

HDMI MATRIX SWITCHER 16X16  
MODEL NO.: HDTVHDMX1616S  
**USER MANUAL**



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**Version: 2018\_V1**

# Contents

1. Safety Instructions.....	1
2. FCC Statements.....	1
3. Introduction.....	2
4. Features.....	2
5. Connection and Operation.....	3
① Matrix Connection.....	3
② Front Panel Button Control.....	4
③ IR Remote Control.....	9
④ EDID Management.....	10
⑤ Serial Port Control.....	11
6. Technical Specifications.....	16
7. Troubleshooting&Maintenance.....	17
8. After-Sales Service.....	18

# Safety Instructions

1. Read the user manual completely before start-up.
2. Heed all warnings and follow basic safety precautions.
3. Do not use this equipment near water or moisture.
4. Clean the equipment only with dry cloth.
5. Unplug the power cord before cleaning.
6. Installation site must be well ventilated.
7. Do not block ventilation holes of the device.
8. Do not put object into ventilation holes, it might cause short circuit incident.
9. Do not install the device near heat sources, such as radiator, stoves. etc.
10. Protect the power cords from being walked on or pinched.
11. Do not dismantle the equipment to prevent risk of electrical shock.
12. Treat it as normal electrical wastes for disposal purpose.
13. Refer servicing to your local vendor or qualified service personnel.
14. For your safety and to avoid damaging the product, the device should be repaired and maintained by the professional and qualified personnel in the designated service center.
15. Unplug the power of all the devices when you are connecting them up.
16. Make sure all devices connecting up are properly grounded.
17. Only use accessories specified by the manufacturer.
18. Unplug the equipment when unused a long period of time.

## FCC Statements

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



# Introduction

HDMX1616S is 16x16 HDMI Matrix Switcher, supporting HDMI1.4 standard and a maximum resolution of 4K@30Hz. It allows any of the 16 Input HDMI Channels to be routed to any of the 16 Output HDMI Channels. Switching can be controlled by IR Remote Control, Front Panel Buttons, RS485, RS232, IP (Optional) and WIFI (Optional). It offers an excellent solution for commercial, residential and educational audio video integration, such as in houses, offices, digital entertainment centers, control centers, conference rooms, school and corporate training environments, etc.



**Figure 1. Front and Back Panel Review**

## Features

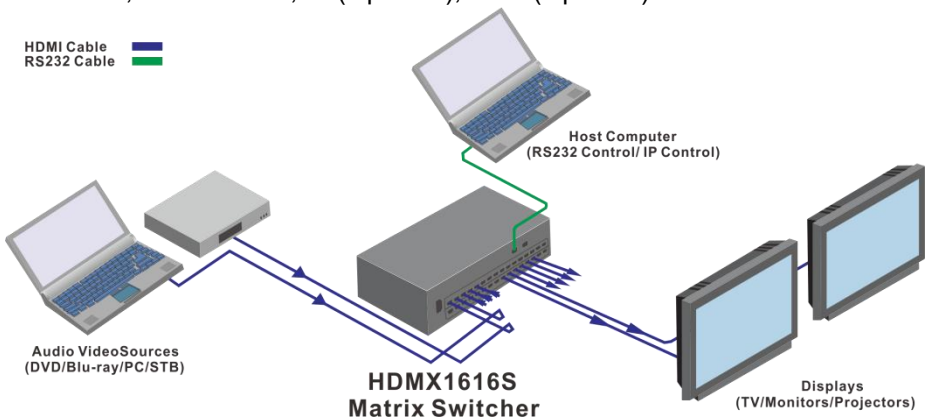
1. 2U standard chassis, easy installation.
2. Support HDMI1.4

3. HDCP Compliant
4. Supports high definition resolutions including: 3840 x 2160P@24/25/30Hz, 1080P@60Hz, 1080i, 720P and other standard video formats.
5. Reading and saving EDID from displays function.
6. With automatic EQ and amplification capabilities.
7. With signal recovery enhancements capabilities.
8. With on-site switching memory protection function.
9. Enhanced ESD electrostatic protection, special lightning protection circuit.
10. Allowing up to 16 channels HDMI audio video sources to be independently switched to 16 HDMI Monitors, HDTV Displays, or Projectors.
11. The front panel LCD screen can display the switching status, input signal characteristics and other information of each channel, which is clear and intuitive.
12. Controllable by IR Remote Control, Front Panel Buttons, RS232, RS485, PC software, IP (Optional), WIFI (Optional).

## Connection and Operation

### Matrix Connection

1. Connect HDMI Sources to HDMX1616S.
2. Connect HDMI Sinks to HDMX1616S.
3. Power On all the Devices.
4. Control the matrix by IR Remote Control, Front Panel Buttons, RS232, RS485, PC Software, IP (Optional), WIFI (Optional).

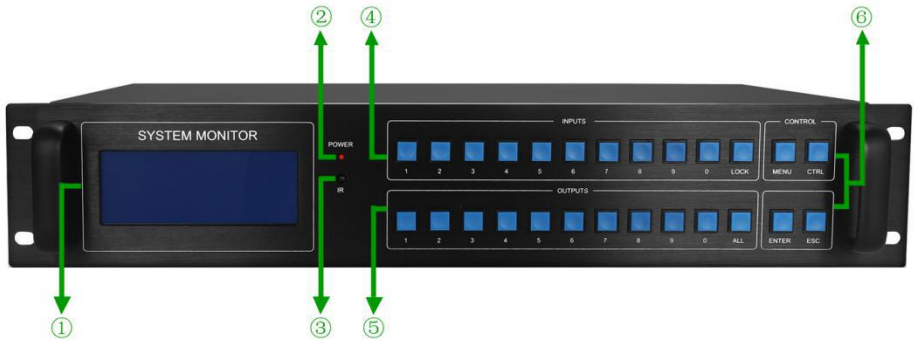


**Figure 2. Matrix Connection Diagram**

## Front Panel Button Control

### 1. Front Panel Review

- ① *LCD Screen* (Display current status of Input-to-Output,etc.).
- ② *Power Indicator* (Power On/Off status).
- ③ *IR Receiver* (Receive IR signal).
- ④ *Input Channels* (Press 01 to 16 to select Input Channels, button LOCK are disabled ).
- ⑤ *Output Channels* (Press 01 to 16 and button ALL to select Output Channels).
- ⑥ *Control Buttons* (MENU, CTRL, ENTER, ESC/ After pressing Input and Output buttons, press ENTER button to execute the operation, press ESC to cancel the operation).



**Figure 3.** Front Panel Review

### 2. Rear Panel Review

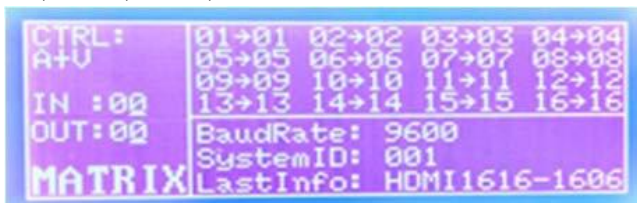
- ① Power On/Off
- ② Grounding (Connect to the ground)
- ③ Input Channels (Connected to Sources)
- ④ Output Channels (Connected to Sinks)
- ⑤ RS485 Port (Control the Matrix)
- ⑥ RS232 In (Connect to PC and Central Control)
- ⑦ RS232 Out (Connect to another serial port control device)
- ⑧ WIFI Control (Optional, support android tablet and android phone )
- ⑨ IP Control (Optional, device can be connected to router and being controlled through the internet).



**Figure 4. Rear Panel Review**

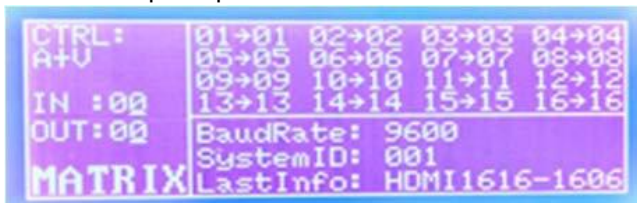
### 3. LCD Screen Display Menu

- ① IN: Input Channels
- ② OUT: Output Channels
- ③ As shown in the following figure, the signal status on the LCD display indicates that the Input Channels are routed out to Output Channels, that is, 1-1, 2-2, 3-3, 4-4, 5-5, 6-6, 7-7, 8-8, 9-9, 10-10, 11-11, 12-12, 13-13, 14-14, 15-15, 16-16.



**Figure 5. Matrix IN and OUT Status Display**

- ④ Switching Display Menu  
As shown in the following figure, it means that the input port 1 switches to output 1 port.



## Figure 6. Matrix Switching Status Display

### ⑤ Menu Operation

Press the MENU button on the front panel, the main menu of the matrix is displayed, including five sub-menus.



## Figure 7. Matrix Main Menu

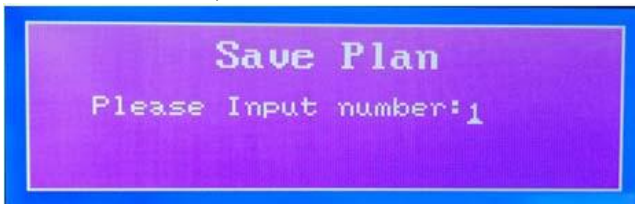
### A. Plan Management

To Save / Open the switching scheme, press 1 to enter the sub-menu, as shown below:



## Figure 8. Matrix Plan Management

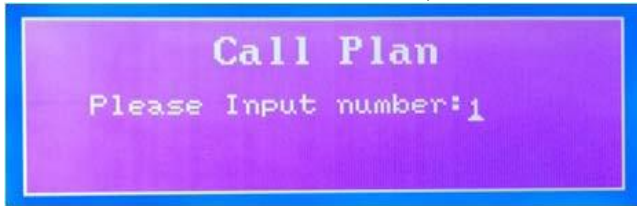
- i) Press 1 to select the Save Plan. Enter the program number (press input channel button), then Press the ENTER button to confirm and save, as shown below:



## Figure 9. Save Plan Management



- ii) Press 2 to select the Call Plan (saved program). Enter the saved program number (press input channel button), then Press the ENTER button to confirm and save, as shown below:



**Figure 10. Call Plan Management**

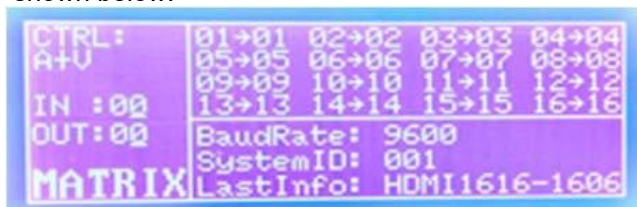
- B. View EQ & SW  
Unused for Matrix16\*16
- C. Set Fan & Buzzer  
Unused for Matrix16\*16

- D. System Set  
Factory Reset and Set the LCD Display-Backlight-Off time. Press input channel button 4 to select the sub-menu, as shown below:



**Figure 11. Matrix System Setup**

- i) Press input channel button 0 to enter factory reset interface, as shown below:



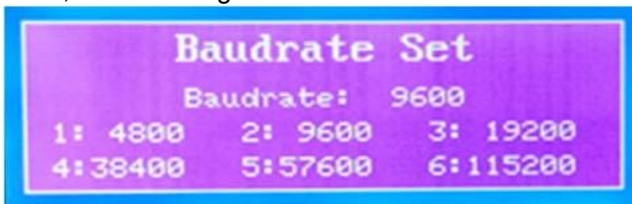
## Figure 12. Factory Reset Setup

- ii) Press input channel buttons to select the LCD display off time: 1: 10s; 2: 20s; 3: 30s; 4: 40s; 5: 50s; 6: 60s, then Press the ENTER button to confirm.
- E. Communication  
Press input channel button 5 to enter the sub-menu, as shown below:



## Figure 13. Communication Setup

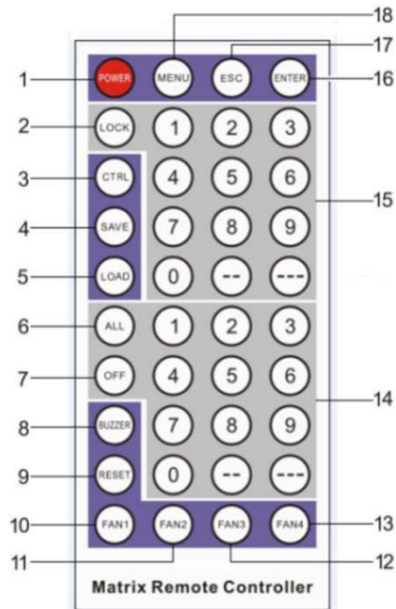
- i) ID Code Mode Setup  
Reserved setting function. Single matrix does not use this function. Multi-matrix splicing control use this function.
- ii) Press the input channel button 2 to enter the baud rate setting interface as shown in the following figure: 1 means 4800. 2 means 9600. 3 means 19200. 4 means 38400. 5 means 57600. 6 means 115200. The baud rate is best to factory defaulted settings data, do not change.



## Figure 14. Baud Rate Setup

- iii) IP Address is not available (optional configuration).

## IR Remote Control



**Figure 15.** IR Remote Control

Item	Button	Function
1	POWER	Turns On/Off the display screen
2	LOCK	Disable
3	CTRL	Disable
4	SAVE	Save Current Matrix Plan
5	LOAD	Calling Set Matrix Plan
6	ALL	Select all the Output channels
7	OFF	Disable
8	BUZZER	Disable
9	RESET	Factory Reset

10	FAN1	Disable
11	FAN2	Disable
12	FAN3	Disable
13	FAN4	Disable
14	OUTPUT BUTTON	Select the Output Channels
15	INPUT BUTTON	Select the Input Channels
16	ENTER	Confirm the Operation
17	ESC	Cancel The Last Operation
18	MENU	Menu Contains 5 Sub-menus

## EDID Management

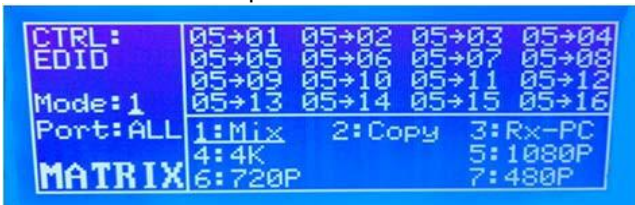
The matrix has two ways to read the EDID. The factory default setting is Automatic Read Mode.

### 1. Automatic Read Mode

HDMX0808S matrix can automatically read EDID. When the matrix output port is connected to the display devices, the matrix will automatically read the Sinks EDID information, and then analyse all the Sinks EDID information, combine a most suitable EDID and send it to the Inputs. As long as the output ports has a plug-in and plug-out actions, the matrix will re-analyse and re-combine the EDID based on the latest EDID information.

### 2. Manual Read EDID

Long press the CTRL button to enter CTRL EDID Mode. The LCD screen displays the current EDID Mode, as shown below, and there are 7 different EDID modes that can be setup in the matrix.



**Figure 16.** Manual Read EDID Mode

When the matrix enters the EDID SET mode, The EDID 1 to EDID 7 corresponds to 7 different EDID modes respectively, and can be selected by the Input buttons. PORT numbers corresponds to the Input Port that needs to set, and can be selected by the Output buttons. All Input Channel EDID can be set the same (select ALL button as shown above) or can be set different by each channel (press input buttons to set it up). After selecting EDID mode and PORT, press ENTER button to confirm the selection.

Below are 7 types of EDID modes:

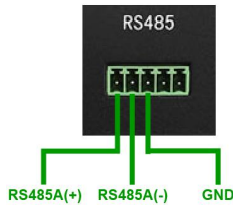
- ① Mix Mode  
Press the Input button 1 to select Mix Mode (Automatic Read EDID Mode).
- ② Copy Mode  
Press the Input button 2 to select Copy Mode. In this mode, by default, the matrix reads the EDID information of the Sink connected to a single Output Channel in a sequence from Port 01 to Port 16 till it detects the first valid EDID information, and send it to the Inputs.
- ③ Rx-PC Mode  
Press the Input button 3 to select Rx-PC Mode. In this mode, the matrix EDID information is controlled by host PC software.
- ④ 4K Mode  
Press the Input button 4 to select 4K Mode.
- ⑤ 1080P Mode  
Press the Input button 5 to select 1080P Mode.
- ⑥ 720P Mode  
Press the Input button 6 to select 720P Mode.
- ⑦ 480P Mode  
Press the Input button 7 to select 480P Mode.

### **Serial Port Control**

The matrix provides RS485 (See Figure 17), RS-232 IN and RS-232 OUT serial ports for control (See Figure 18). RS232 IN port connects with PC, while RS232 Out port connects to other devices that require communication to PC through RS232 protocols. This matrix can cascade with multiple devices, signal input through RS-232 IN, output through RS-232 OUT to other devices, so that all the cascade devices can be controlled by the same Host PC or Central Control, which saves extra serial ports.

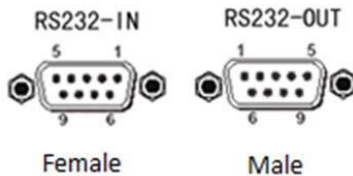
1. RS485 Communication Port

RS485 Port Pinout from left to right: RS485A(+), RS485B(-), GND as shown below:

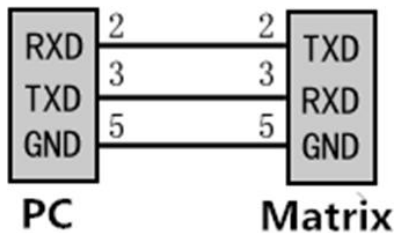


**Figure 17. RS485 Port Pinout**

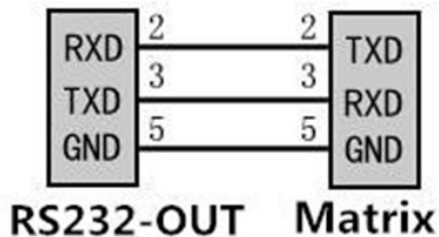
2. RS232 Serial Port Control



**Figure 18. RS232 Control Ports**



**Figure 19. RS232 IN Pinout**



## Figure 20. RS232 OUT Pinout

RS232 IN Port (D-SUB9F) Function Description

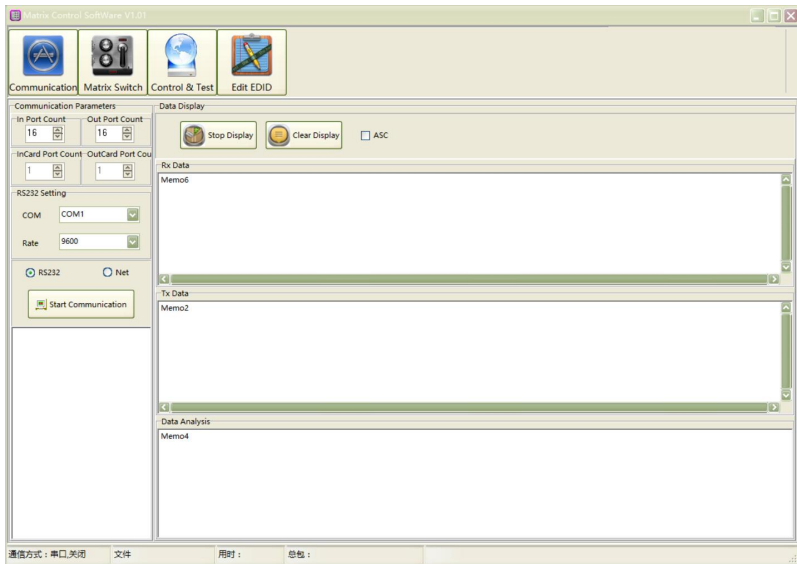
Pin	Function
1	--
2	TXD
3	RXD
4	--
5	GND
6	--
7	--
8	--
9	--

RS232 OUT Port (D-SUB9F) Function Description

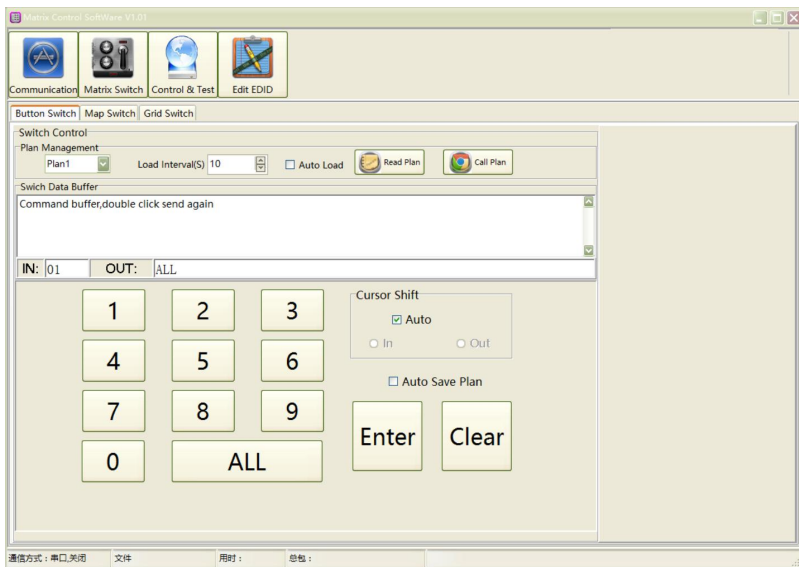
Pin	Function
1	--
2	RXD
3	TXD
4	--
5	GND
6	--
7	--
8	--
9	--

### Steps:

- 1) Connect the Matrix Switcher to the PC through the RS232 cable.
- 2) Select the correct Serial Port in the Host Computer, and control the Matrix Switcher by the Host Computer Software. Or integrate RS232 protocols into your Central Control System.
- 3) Matrix Control Software
  - ① Communication

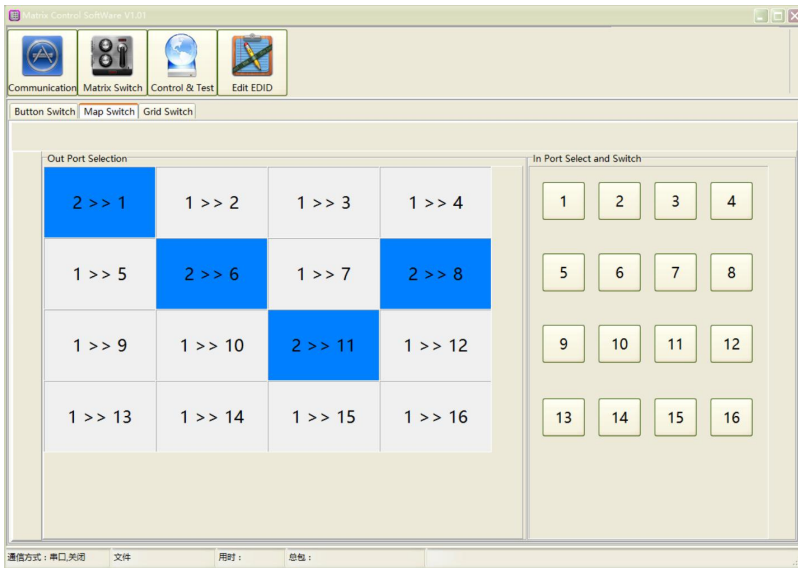


## ② Matrix Switch (Button Switch)



## ③ Matrix Switch (Map Switch)





#### ④ Matrix Switch (Grid Switch)

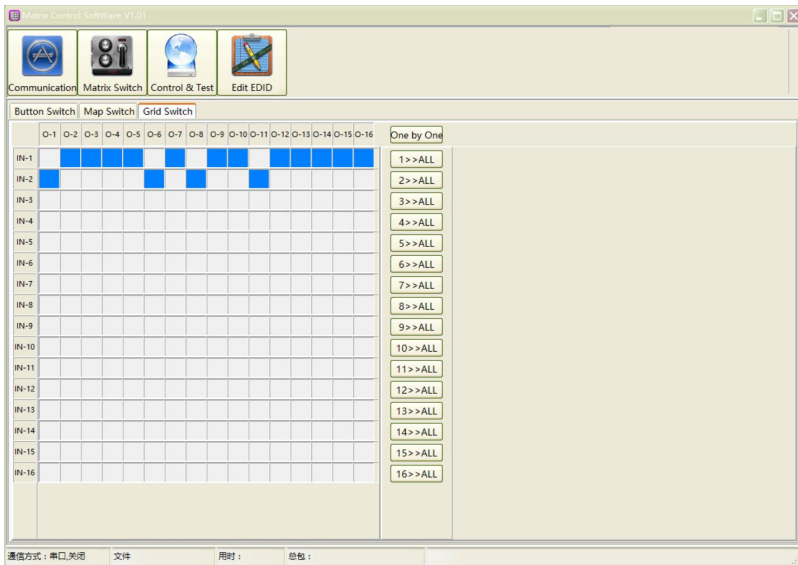


Figure 21. Matrix Control Software (①②③④)

#### 4) RS232 Serial Port Control Protocols

Baud Rate: 9600

Data Bits: 8

Start Bit: 1

Stop Bit: 1

Parity Bit: None

Matrix Compatible Protocols:

Protocols		Examples
*IXOY(!	*I01O02(!	1 input>>2 output
XVY.	01V02.	1 input>>2 output
*Y<X!	*02<01!	1 input>>2 output
X*Y!	01*02!	1 input>>2 output
X*Y%	01*02%	1 input>>2 output
<X,Y,V>	<1,2,V>	1 input>>2 output
XVY%	01V02%	1 input>>2 output
X,Y,V	1,2,V	1 input>>2 output

## Technical Specifications

INPUT	16xHDMI (Female) Minimum Level: 0.5Vp - p Maximum Level: 1.0Vp - p Differential Impedance: 100Ω Return Loss: - 30db@5MHz
OUTPUT	16xHDMI (Female) Input Level: 0.7Vp - p Differential Impedance: 100Ω Return Loss: - 30db@5MHz DC Compensation: 5mV(Max)

SIGNAL TYPE	HDMI1.4 specification HDMI - A all - digital T.M.D.S. signal
PROTOCOL	Support HDMI1.4 Protocol, compatible with DV11.0 Protocol
BANDWIDTH	Up to 340Mhz
SIGNAL RATE	Up to 10.2Gbps
RESOLUTION	MAX 4K@30Hz
VIDEO FORMAT	3840x2160P/1080P/1080i/720P/576P/480P/576i/480i
CONTROL	Panel Button/RS485/RS232/Remote Controller/PC software control/ IP (Optional)/ Wifi (Optional)
POWER CABLE	ACIN 176V - 264V
POWER CONSUMPTION	30~50W
OPERATION TEMPERATURE	0--45℃
RELATIVE HUMIDITY	10%-90% RHL non-condensing
ESD PROTECTION	Human - body Model: ±8kV(Air - gap discharge)/±4kV(Contact discharge)
PRODUCT DIMENSION	440mmx285mmx89mm (Lx W x H)
PACKING DIMENTION	560mmx340mmx245mm (Lx W x H)
WEIGHT	/
PACKING LIST	Matrix Switcher x1 Power Cable x1 RS232 Cable x1 User Manual x1

# Troubleshooting & Maintenance

## 1. No Power

- ① Check if the power cable is properly plugged into a power outlet.

## **2. No Image**

- ① Check that the Input signal source devices are turned on and well connected to the Matrix Switcher.
- ② Check that the displays are turned on and well connected to the Matrix Switcher.
- ③ Check the system connection status.
- ④ Check the all wiring cables are in a good condition.
- ⑤ Check whether the IR Remote Control and Front Panel Buttons are correctly functioned.
- ⑥ Check the quality of the wired HDMI cable, whether the HDMI cables meet HDMI 1.4 standard.

## **3. Image Blurring**

- ① Reconnect the connectors to prevent poor socket contact.
- ② Check the quality of the wired cable, whether the HDMI cables meet HDMI 1.4 standard.

## **4. IR Remote Control No Response**

- ① Check if the remote control battery pack is removed.
- ② Check if the remote control battery is no electricity.

# **After-Sales Service**

## **1. Product Warranty:**

We guarantee that our device will be free from defects in materials and workmanship for one year. The warranty period starts from the shipment delivery date as per the purchase order. Proof of purchase in the form of bill of sale or receipted invoice which are evidences that the device is within the warranty period must be presented to obtain warranty service.

Damages and malfunctions caused by deliberate actions, incorrect operations, self-dismantle repairing or force majeure etc. are not within the warranty policy. Device that exceeds the warranty period for repairing will be charged for a repairing fee and two way shipment freight.

## **2. Technical Support:**

For more questions or technical issues, please try to get help from the importer or your local distributor.