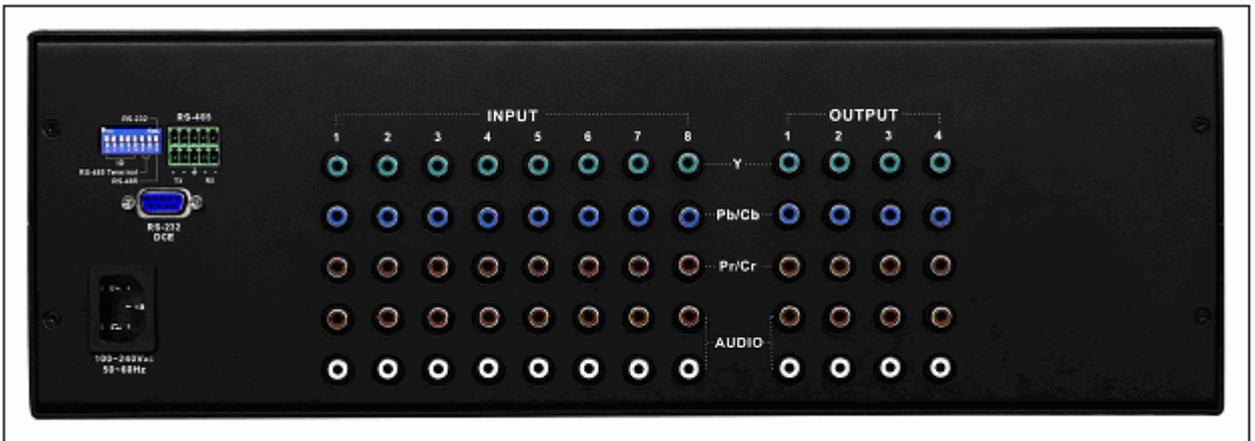


Figure 4-4 HIT-COMPAUD-844 Rear Panel

4.0.3 HIT-COMPAUD-888 Front/Rear Panels



Figure 4-5 HIT-COMPAUD-888 Front Panel

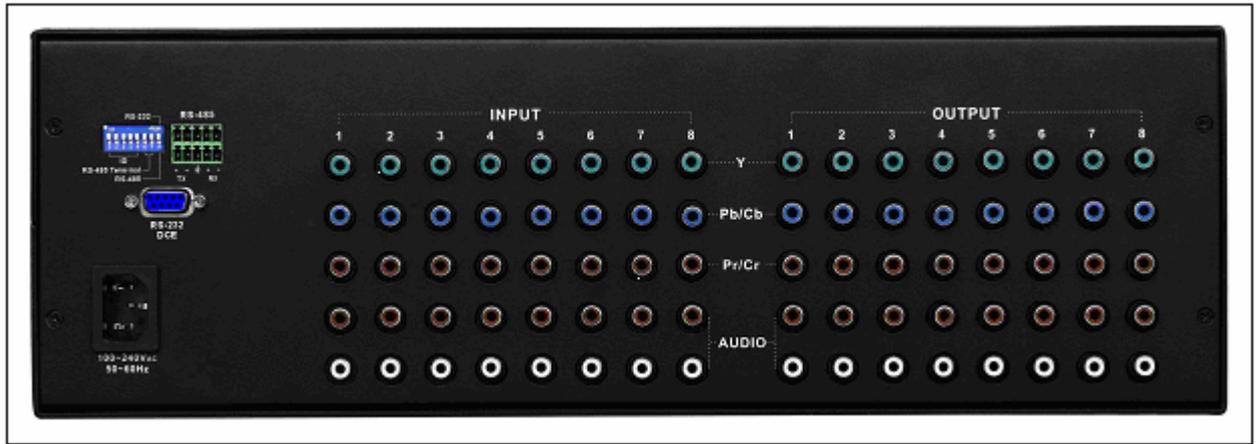


Figure 4-6 HIT-COMPAUD-888 Rear Panel

5.0 Matrix and Peripherals Connection

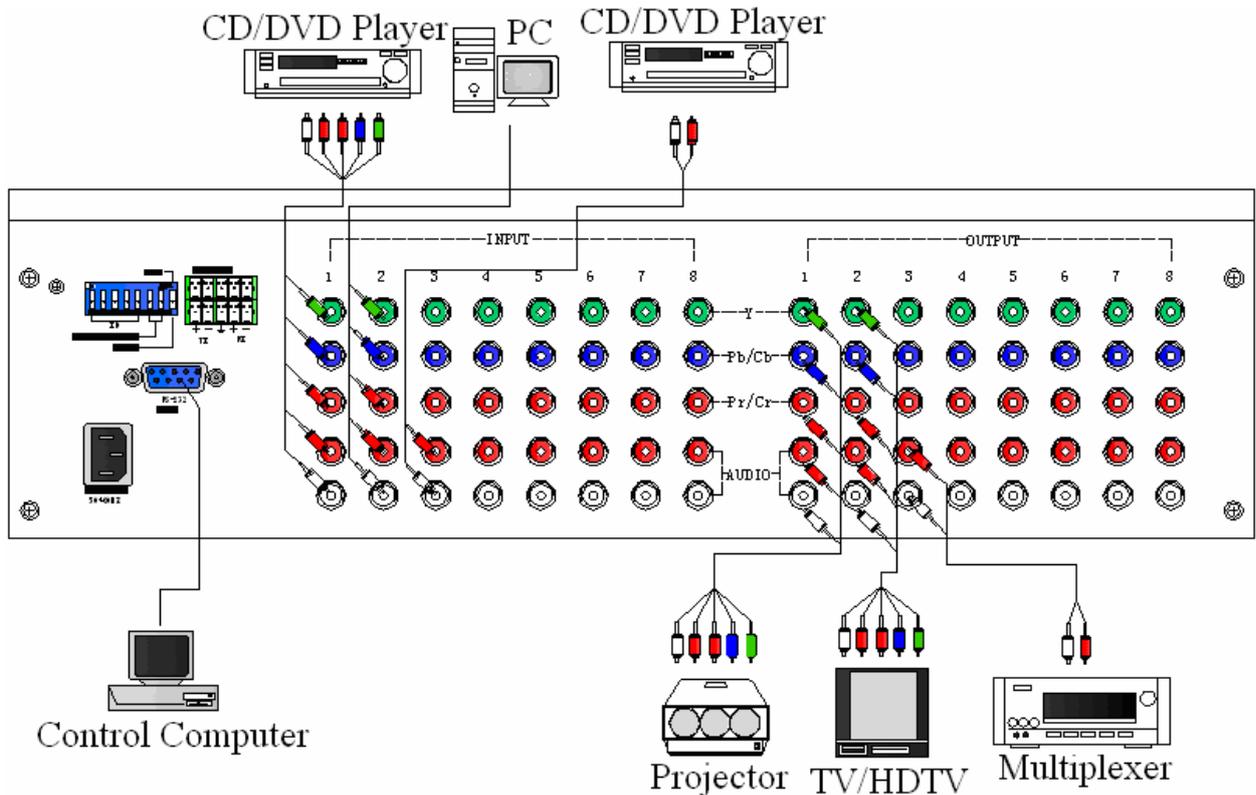


Figure 5-1 Matrix System Connection

5.0.1 Input/Output Jacks

Referring to the different matrix models, the video signal input/output jacks are formed by the 4th and 8th rows RCA female connectors. The connectors from top to bottom are: Y, Pb/Cb, Pr/Cr, Audio Signal Jack. The Y signal jack is green, the Pb/Cb signal jacks are blue, the Pr/Cr signal jacks are red, and the upper row audio jacks are red (right audio channel) and the lower row audio jacks are white (left audio channel). The output jack channels are numbered from left

to right as NO.1 to NO.8 (in five rows). Refer to the drawing on the housing for other types of connectors.

Different models of matrix systems provide a different number of input/output connectors where users can connect to different audio/video equipment including CD/DVD players, graphics workstations, and number display. The output connectors can be connected to projectors, video recorders, displays and multiplexers.

5.0.1.1 Audio/Video Connecting Cable

Different models of the matrix system provides a different number of input/output jacks for users to connect to different audio/visual equipment including CD/DVD players, graphics workstations, and number displays. The output terminals can be connected to projectors, video recorders, displays and multiplexers and so on. The matrix supports various AV video signal sources.

The RCA connecting terminal---audio/video port: The 4-hole RCA Jack is a conventional audio connector. Its installation hole measures 14x18mm.

YPbPr Connector—Standard Video Input (3-RCA) Connector:

Type: Video connectors are in pairs (Y, Pb, Pr) (Green Y, Blue Pb, Red Pr)

For matrix YPbPr RCA jack connection, see Figure 6-2 below:

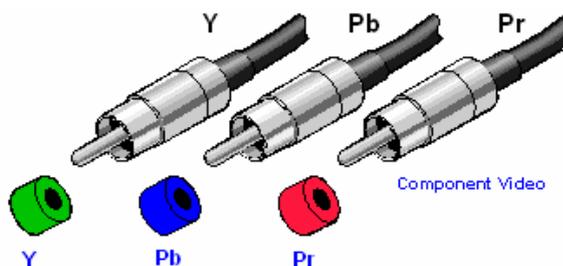


Figure 6-2 YPbPr-RCA Connecting Cables

RCA, an abbreviation for lotus socket, is a DVD component (YpbPr) socket.

The YpbPr connector is a high definition digital TV connector (color contour YpbPr) capable of connecting with high definition digital set-top box, satellite receiver and various high definition monitors and TV equipment.

Color difference output (YPbPr) connector separates the modulated Y, PB and PR signals. It separates the colorimetry C signal into blue b-Y color difference and red r-Y color difference and uses 3 cables for separate transmission to improve display resolution. This way, it ensures the largest bandwidth of colorimetry and averts interference to the signals because the signals are transmitted by 3 separate cables and each cable is being properly sleeved.

The Audio Connecting Cable:

Type: The audio connecting cables are in pair for left and right channels (R for red and L for left).

Connection of the RCA connector of the matrix audio is as shown in Figure 6-3 below:

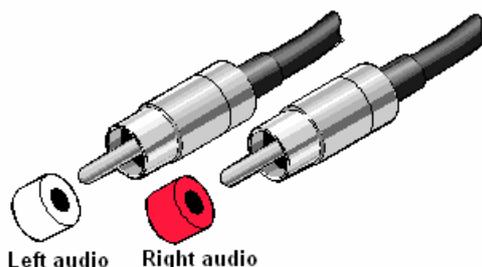


Figure 6-3 AUDIO RCA Connecting Cables

The RCA connector uses coaxial signal transmission with the axial for signal transmission and the outer ring for grounding. It can be used to transmit digital audio signals and modulated video signals. Generally, the RCA audio connectors are in pairs separately indicated by red for the right audio channel (R for right) and black or white for the left audio channel (L for left). The RCA stereo cable is in one set for both left and right audio channels with each channel in one cable.

The matrix “Audio Inputs” and “Audio Outputs” can be separately connected to the audio signal connector of the video recorder and a multiplexer.

Connection Method: Use the RCA (often referred to as the lotus socket) connector for connection. You are recommended to use the 14 x 18mm 4-hole RCA JAYK connector for connection to input and output equipment. Connect the RCA video and audio connectors of the signal source equipment output terminal to the same channel RCA connector of the matrix input terminal, and also connect the RCA connectors of the matrix output terminal to the RCA input connectors of the output equipment via a dedicated RCA signal cable.

NOTE: The RCA connectors at both ends of the various signal cables must correspond to each other, otherwise loss of color reproduction or even no signal output could happen.

Advantage: The AV connectors have realized separate audio and video transmission, thereby averted mixed audio/video interference to degrade graphics quality. The AV connectors have now been extensively used in TV equipment.

5.0.2 Matrix and Control Computer Connection

Use the RS-232 connecting cable to connect the computer serial port (COM1 or COM2) to the RS-232 communication port of the matrix host. The computer can then be used to control the matrix after installation of application software.

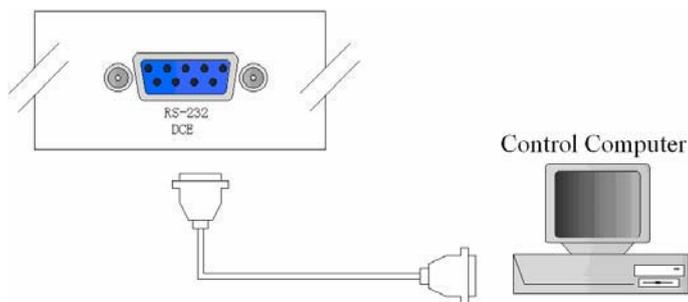


Figure 5-4 Matrix and Computer Connection

5.0.3 Remote Control Methods and Settings

The matrix provides standard RS-232 and RS-485 serial communication ports. Aside from using the front panel keys for switching operation, you are also permitted to use the RS-232 and RS-485 serial communication ports for remote operation. It also supports RS-485 serial control.

5.0.3.1 RS-232 Communication Port, Connection Methods

The RS-232 port is a 9-pin female connector. The Leg functions are shown in the table below:

Pin NO.	Leg	Description
1	N/u	Null
2	Tx	Send
3	Rx	Receive
4	N/u	Null
5	Gnd	Ground
6	N/u	Null
7	N/u	Null
8	N/u	Null
9	N/u	Null

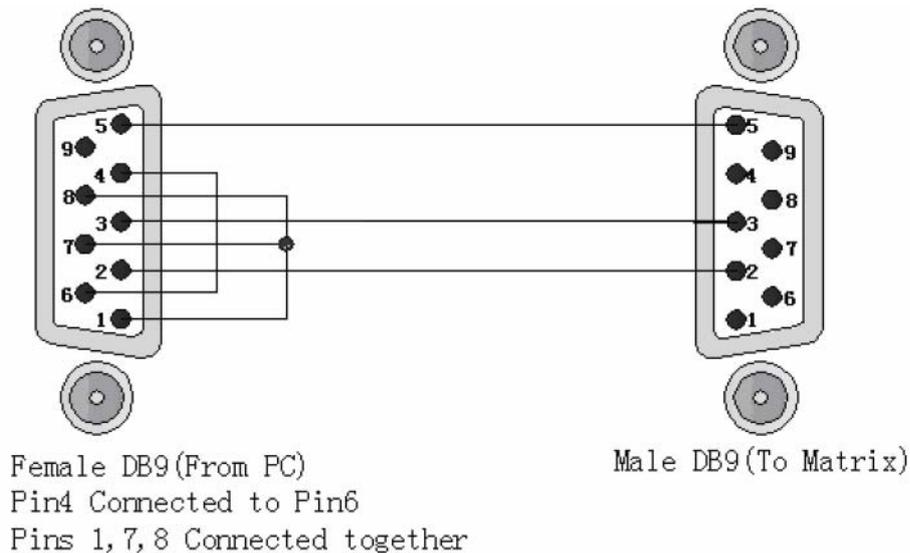


Figure 5-5

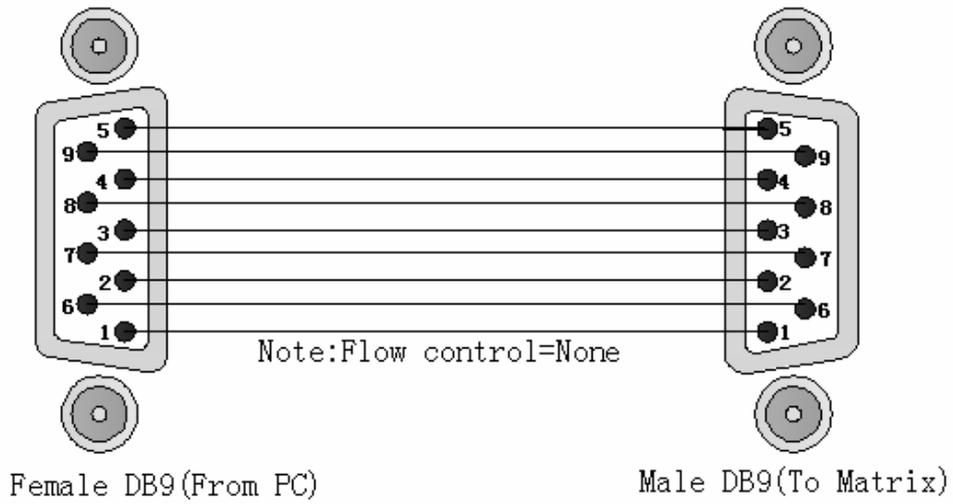


Figure 5-5 (a)

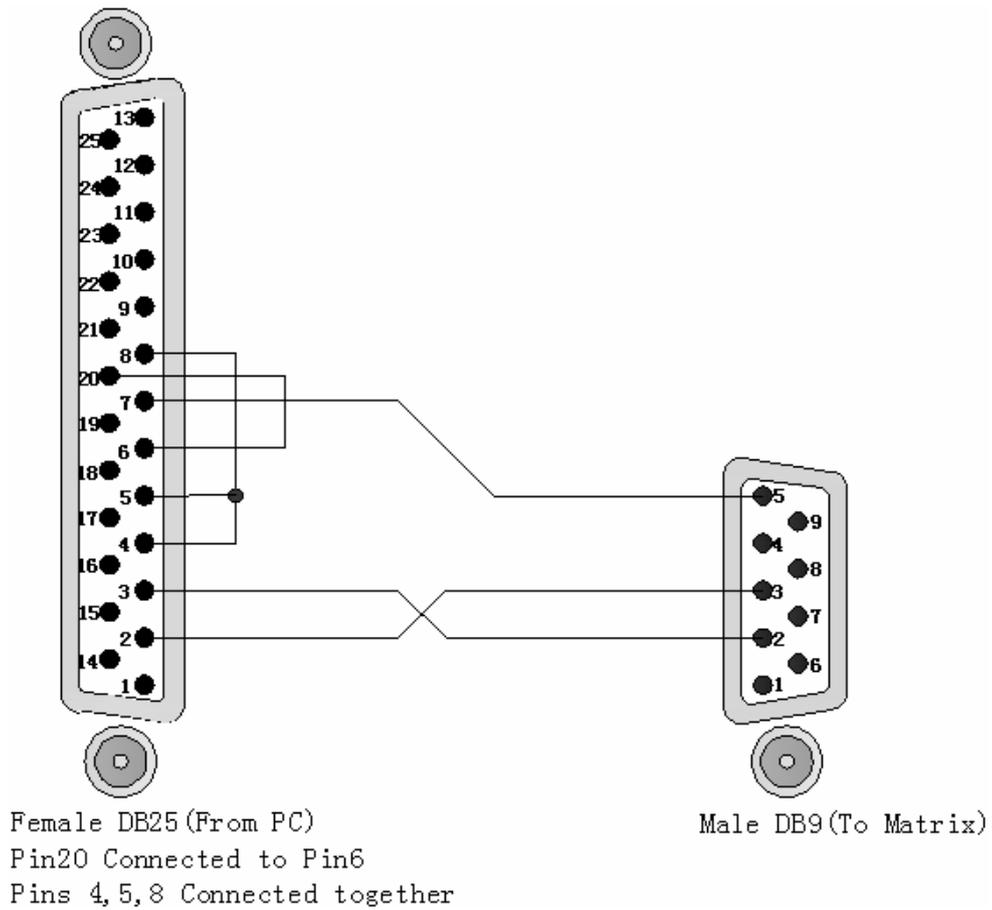


Figure 5-6

Note: The Matrix RS-232 port is defined as DCE.

5.0.3.2 RS-485 Communication Port

You can use the RS-485 port to control more than one product.

The RS-485 Port as shown in Figure 5-7 below:

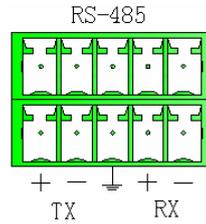


Figure 5-7

5.0.3.3 On/Off Switch Settings

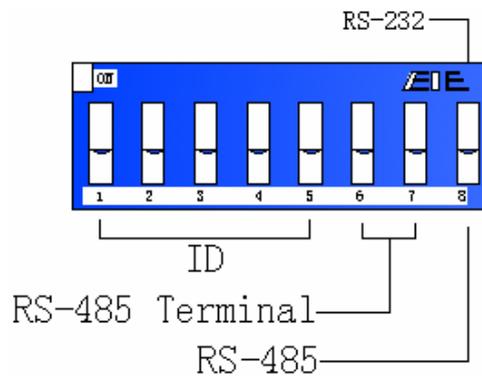


Figure 5-8

- A. DIP SW-8:RS-232/RS-485 switches ON/OFF
 - ON:RS-232 Enables Single System or RS-485 Serial Master
 - OFF:RS-485 Enables RS-485 Serial Slave
- B. DIP sw-6/7:RS-485 Terminator ON/OFF
 - ON:Terminator ON
 - OFF:Terminator OFF
- C. DIP sw 1 to 5 Setting (address setting)

The ID address determines the position of a Matrix system. When multiple products are connected to one PC or when the Matrix products are serially connected, the ID address decides which product is to be controlled. Use the on/off switches 1, 2, 3, 4, 5 on the rear panel to set the ID address as shown in Figure 5-2 below:

ID Address (Decimal)	Software ID Address (Hexadecimal)	ON/OFF (Binary)	ON/OFF Switch Settings				
			SW1	SW2	SW3	SW4	SW5
0	00	00000	OFF	OFF	OFF	OFF	OFF
1	01	00001	OFF	OFF	OFF	OFF	ON
2	02	00010	OFF	OFF	OFF	ON	OFF
3	03	00011	OFF	OFF	OFF	ON	ON
4	04	00100	OFF	OFF	ON	OFF	OFF
5	05	00101	OFF	OFF	ON	OFF	ON
6	06	00110	OFF	OFF	ON	ON	OFF
7	07	00111	OFF	OFF	ON	ON	ON
8	08	01000	OFF	ON	OFF	OFF	OFF
9	09	01001	OFF	ON	OFF	OFF	ON
10	0A	01010	OFF	ON	OFF	ON	OFF
11	0B	01011	OFF	ON	OFF	ON	ON
12	0C	01100	OFF	ON	ON	OFF	OFF
13	0D	01101	OFF	ON	ON	OFF	ON
14	0E	01110	OFF	ON	ON	ON	OFF
15	0F	01111	OFF	ON	ON	ON	ON
16	10	10000	ON	OFF	OFF	OFF	OFF
17	11	10001	ON	OFF	OFF	OFF	ON
18	12	10010	ON	OFF	OFF	ON	OFF
19	13	10011	ON	OFF	OFF	ON	ON
20	14	10100	ON	OFF	ON	OFF	OFF
21	15	10101	ON	OFF	ON	OFF	ON
22	16	10110	ON	OFF	ON	ON	OFF
23	17	10111	ON	OFF	ON	ON	ON
24	18	11000	ON	ON	OFF	OFF	OFF
25	19	11001	ON	ON	OFF	OFF	ON
26	1A	11010	ON	ON	OFF	ON	OFF
27	1B	11011	ON	ON	OFF	ON	ON
28	1C	11100	ON	ON	ON	OFF	OFF
29	1D	11101	ON	ON	ON	OFF	ON
30	1E	11110	ON	ON	ON	ON	OFF
31	1F	11111	ON	ON	ON	ON	ON

Figure 5-2 ID Address Settings

5.0.3.4 Matrix System and Control System Connection

A. If PC provides RS-232, connection is as in Figure 5-9 below:

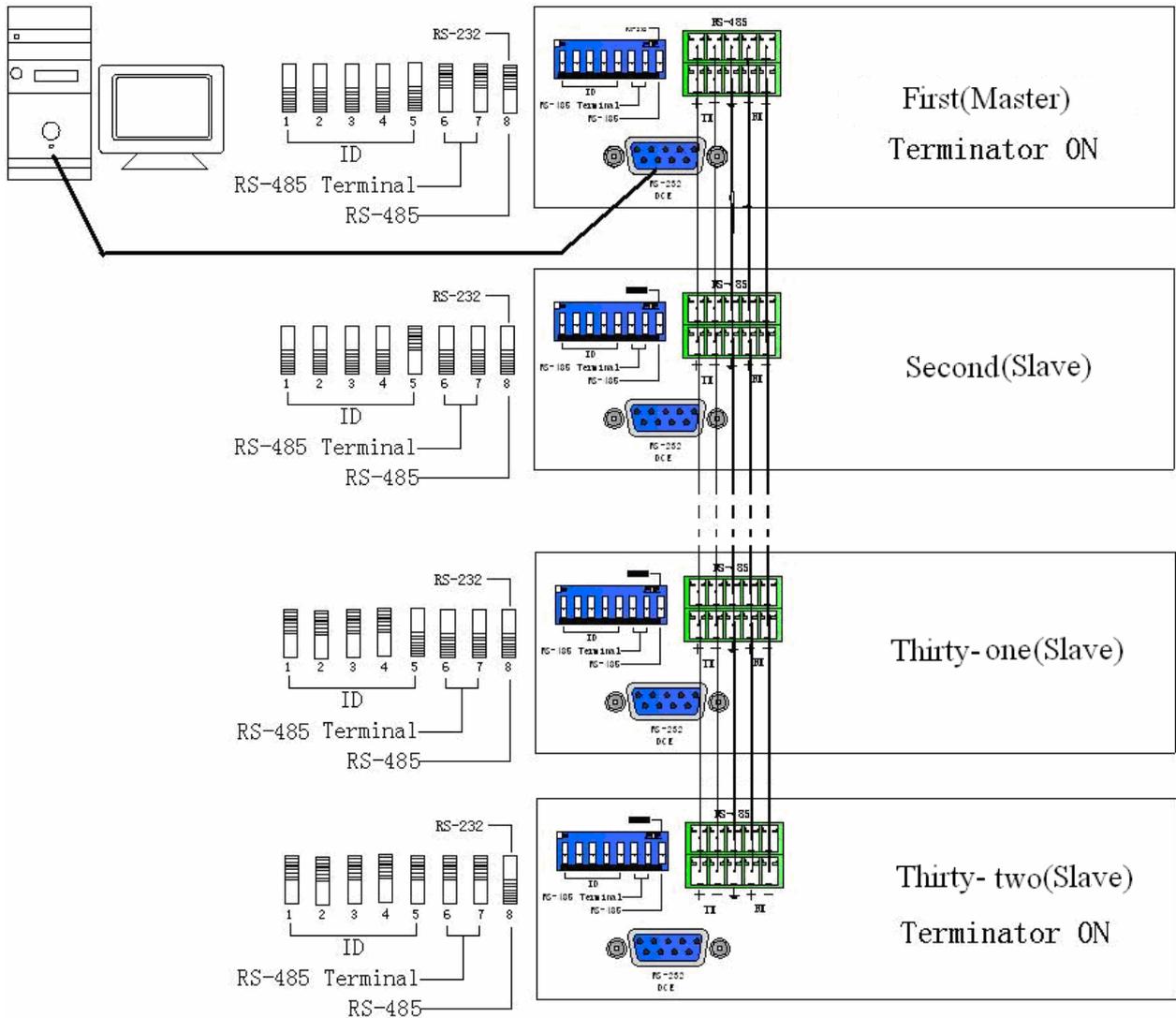


Figure 5-9

NOTE: 1. For RS-232 connection refer to previous Figure for operation ;

2. RS-232 or RS-485 baud rates: 9600bps, no odd or even calibration address, 8bit data transmission address, 1bit stop address (96, N, 8, 1) ;

3. Serial connection between Matrix RS-485 as follows:

TX (+) ←→ TX (+)

TX (-) ←→ TX (-)

RX (+) ←→ RX (+)

RX (-) ←→ RX (-)

4. Each DIP sw1-5 address must not set to same ID address.

B. If PC provides RS-485, connection is as in Figure 5-10 below:

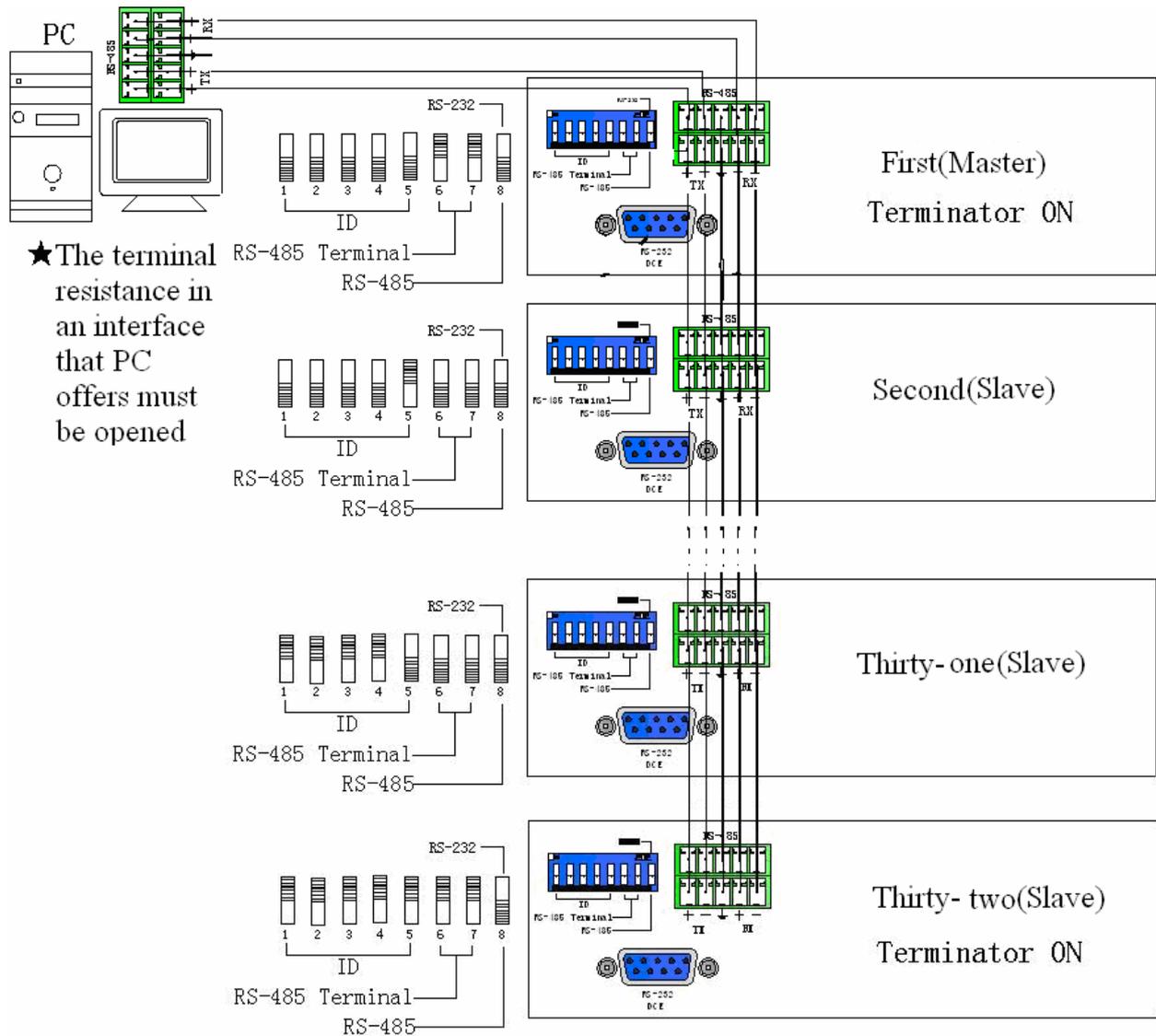
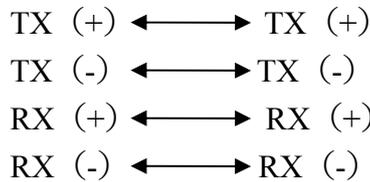


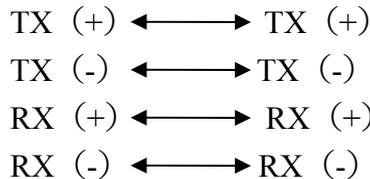
Figure 5-10

NOTE: 1. RS-485 baud rate: 9600bps, no odd or even calibration address, 8bit data transmission address, 1bit stop address (96, N, 8, 1) ;

2. Connect your PC RS-485 port to the Matrix RS-485 port as follows:



3. Serial connection between Matrix RS-485 ports as shown below:



4. Each DIP sw1-5 address must not set to same ID number.

6.0 Matrix Control Panel Operation

6.0.1 Input/Output Switching Key Operation Mode

You can use the front panel keys of the Matrix system for fast audio/video switching. (For details in key pressing, refer to the “Front Panel Key Pressing Instructions”.)

Operation methods as follows:

“Switching Methods” + “Output Channel ” +“ Input Channel ”

Description: ‘

“Switching Methods”

Synchronous audio/video switching or separate switching: Using the “Audio” and “Video” keys on the front panel, you can select “Synchronous Audio/Video Switching,” “Audio Switching Only” or “Video Switching Only.”

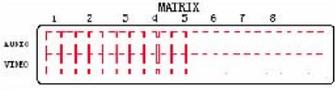
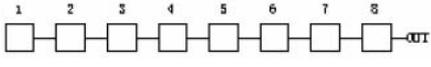
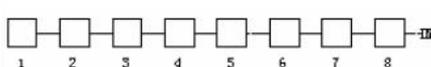
“ Output Channel ”

The “OUT Row 1-8” keys on the front panel represent output channels 1 to 8 for connection to peripheral display.

“ Input Channel ”

The “IN Row 1-8” keys on the front panel represent input channels 1 to 8 for connection to the currently connected channels of the signal source to be switched.

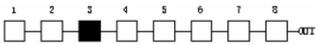
6.0.2 Front Panel Key Functions

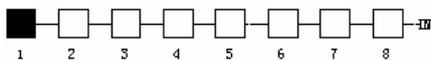
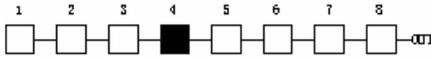
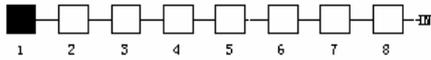
Part	Function Key	Function
1		LCD display shows current matrix status and operation hints.
2		Output channel selection keys used for setting audio/video output channels or for selection of Status Retrieve or Stored Number.
3		Input channel selection keys used for setting audio/video input channels or for selection of Status Retrieve or Stored Number.
4	ALL	Implement all output selection keys via certain input route. ---Example: First press the “ALL” key, then select the input channel to output to all output channels; first press the “ALL”key, then press the “OFF” key to close all the presently displayed switching status.

Part	Function Key	Function
5	OFF	Close output channel key. ---First press to close the output channels, then press the “OFF” key to close the specified channel.
6	STO	The “Store Key” saves all current input/output corresponding relations. ---Example: Press the “STO”key, then press the output channel key which you want to save all currently displayed input/output corresponding relations.
7	RCL	The “Retrieve Key” retrieves the saved input/output corresponding relations. ---Example: First press the “RCL” key, then press the previously saved output channel key to retrieve the saved input/output status and implement this status switching.
8	AUDIO	The audio switching selection key switches to another output channel from the same channel. Example: Press the Audio key to open or close the Audio switching function. When the LED indicator next to the Audio key lights shows switching function is open and when the light goes off shows you have selected to close the audio switching function.
9	VIDEO	The video switching selection key switches to another output channel from the same channel. Example 1: Press the Video key to open or close the video switching function. When the LED indicator next to the Video key shows video switching function is open and when the light goes off shows the switching function is close.

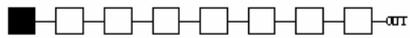
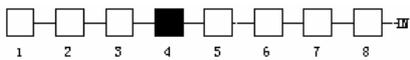
6.0.3 Operation Examples

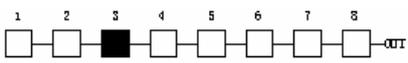
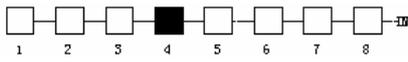
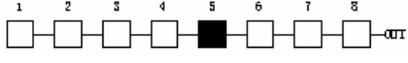
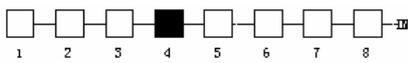
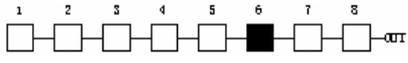
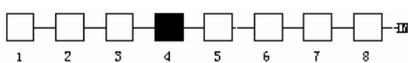
Example 1: Synchronously switch the NO. 1 audio/video signals to the NO. 3 and 4 output channels.

Key	LCD Display	Operation
	 <pre> MATRIX 1 2 3 4 5 6 7 8 AUDIO 0 0 0 0 0 0 0 0 VIDEO 0 0 0 0 0 0 0 0 </pre>	<p>1. Press the NO. 3 key of the output channel for 2 seconds, then enter the input channel when the red 0 on LCD begins to flicker.</p>

Key	LCD Display	Operation																											
	<p>MATRIX</p> <table border="1"> <tr> <td></td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>AUDIO</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>VIDEO</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> </table>		1	2	3	4	5	6	7	8	AUDIO	0	0	1	0	0	0	0	0	VIDEO	0	0	1	0	0	0	0	0	<p>2. Press the NO.1 key of the Input channel for 2 seconds for selection of NO.1 channel to input into NO.3 channel for output. The LCD shows 1 at channel NO.3 for both Audio and Video. Enter the Output channels.</p>
	1	2	3	4	5	6	7	8																					
AUDIO	0	0	1	0	0	0	0	0																					
VIDEO	0	0	1	0	0	0	0	0																					
	<p>MATRIX</p> <table border="1"> <tr> <td></td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>AUDIO</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>VIDEO</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> </table>		1	2	3	4	5	6	7	8	AUDIO	0	0	1	0	0	0	0	0	VIDEO	0	0	1	0	0	0	0	0	<p>3. Press the NO.4 key of the output channel for 2 seconds and then enter the input channel when the red 0 on LCD flickers.</p>
	1	2	3	4	5	6	7	8																					
AUDIO	0	0	1	0	0	0	0	0																					
VIDEO	0	0	1	0	0	0	0	0																					
	<p>MATRIX</p> <table border="1"> <tr> <td></td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>AUDIO</td> <td>0</td> <td>0</td> <td>1</td> <td>1</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>VIDEO</td> <td>0</td> <td>0</td> <td>1</td> <td>1</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> </table>		1	2	3	4	5	6	7	8	AUDIO	0	0	1	1	0	0	0	0	VIDEO	0	0	1	1	0	0	0	0	<p>4. Press the NO.1 key of the input channel for 2 seconds for selection of NO.1 channel for input and NO. 3 and 4 channels for output. LCD shows 1 at NO.3 and NO.4 channels for both Audio and Video.</p>
	1	2	3	4	5	6	7	8																					
AUDIO	0	0	1	1	0	0	0	0																					
VIDEO	0	0	1	1	0	0	0	0																					

Example 2: Operation for synchronously switching video signals from NO.4 channel to NO.1, 3, 5 and 6 output channels.

Key	LCD Display	Operation																											
<p>ALL STO AUDIO •</p> <p>OFF RCL VIDEO •</p> 	<p>ALL STO AUDIO ◦</p> <p>OFF RCL VIDEO •</p> <p>MATRIX</p> <table border="1"> <tr> <td></td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>AUDIO</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>VIDEO</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> </table>		1	2	3	4	5	6	7	8	AUDIO	0	0	0	0	0	0	0	0	VIDEO	0	0	0	0	0	0	0	0	<p>1. Press the AUDIO key to turn off the LED indicator, then enter the output channel.</p>
	1	2	3	4	5	6	7	8																					
AUDIO	0	0	0	0	0	0	0	0																					
VIDEO	0	0	0	0	0	0	0	0																					
	<p>MATRIX</p> <table border="1"> <tr> <td></td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>AUDIO</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>VIDEO</td> <td>4</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> </table>		1	2	3	4	5	6	7	8	AUDIO	0	0	0	0	0	0	0	0	VIDEO	4	0	0	0	0	0	0	0	<p>2. Press the NO.1 key of the output channel for 2 seconds, then enter the input channel when the red 0 on LCD flickers.</p>
	1	2	3	4	5	6	7	8																					
AUDIO	0	0	0	0	0	0	0	0																					
VIDEO	4	0	0	0	0	0	0	0																					
	<p>MATRIX</p> <table border="1"> <tr> <td></td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>AUDIO</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>VIDEO</td> <td>4</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> </table>		1	2	3	4	5	6	7	8	AUDIO	0	0	0	0	0	0	0	0	VIDEO	4	0	0	0	0	0	0	0	<p>3. Press the NO.4 key of the input channel for 2 seconds to select operation of input from NO.4 channel and output from NO.1 channel. Enter the output channel when VIDEO shows 4 at NO.1 channel on LCD.</p>
	1	2	3	4	5	6	7	8																					
AUDIO	0	0	0	0	0	0	0	0																					
VIDEO	4	0	0	0	0	0	0	0																					

Key	LCD Display	Operation																											
	<p style="text-align: center;">MATRIX</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td></td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>AUDIO</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>VIDEO</td> <td>4</td> <td>0</td> <td style="color: red;">0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> </table>		1	2	3	4	5	6	7	8	AUDIO	0	0	0	0	0	0	0	0	VIDEO	4	0	0	0	0	0	0	0	<p>4. Press the NO.3 key of the output channel for 2 seconds and enter the input channel when the red 0 on LCD flickers.</p>
	1	2	3	4	5	6	7	8																					
AUDIO	0	0	0	0	0	0	0	0																					
VIDEO	4	0	0	0	0	0	0	0																					
	<p style="text-align: center;">MATRIX</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td></td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>AUDIO</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>VIDEO</td> <td>4</td> <td>0</td> <td>4</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> </table>		1	2	3	4	5	6	7	8	AUDIO	0	0	0	0	0	0	0	0	VIDEO	4	0	4	0	0	0	0	0	<p>5. Press the NO.4 key of the input channel for 2 seconds to select operation of input from NO.4 channel and output from NO.1 and NO.3 channels. Enter the output channel when VIDEO shows “4” at NO.1 and NO.3 channels on LCD.</p>
	1	2	3	4	5	6	7	8																					
AUDIO	0	0	0	0	0	0	0	0																					
VIDEO	4	0	4	0	0	0	0	0																					
	<p style="text-align: center;">MATRIX</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td></td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>AUDIO</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>VIDEO</td> <td>4</td> <td>0</td> <td>4</td> <td>0</td> <td style="color: red;">0</td> <td>0</td> <td>0</td> <td>0</td> </tr> </table>		1	2	3	4	5	6	7	8	AUDIO	0	0	0	0	0	0	0	0	VIDEO	4	0	4	0	0	0	0	0	<p>6. Press the NO.5 key of the output channel for 2 seconds and enter the input channel when the red 0 on LCD flickers.</p>
	1	2	3	4	5	6	7	8																					
AUDIO	0	0	0	0	0	0	0	0																					
VIDEO	4	0	4	0	0	0	0	0																					
	<p style="text-align: center;">MATRIX</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td></td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>AUDIO</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>VIDEO</td> <td>4</td> <td>0</td> <td>4</td> <td>0</td> <td>4</td> <td>0</td> <td>0</td> <td>0</td> </tr> </table>		1	2	3	4	5	6	7	8	AUDIO	0	0	0	0	0	0	0	0	VIDEO	4	0	4	0	4	0	0	0	<p>7. Press the NO.4 key of the input channel for 2 seconds to select operation of input from NO.4 channel and output from NO.1, 3 and 5 channels. Enter the output channel when VIDEO shows “4” at NO.1, 3 and 5 channels on LCD.</p>
	1	2	3	4	5	6	7	8																					
AUDIO	0	0	0	0	0	0	0	0																					
VIDEO	4	0	4	0	4	0	0	0																					
	<p style="text-align: center;">MATRIX</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td></td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>AUDIO</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>VIDEO</td> <td>4</td> <td>0</td> <td>4</td> <td>0</td> <td>4</td> <td style="color: red;">0</td> <td>0</td> <td>0</td> </tr> </table>		1	2	3	4	5	6	7	8	AUDIO	0	0	0	0	0	0	0	0	VIDEO	4	0	4	0	4	0	0	0	<p>8. Press the NO.6 key of the output channel for 2 seconds and enter the input channel when the red 0 on LCD flickers.</p>
	1	2	3	4	5	6	7	8																					
AUDIO	0	0	0	0	0	0	0	0																					
VIDEO	4	0	4	0	4	0	0	0																					
	<p style="text-align: center;">MATRIX</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td></td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>AUDIO</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>VIDEO</td> <td>4</td> <td>0</td> <td>4</td> <td>0</td> <td>4</td> <td>4</td> <td>0</td> <td>0</td> </tr> </table>		1	2	3	4	5	6	7	8	AUDIO	0	0	0	0	0	0	0	0	VIDEO	4	0	4	0	4	4	0	0	<p>9. Press the NO.4 key of the input channel for 2 seconds to select the operation of input from NO.4 channel and output from NO.1, 3, 5 and 6 channels. VIDEO shows “4” at NO.1,3, 5 and 6 channels on LCD.</p>
	1	2	3	4	5	6	7	8																					
AUDIO	0	0	0	0	0	0	0	0																					
VIDEO	4	0	4	0	4	4	0	0																					

7.0 Matrix Application Software

7.0.1 Software Introduction

The 《AV Matrix》 Matrix control software applies to different input/output matrixes.

7.0.1.1 Software Description

The 《AV Matrix》 matrix testing software is an application tool developed for matrix testing and application. The software operation environment is as follows:

Window98/2000/NT/XP operatng systems

32M interal memory or above

10M hard disk space or above

CD-ROM

At least one serial communicatin port

7.0.1.2 Software Activation

First, you must turn off power both to the matrix and to the computer. Then, connect the matrix RS-232 port to the PC RS-232 port using the bundled communication cable. (Refer to the previous section “Matrix and Control Computer Connection.”);

Turn on power to the matrix and the computer:

Activate the AV Matrix.exe on the bundled CD-ROM in the control computer to enter the control software interface.

7.0.2 Software Features

The software controls signal connection between the corresponding input port and output port as required. The main operation window is shown in Figure 7-1 below:

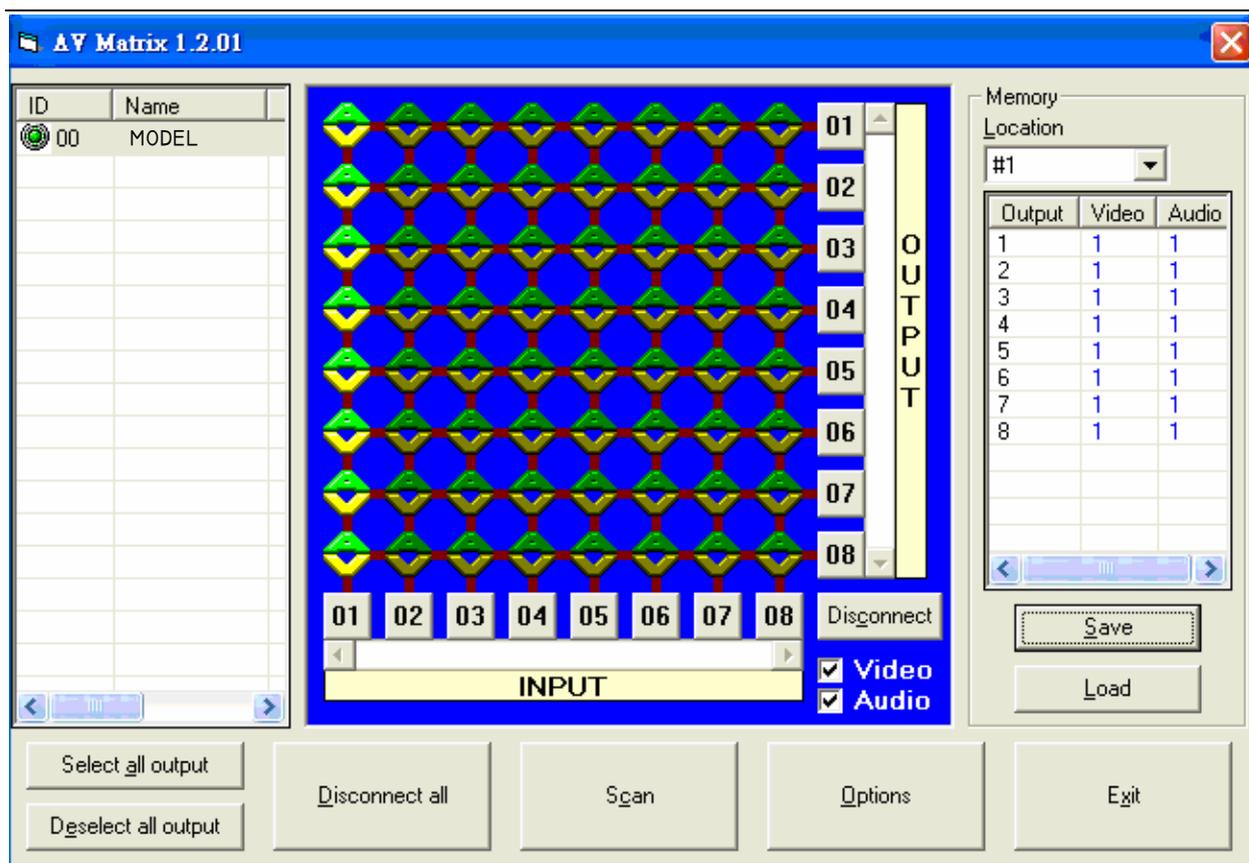


Figure 7-1 《AV Matrix》 Control Software Usage Interface

Scroll on the left lower corner to view contents as shown below.

	A/V	I/O	Memory
188	Both	8/8	8

7.0.2.1 Main Operation Interface Functions

Refer to the window menu above, the interface blue area shows crossing matrix of output ports 01-08 and input ports 01-08. On the lower right hand corner, you can select either “Video” for signal input switching or “Disconnect” to close all output ports. Click to check the white box to the left of “Video” or “Audio” for video or audio signal transimission.

Examples for Selecting Matrix Switching Functions:

Example 1: Now there is a HIT-COMPAUD-888 matrix having all the input/output ports properly connected to the equipment. There are two ways of operation if you want to set channel 1 audio/video to channels 2, 3 and 5 for output and channel 3 audio/video to channel 6 for output:

First way: Make sure you have selected “ Video” and “ Audio” by checking the white boxes

to the left. Directly click on the corresponding icons on the matrix  to turn them into

 to complete the switching operation.

Second way:

Step 1: Make sure you have selected “Video” and “Audio” by checking the boxes to the left.

Step 2: First select the “Output” number keys 02, 03 and 05 to the right, and select the “Input” number key 01 to the bottom. Afterwards, press consecutively the previously selected “Output” number keys 02, 03 and 05 (or you can press the “Deselect all output” key). This way, you have selected “Input” 01 and “Output” 02, 03 and 05 switching.

Step 3: First select the “Output” number key 06 to the right, and select the “Input” number key 03 to the bottom. Afterwards, press the previously selected “Output” number key 06 (or you can press the “Deselect all output” key). This way, you have selected Input 03 and Output 06 switching.

Upon completion of the above 3 steps, you have actually completed the switching operation of having Audio/Video channel 1 to Output channels 2, 3 and 5 while at the same time successfully switched from Audio/Video channel 3 to Output channel 6.

Example 2: Now, there is a HIT-COMPAUD-888 matrix with the input/output ports properly connected to the equipment. It is required to set the input/output connectors to switching from video channel 1 to output channels NO.1, 6 and 7 and also to switch from audio channel 2 to output channel 8. There are two ways of operations:

First Way:

Step 1: Make sure you have selected “Video” and not “AUDIO”. Directly click on the icons on the matrix corresponding to the INPUT number key 01 and the OUTPUT number keys

01, 06, 07  to turn into , you have then selected video switching of input 01 and output 01,06,07.

Step 2: Make sure you have selected “AUDIO” and not “Video”. Directly click on the matrix icons corresponding to INPUT number key 02 and OUTPUT number key 08  to turn them into  you have then selected audio switching of input 02 and output 08.

Upon completion of the above 2 steps, you have successfully switched video channel 1 to output channels 1, 6 and 7 and also switched audio channel 2 to output channel 8.

Second Way:

Step 1: Make sure you have selected “Video” and not “AUDIO”.

Step 2: Select the output number keys 01,06 and 07 to the right and input number key 01 to the bottom. Afterwards, press consecutively the previously pressed output number keys 01,06 and 07 to the right (or you can press the Deselect all output key). This way, you have selected video switching of input 01 to output 01,06 and 07.

Step 3: Make sure you have selected “AUDIO” and not “Video”.

Step 4: Select output number key 08 to the right and input number key 02 to the bottom. Afterwards, press again the previously-pressed output number key to the right (or you can

press the Deselect all output key) . This way, you have selected audio switching of input 02 and output 08.

Upon completion of the above 4 steps, you have completed the operation of switching video channel 1 to output channels 1, 6, and 7 while also switching audio channel 2 to output channel 8.

7.0.2.2 Disconnect Function Keys

Close all the unused output ports.

A specific example of operation is described below:

The present input and output relations are shown in Figure 7-2 below:

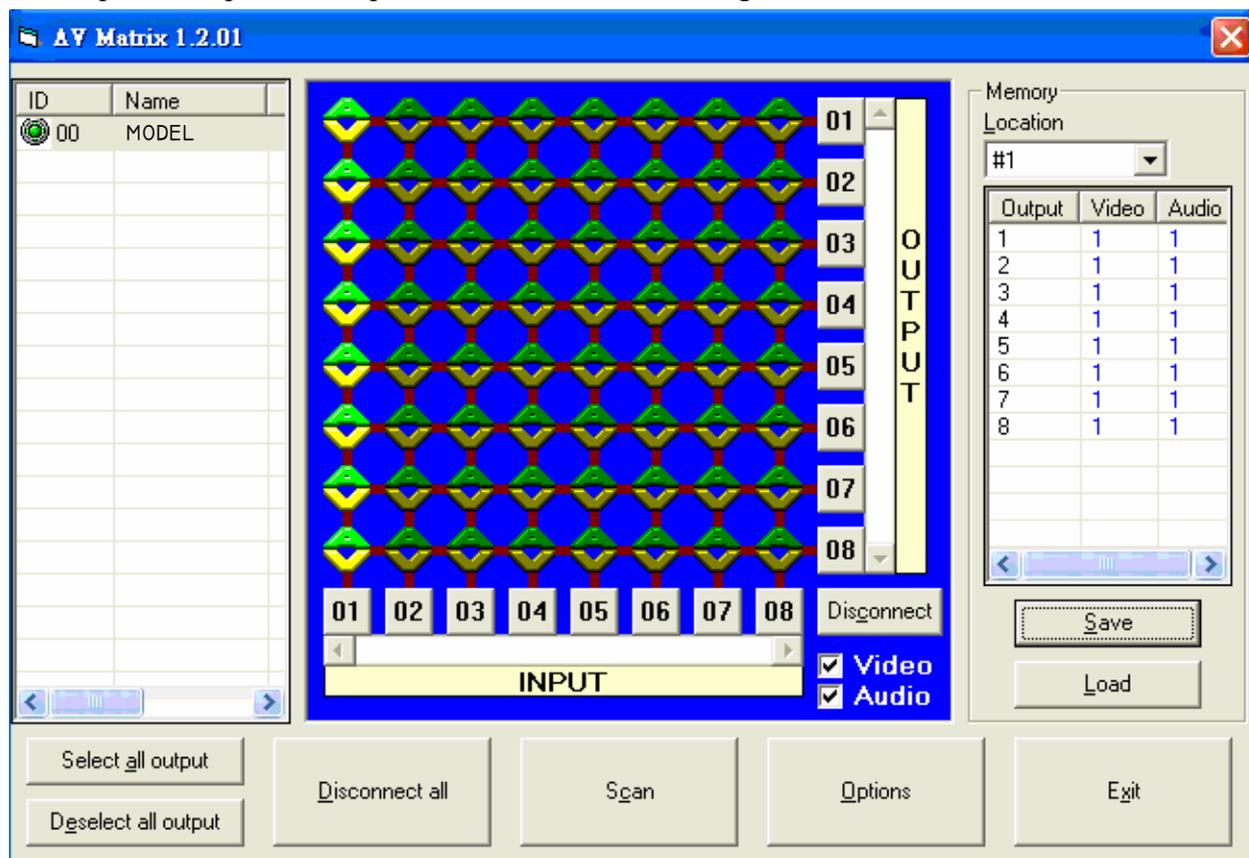


Figure 7-2

Now, you have to close the output ports 03、 05、 and 06.

Step 1: First press down the output number keys 03, 05 and 06 to the right;

Step 2: Press the “Disconnect” key;

Step 3: Press the previously-pressed output number keys 03, 05 and 06 (or press the “Deselect all output” key) to complete the operation.

The final results will be as shown in Figure 7-3 below:

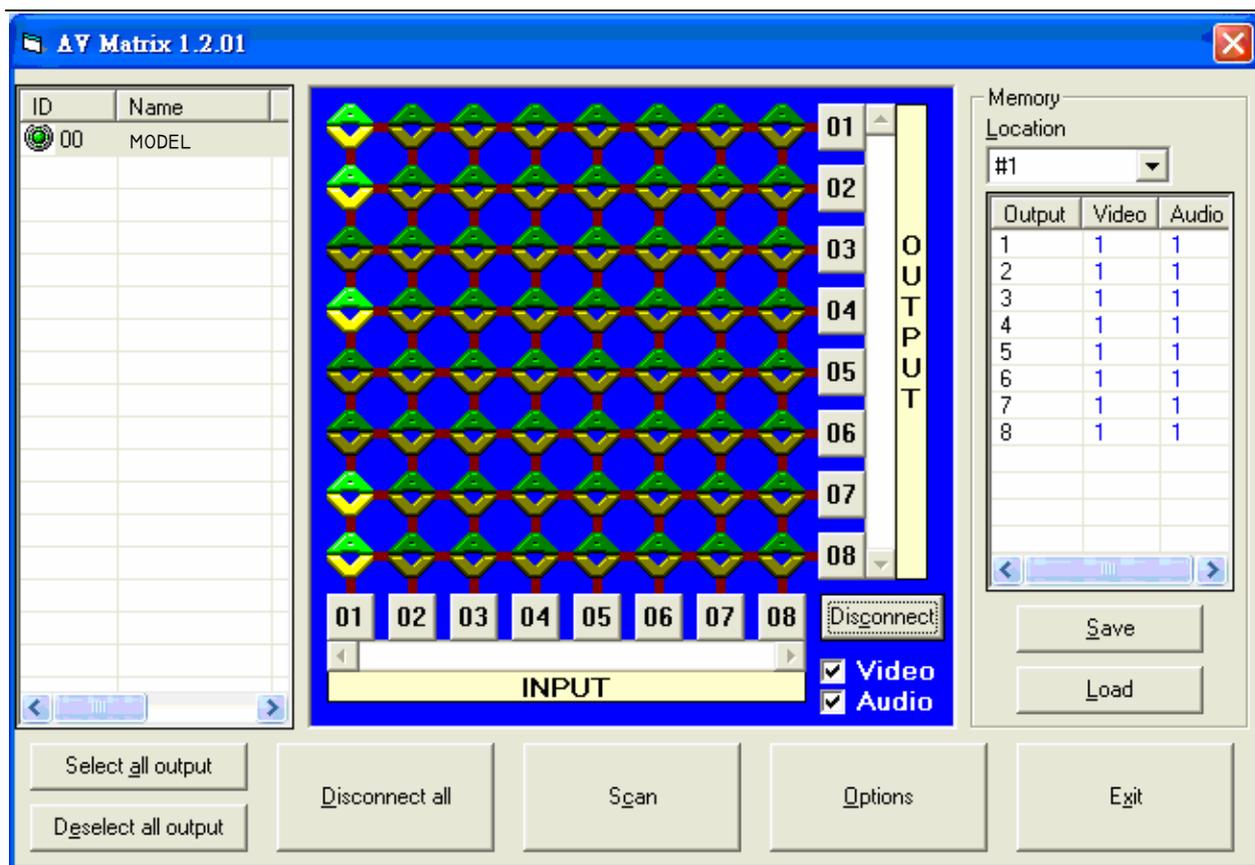


Figure 7-3

7.0.2.3 Select all output, DeSelect all output Switching Functions

(1) Select all output Function Description: You can use this function to select one port for input and all output ports for output.

A specific example of operation is described below:

Example: Now, you have a HIT-COMPAUD-888 matrix with all input and output ports properly connected to the equipment. The needed input/output ports should be set to audio/video channel 1 while switching all output ports to output.

Make sure you have selected both “Video” and “Audio” by checking the boxes to the left.

Then, press the Select all output key and select the input number key 01. Click on the

matrix icons along the 01 row  to turn them into  to complete the command operation.

(2) DeSelect all output Functin Description: It is used to close the Select all output function.

7.0.2.4 Disconnect all Command

Function Description: To close all the switching methods.

Press the “Disconnect all” key to close connection to all input and output ports.

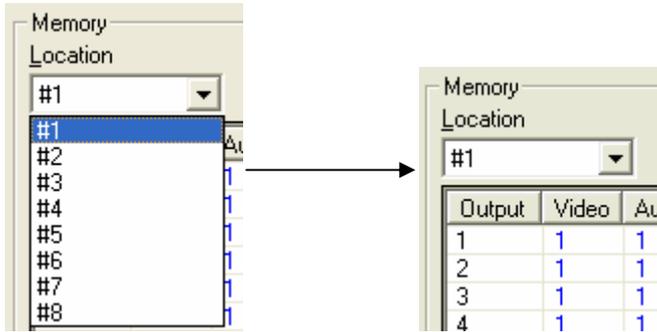
7.0.2.5 Memory Function Usage

Function Description: To store and retrieve.

Store Functin Description: The Store Function saves all the present input/output switching relations to any Locations from #1 to #8 you desired.

A specific example of the Store Function is described below:

Stores all the present input/output switching relations to Location #1. First, select Location #1 , as shown in the figure below:



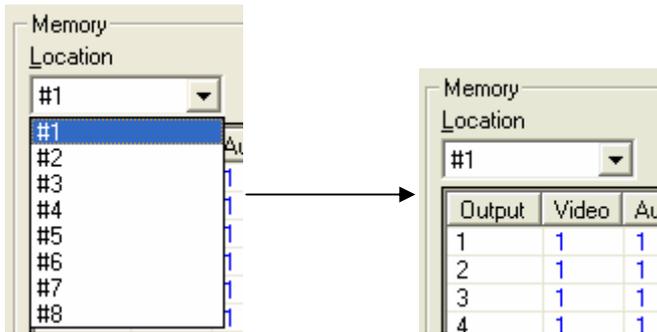
, then click the save key to save all the

present input/output switching relations to Location #1.

Retrieve Function Description: To retrieve the saved input/output switching relations.

A specific example of the Retrieve Function is described below:

To retrieve the input/output corresponding relations saved in Location #1. First, select Location #1 as shown in the figure below:



, then click the Load key to retrieve all the

input/output corresponding relations stored in Location #1.

7.0.2.6 Scan Function Usage

Use the mouse to click the Scan key to refresh the AV Matrix operating interface.

7.0.2.7 Options Function Usage

Activation Function:

In the main menu, select Options to prop up the Options window as shown in Figure 7-4 (a)

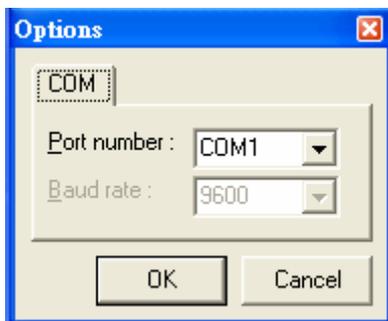


Figure 7-4 (a)

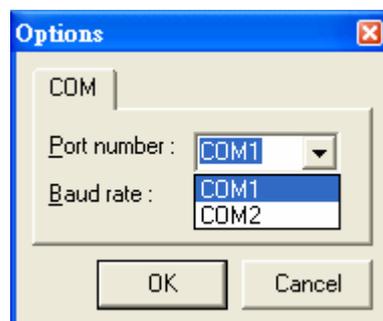


Figure 7-4 (b)

Function Description:

Linking Methods: In “Port number” select either COM1 port or COM2 port as shown in

Figure 7-4(b); in “Baud rate” select 9600 for signal transmission as shown in Figure 7-4(a)

7.0.2.8 Exit Function Usage

Function Description: To exit the operating software.

7.0.2.9 Other Usages

Displays the presently saved switching status as shown in Figure 7-5 below:

Output	Video	Audio
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1

Figure 7-5

When Video/Audio corresponding to Output is open, it shows the Output ports corresponds to the Video/Audio Input ports; when they are close the word None will be shown in red in the above table.

8.0 Communication Protocol and Control Command Code

Communication Protocol: Baud rate 9600bps, no odd or even calibration bit address, 8bit transmission address, 1bit stop address.

Refer to the “Command list.pdf” on the CD-ROM for the command system.

9.0 Matrix System Technical Parameters

Model	HIT-COMPAUD-888	HIT-COMPAUD-844	HIT-COMPAUD-444
Technical Parameters			
Video			
Enhancement	0dB		
Bandwidth	150MHz (-3dB), Full Load		
Max. Transmission Delay	20nS(± 1nS)		
Switching Speed	50nS(Longest Time)		
Signal Type	Component/Composite Video		
Video Input			
Connector	8 RCA Female Connectors	8 RCA Female Connectors	4 RCA Female Connectors
Signal Strength	1Vp-p Y Component Video, S-video, Composite Video ; 0.3Vp-p R-Y & B-Y Component Video, S-video		
Min./Max. Voltage	Modulated Signal 0.5V~2.0Vp-p		
Impedance	75Ω		
Video Output			
Connector	8 RCA Female Connectors	4 RCA Female Connectors	4 RCA Female Connectors
Min./Max. Voltage	2.5Vp-p		
Impedance	75Ω		
Audio Signal			
Input/Output Connectors	RCA Female Connectors		
Signal Type	Stereo, Balanced or Unbalanced		
Impedance	Input :> 10kΩ Output : 100Ω		
Max. Input Level	+19.5dBu		
Max. Output Level	+19.5dBu		
Control Type			
Serial Control Connectors	RS-232, 9-Pin Female D Type Connector		
Baud Rate and Protocol	9600bps, no odd or even calibration address, 8bit Transmission Address, 1bit Stop Address		
Serial Control Port Structure	TX, RX, GND		
Control Procedures	《AV Matrix》		
Specifications			
Power	100VAC~240VAC,50/60Hz, International Auto-Switch		
Temperature	Storage, Operating Temp.: -40 ⁰ ~+85 ⁰		

Model	HIT-COMPAUD-888	HIT-COMPAUD-844	HIT-COMPAUD-444
Technical Parameters			
Humidity	Storage, Operating Humidity: 10%~90%		
Housing Measurements	485(L)X272(W)X140mm(H)		
Product Weight	4800g		
Median Failure Interval	30, 000 Hours		
Warranty	One year warranty, lifetime maintenance		

10.0 Common Problems and Solutions

1. What to do if the matrix front panel keys switching not responsive?

Answer: The matrix front panel keys employ scanning testing and require longer response time. Press the keys for 2 seconds and then release. This way, key switching will be responsive in operation.

2. What to do if matrix does not display or color display is abnormal after hot plug?

Answer: Switching of the matrix system goes through the IC chips. If the voltage difference between the input signal equipment and the matrix equipment is too large, hot plug could easily cause damage to the IC chips. Please turn off power to the system before plugging or unplugging.

3. What to do if ghosting happens when YPbPr signals output to display?

Answer: Ghosting is often caused either by the projector, inferior cable quality or long transmission distance. You are advised to adjust the projector or replace with better quality cable.

4. What to do if loss of color reproduction happens or no video signal output?

Answer: Please check if connectors at both ends of the YPbPr signal cable are correctly connected.

5. What to do if the serial port (usually refer to the computer serial port) fails to control the matrix?

Answer: Check that the communication port set by the control software is correctly connected to the corresponding serial port of the equipment. Also, check if the computer communication port is in good order.

6. What to do if the corresponding graphics fail to output during matrix switching?

Answer: (1) Check if there is signal on the input end. If there is no input signal, it could be that the input connection cable is broken or the connector gets loosen. You are advised to replace the connection cable.

(2) Check if there is signal on the output end. If there is no output signal, it could be that the cable is broken or the connector gets loosen. You are advised to replace the connection cable.

(3) Check if the output port number is the same as the controlled port number.

(4) If none of the above circumstances happen, it could be internal failure of the product itself. You must send for repair by qualified technical engineers.

7. What to do if the power LED is not on, LCD has no display and no response in operation?

Answer: Check if the equipment power input is in good contact.

8. What to do if you sensed power leakage during plugging or unplugging of the audio/video ports?

Answer: It could be that the equipment power is not properly grounded. You must properly ground your equipment, otherwise product life can easily be shortened.

9. What to do if the LCD displays normally and the communication port has return code but no graphics or audio output?

Answer: (1) It could be that the audio/video connectors got loosen. Simply replace the connectors.

(2) It could be the connection cable short-circuited. Simply replace the cable.

(3) It could be the connection cable is broken. Simply replace the cable.

10. What to do if the matrix panel keys and communication ports are out of order?

Answer: Check if the equipment power input is in good contact and the computer communication ports are in good order. If yes, it could be some internal failure of the product, please send for repair by qualified technical engineer.

11. What to do if operation and function failure occurred?

Answer: Check if the equipment and the matrix system are in proper connection. If the problem persists, send the product to the maintenance center for repair.

NOTE:

Do not replace the power cord yourself. If the power cord is damaged, ask your distributor to send qualified technician to replace it for you.