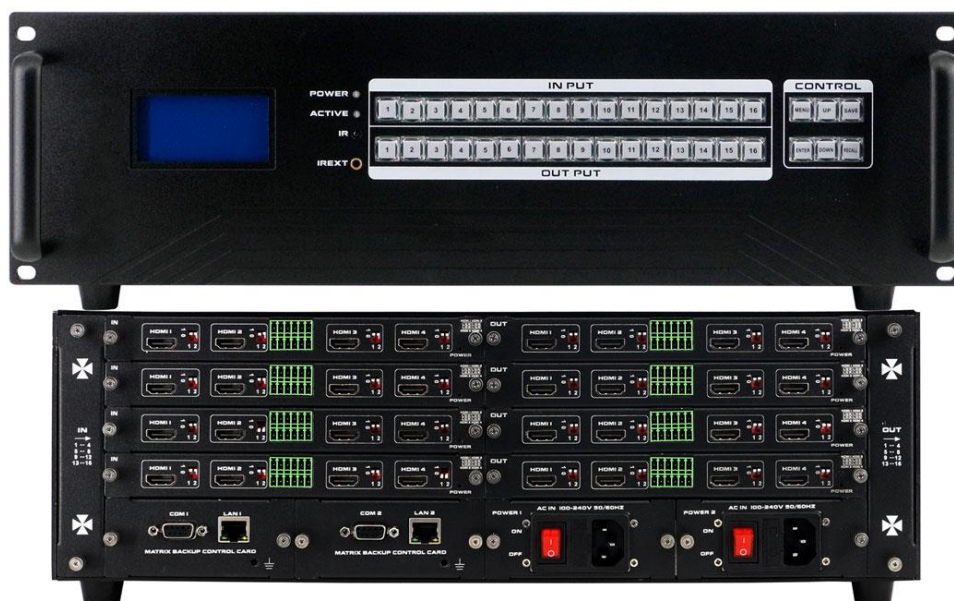


1-card 4-port Modular Matrix Switcher



Preface

We are honored for your purchasing of our products. In order to have the best performance of the products, please read the user manual carefully before using them. Hope this user manual can bring more convenience, and please don't hesitate to get in touch with us or your local dealer if you have any issue during your usage.

Note: This user manual is for 16x16 matrix switch, the 4x4 and 8x8 also can reference this user manual.

SAFETY REMINDER



To protect the device and operating personnel from electrostatic discharge, you need to check and ensure that the device is grounding well before the device is powered on. Please observe

the following when you install, use, maintain this equipment.



Attention the equipment needs good earth grounded

- Please use single-phase three wire system AC 220V power supply, and ensure all transmission system is grounding well.
- To protect operating personnel and the device, please turn off all power supplies and pull the plug before moving the device or doing some specific works which need to be done when the electricity is turned off . Please turn off the main power switch on rainy days or when not in use for a long time.
- Please do not put anything upon the cables, or tread the cables.
- To avoid damaging the device, please turn off power supply before plugging cable into the device or pulling cable from device. The damage caused by plugging/ pulling cables without turning off power supply is outside the scope of the warranty.
- The power of the device gives out heat when it works, so it' s necessary to keep the work environment ventilated to protect the device from the damage caused by over temperature.
- Do not place the device in very cold or very hot places. Do not sprinkle any corrosive chemicals or liquid on or around the device.
- To avoid accident or any further damage ,non-professionals please do not dismantle or maintain the device without permission.

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1. Product Introduction

The FM series modular matrix switcher series have 3 models: 16x16, 8x8 and 4x4. All the signal input and output cards using 1-card 1-port, wide range selections of the input and output cards, it provides users the most flexible configuration ability to meet with the real applications. And the 1080P and 4K60 I/O cards can reach any switching, converting, extension, resolution adjustment. Supports seamless or fast switching function, electromagnetic protection function, it can efficiently shield the electromagnetic interference for the surrounding environment to make sure the equipment running more stable.

The single channel signal switching speed can reach 12.5Gbps, and the main board is using Four core four links processing technology, the switching ability speed can reach 32Gbps. With uncompressed transmission technology for the digital signal to make sure the image High fidelity output. Unique signal links shielding designing technology to make sure the signal completeness, the internal data switch has super strong capacity of resisting disturbance and long continuous and stable working ability. Supports 7*24 continuously working and with dual LAN and RS232 backup control, it's convenient for users to control via PC, iPad, APP and the 3rd parties central control by the the RS232 control commands.

With the dual RS232 and LAN control, users also can simply set up and control the surrounding equipment, such as the projector, electric curtain and TVs.

This matrix switchers have been widely used in the conferencing, radio&television project, multimedia conferencing hall, large screen display project, television teaching, command control center and so on applications.

2. Product Features

- Modular designing chassis
- 4 channels 1 card, supports DVI-I/ HDMI/ 3GSDI/ HDBaseT/ Fiber to mix input and output

- Support seamless switching between all the signals
- 4-core 4 links processing chipset provides up to 32GBPS signal switching processing ability
- Front buttons with background lights, easier to operate at any time
- Support EDID automatic recognition and compatible with HDCP
- Support 3.5mm audio embedded and de-embedd function
- Support 4K60, HDMI2.0 444 digital HD video signal transmission and seamless switching
- Support 3D image frequency repairing, pixel reread processing function
- Support scaling up/down function via the DIP switch
- Support dual LAN ports backup control and centralization network management function
- Support hot-plug function
- Support auto saving protection and auto recovery function while power cut

3. Technical Datasheet

| | |
|-----------------------|--|
| Model | 16x16 |
| Description | 16x16 modular chassis |
| Input Card | 1-card 4-port, support HDMI, DVI, 3GSDI, VGA, HDBaseT, Fiber Optic |
| Output Card | 1-card 4-port, support HDMI, DVI, 3GSDI, VGA, HDBaseT, Fiber Optic |
| Protocol | HDMI1.4a/ HDMI2.0, DVI1.0, compatible with HDCP and EDID function |
| Color Space | RGB444, YUV444, YUV422, support x.v.Color extension color gamut standard |
| Resolution | 640x480---1920x1200@60Hz(VESA), 480i---4K30Hz(HDTV), 4K60Hz |
| Data Speed | 12.5Gbps |
| Transmission distance | 70/100m(Cat6), 80Km(Single-mode), 20m(Digital cable), 25m(Analog cable) |
| Control Methods | Broadcasting switching button, dual RS232+LAN control |
| Dimension | 482*390*138(3U)mm |
| Weight | 11.6KG(No cards) |
| Consumption | 21W(No cards) |
| Power Supply | AC 110V-240V 50/60HZ |

| | |
|--------------|------------|
| Working Temp | -10℃ - 50℃ |
| Storage Temp | -25℃ - 55℃ |

4. Packing Details

Matrix switch chassis with customized configuration1 unit

Power cord1 pcs

User manual1 pcs

5. Panel Diagram

Front Panel



| No. | Name | Description | |
|-----|------------|---|--|
| ① | LCD Screen | Operation information real-time Display | |
| ② | POWER | light up after power on, it will light off after power off | |
| ③ | ACTIVE | Flashing while using the buttons/ WEB switching successfully | |
| ④ | IREXT | IR remote control extension port | |
| ⑤ | OUTPUT | Input buttons with background light, from 1~9 input buttons | |
| ⑥ | INPUT | Output buttons with background light, from 1~9 output buttons | |
| ⑦ | CONTROL | MENU | Select between View, Switch, Scene Save/ Recall and Setup |
| | | UP | Upward and short cut button for switching to ALL outputs |
| | | SAVE | For saving the scene or setup |
| | | ENTER | Enter button |
| | | DOWN | Downward and short cut button for canceling to ALL outputs |

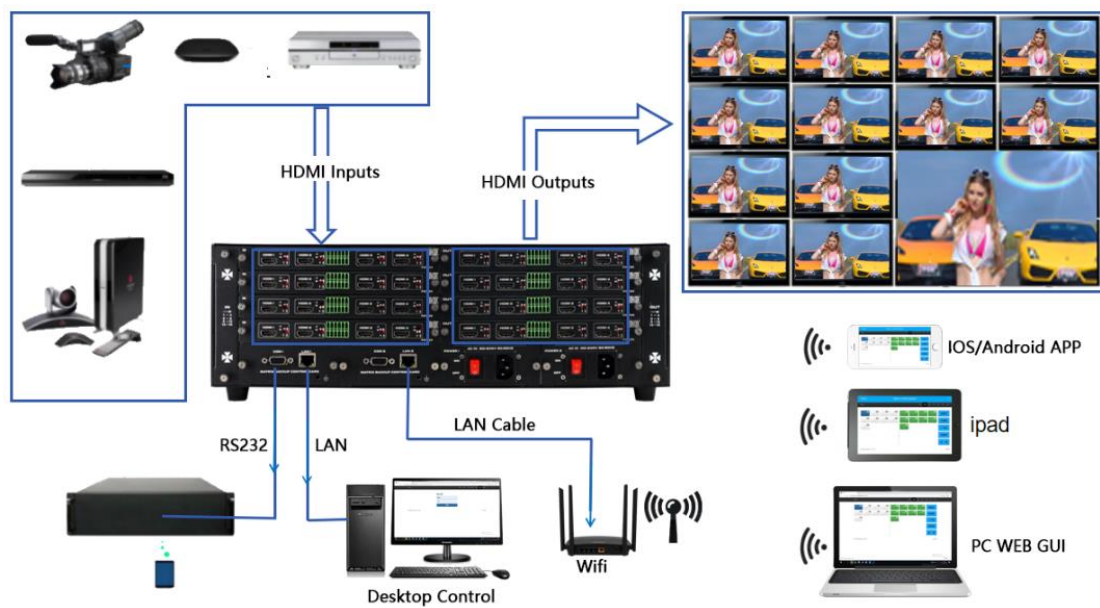
| | | | |
|--|--|--------|-------------------------------|
| | | RECALL | For recalling the saved scene |
|--|--|--------|-------------------------------|

Rear Panel:



| No. | Name | Description |
|-----|-------------------|--|
| ① | Cooling fans | Modular cooling fans |
| ② | Input card slots | Support 4 4-port 1-card input cards |
| ③ | 3-pin audio | For external audio embedded |
| ④ | Output card slots | Support 4 4-port 1-card output cards |
| ⑤ | 3-pin audio | For external 3.5mm audio de-embedded |
| ⑥ | LAN Ports | Dual LAN ports for WEB/TCP/IP control |
| ⑦ | RS232 Ports | Dual RS232 ports for 3 rd parties control |
| ⑧ | Power Port | AC 100V-240V 50/60Hz |
| ⑨ | Power Switch | Power ON/OFF switch with light |

6. Equipment Connection Diagram



7. Equipment Operation and Instruction

The LCD display screen will light up after power and turned on. It shows the current operation status, press MENU button, it will keep recycling between VIEW, SWITCH, SCENE, SETUP four different interface. The default interface is VIEW.

7.1 Font buttons switching operation

7.1.1 Switching operation

Switching with industry 2-key fast switching, first press the input button and then select/press output button. Details are as follow:

- There are 1~9 nine input buttons, 1~9 nine output buttons. First press MENU to show SWITCH interface, then can continue the next switching step
- Press input number at the INPUT area, the input button will light up with blue light
- Then press output number at the OUTPUT area, and the output button will light up. Users also can press the UP button to realize 1 to ALL switching.
- If need to cancel switching, can press the button again to cancel. Users also can press the DOWN button to cancel all outputs

7.1.2 Scene Operation

- The system can save 24 scenes, after switching successfully in the SWITCH interface, press MENU button and switch to SCENE interface.
- Enter the wanted scene save number(1~24), then press SAVE. If want to reload the saved scene, press the scene number and press RECALL button

Note: Via front buttons to save/recall scene, Mini99 only support 9 scenes, Mini1818 supports 18 scenes

7.1.3 Setup Operation

- First press MENU switch to SETUP interface, then continue next operation
- Via SETUP, it can realize IP address changing, in SETUP interface can use UP/ DOWN button to position, enter the needed IP address from the left button side, then press SAVE button to save

7.1.4 View Operation

- Via MENU button switch to VIEW interface, will display the current switching status

7.2 WEB Control

The default IP address are 192.168.0.80(LAN1) and 192.168.1.80(LAN2).

7.2.1 Login Operation

Accordingly to connected LAN port, enter the corresponding IP address, if using the LAN1, then enter 192.168.0.80 in the browse(Recommend with Google browse) as below:

Matrix Manager Switch Scene Caption Setup **Login** More ▾

Please login

username

password

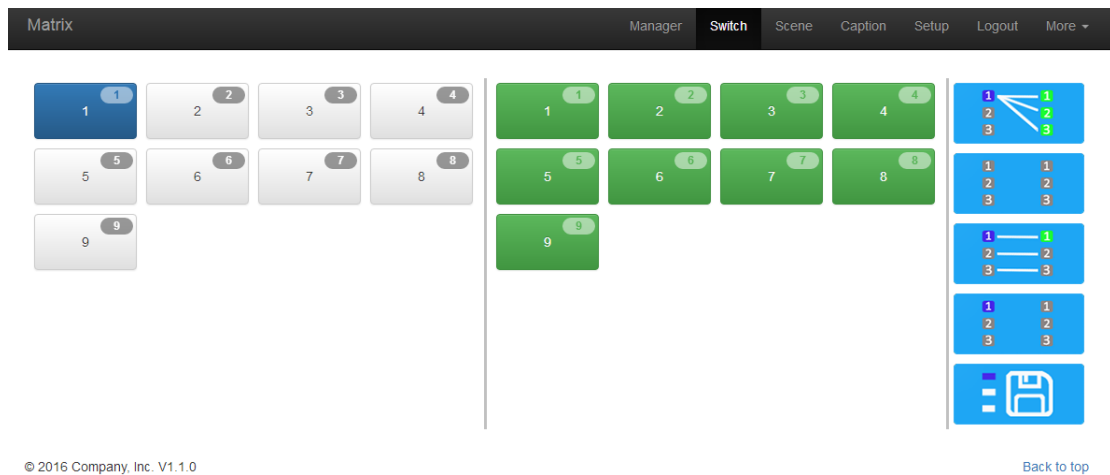
Login

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Note: The default user name and password is same: admin, click login after entering. Please make sure the control PC is at the same IP segment.

7.2.2 Switch

Switch interface:



The left side of the long string is input area: Mini99 will have 9 buttons, Mini1818 has 18 buttons, Mini3636 will have 36 buttons. The right side is output area, the buttons are the same with input area. And there're 5 buttons: The 1st for 1 to all, 2nd for 1 off to all, 3rd for 1 to 1, 4th for all off, the last one is for scene save and recall. (Change names can be done in Caption interface)

If need to switch 1 input to 1 output: First click the input number, then click the output number

If need to switch 1 input to many outputs: First click input number, then press all the needed output number

If need to switch 1 input to all outputs, first click input number, then click the 1st button at the right side

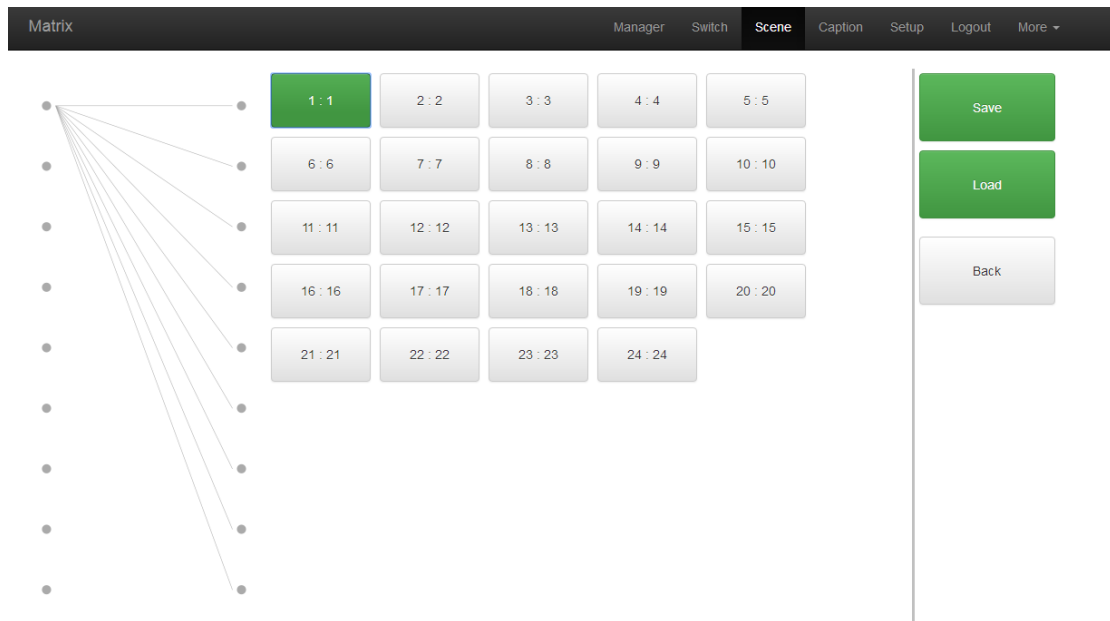
If need to switch off the input, first click the input number, then click the 2nd button at the right side

If need to switch 1 to 1, 2 to 2...., then just click the 3rd button at right side directly

If want to switch off all the input and output, then just click the 4th button at the right side directly

7.2.3 Scene

Scene Interface:



There're 24 scenes in the middle, can view the current switching status from left side, the right side are the Save, Load, Back buttons. (All scenes can be named in Caption interface)

If want to save the current switching status as the scene: Select the wanted scenes number(1~24), then click Save to save.

If want to recall the saved scenes: Select the wanted scene number(1~24), then click Load button to recall

Click Back button to return back the Switch interface.

7.2.4 Caption:

For changing the input, output and scenes' name

There are 3 parts on the left side, the first one is for Scene, middle one is for Input and the last one is for the Output. And there are 4 buttons on the right side, Clear for clearing all the names, Default for returning back to default status, Load is for syncing, click Load can recall all the saved names on the matrix, Save is for saving the current name changes to the matrix

Scene

| | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| 001 : <input type="text" value="1"/> | 002 : <input type="text" value="2"/> | 003 : <input type="text" value="3"/> | 004 : <input type="text" value="4"/> |
| 005 : <input type="text" value="5"/> | 006 : <input type="text" value="6"/> | 007 : <input type="text" value="7"/> | 008 : <input type="text" value="8"/> |
| 009 : <input type="text" value="9"/> | 010 : <input type="text" value="10"/> | 011 : <input type="text" value="11"/> | 012 : <input type="text" value="12"/> |
| 013 : <input type="text" value="13"/> | 014 : <input type="text" value="14"/> | 015 : <input type="text" value="15"/> | 016 : <input type="text" value="16"/> |
| 017 : <input type="text" value="17"/> | 018 : <input type="text" value="18"/> | 019 : <input type="text" value="19"/> | 020 : <input type="text" value="20"/> |
| 021 : <input type="text" value="21"/> | 022 : <input type="text" value="22"/> | 023 : <input type="text" value="23"/> | 024 : <input type="text" value="24"/> |

✕ Clear

↺ Default

⌂ Load

💾 Save

Input

| | | | |
|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| 001 : <input type="text" value="1"/> | 002 : <input type="text" value="2"/> | 003 : <input type="text" value="3"/> | 004 : <input type="text" value="4"/> |
| 005 : <input type="text" value="5"/> | 006 : <input type="text" value="6"/> | 007 : <input type="text" value="7"/> | 008 : <input type="text" value="8"/> |
| 009 : <input type="text" value="9"/> | | | |

Output

| | | | |
|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| 001 : <input type="text" value="1"/> | 002 : <input type="text" value="2"/> | 003 : <input type="text" value="3"/> | 004 : <input type="text" value="4"/> |
| 005 : <input type="text" value="5"/> | 006 : <input type="text" value="6"/> | 007 : <input type="text" value="7"/> | 008 : <input type="text" value="8"/> |

7.2.5 Manager

Centralization Manage interface:

Click Manager can realize many matrices centralized controlling

Matrix

Manager

Switch

Caption

Setup

Logout

More ▾

192.168.1.88

rename

open window

|

research

At the same local area network, it can control one to many matrices with same segment but different IP address, the most can control 254 units matrices. Such as the following IP are 192.168.1.81 are 192.168.1.88 two different matrices, and 192.168.1.81 is 40x40 matrix, and 192.168.1.88 is 10x10 matrix. Click research to find and control all the matrices. Also support rename the matrices' name, such as to change 192.168.1.81 as 1, then click 192.168.1.81 and enter number 1 and click rename. And rename 192.168.1.88 as 2. Check as following interface:

Also can click IP address to control at this interface:

2
192.168.1.88

1
192.168.1.81

1

rename

open window

|

research

1

2

3

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2
192.168.1.88

1
192.168.1.81

2

rename

open window

|

research

Table Socket 1

Table Socket 2

Mini Computer

Mi TV Box

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TV Wall 1

TV Wall 2

TV Wall 3

Projector

TV Wall 5

TV Wall 6

TV Wall 7

Samsung TV

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7.2.6 Setup

Set up interface:

System Reboot: for modifying the matrix configuration(IP address, Login password)

Ethernet: for changing IP address accordingly

Administrator: For changing the Login user name and password

Multifunction Buttons: For controlling the surrounding equipment

The screenshot shows the Matrix Setup interface. The browser address bar displays "192.168.0.80/setup.php". The top navigation bar includes "Matrix", "Manager", "Switch", "Scene", "Caption", "Setup" (highlighted with a red box), "Logout", and "More". A red arrow points to the "Setup" button with the text "Step 1: Click Setup".

Three modal windows are displayed:

- System**: A window titled "System" with the message "System will reboot". It has "Close" and "Reboot" buttons.
- Ethernet**: A window titled "Ethernet" with input fields for IP 1, Subnet 1, Gateway 1, IP 2, Subnet 2, and Gateway 2. The default values are 192.168.0.80, 255.255.255.0, 192.168.0.1, 192.168.1.80, 255.255.255.0, and 192.168.1.1 respectively. It has "Close", "Default", "Reload", and "Save" buttons.
- Administrator**: A window titled "Administrator" with input fields for Username (default: admin), Password, and Password Confirm. It has "Close", "Default", and "Save" buttons.

← → ↻ ⓘ Not secure | 192.168.0.80/setup.php

Username :

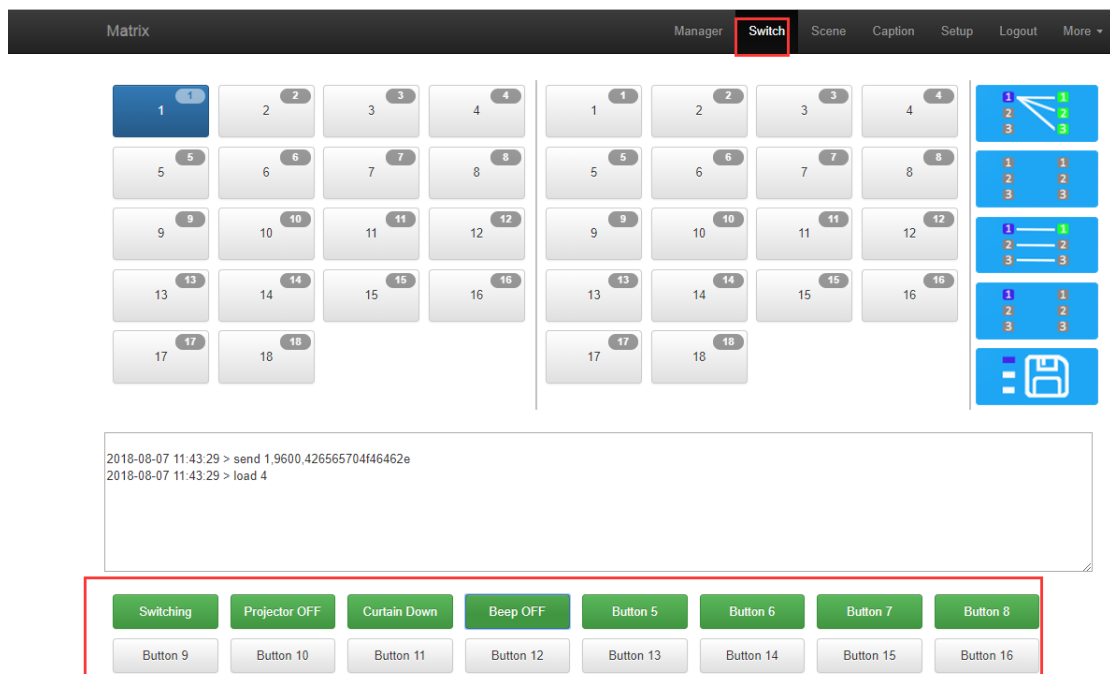
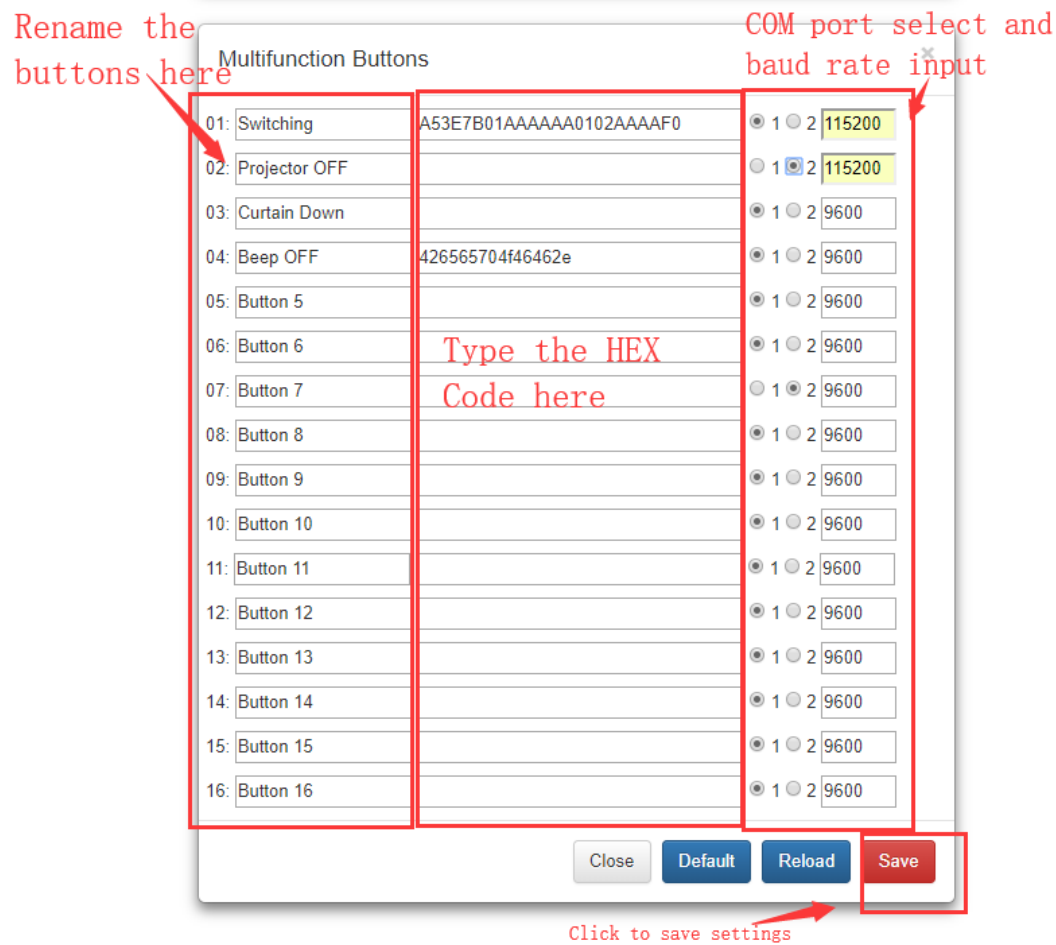
Password :

Password : Confirm

Multifunction Buttons

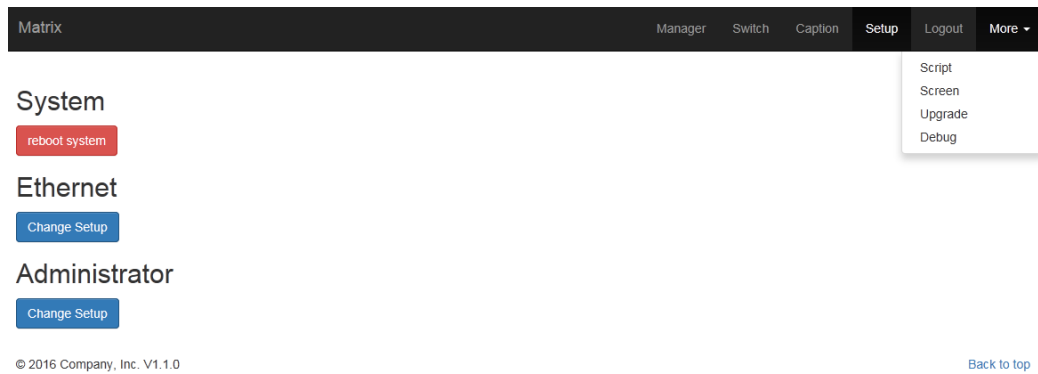
| | | | |
|---------------|---|--|-----------------------------------|
| 01: Button 1 | <input type="text" value="A53E7B01AAAAAA0102AAAAF0"/> | <input checked="" type="radio"/> 1 <input type="radio"/> 2 | <input type="text" value="9600"/> |
| 02: Button 2 | <input type="text"/> | <input checked="" type="radio"/> 1 <input type="radio"/> 2 | <input type="text" value="9600"/> |
| 03: Button 3 | <input type="text"/> | <input checked="" type="radio"/> 1 <input type="radio"/> 2 | <input type="text" value="9600"/> |
| 04: Button 4 | <input type="text"/> | <input checked="" type="radio"/> 1 <input type="radio"/> 2 | <input type="text" value="9600"/> |
| 05: Button 5 | <input type="text"/> | <input checked="" type="radio"/> 1 <input type="radio"/> 2 | <input type="text" value="9600"/> |
| 06: Button 6 | <input type="text"/> | <input checked="" type="radio"/> 1 <input type="radio"/> 2 | <input type="text" value="9600"/> |
| 07: Button 7 | <input type="text"/> | <input checked="" type="radio"/> 1 <input type="radio"/> 2 | <input type="text" value="9600"/> |
| 08: Button 8 | <input type="text"/> | <input checked="" type="radio"/> 1 <input type="radio"/> 2 | <input type="text" value="9600"/> |
| 09: Button 9 | <input type="text"/> | <input checked="" type="radio"/> 1 <input type="radio"/> 2 | <input type="text" value="9600"/> |
| 10: Button 10 | <input type="text"/> | <input checked="" type="radio"/> 1 <input type="radio"/> 2 | <input type="text" value="9600"/> |
| 11: Button 11 | <input type="text"/> | <input checked="" type="radio"/> 1 <input type="radio"/> 2 | <input type="text" value="9600"/> |
| 12: Button 12 | <input type="text"/> | <input checked="" type="radio"/> 1 <input type="radio"/> 2 | <input type="text" value="9600"/> |
| 13: Button 13 | <input type="text"/> | <input checked="" type="radio"/> 1 <input type="radio"/> 2 | <input type="text" value="9600"/> |
| 14: Button 14 | <input type="text"/> | <input checked="" type="radio"/> 1 <input type="radio"/> 2 | <input type="text" value="9600"/> |
| 15: Button 15 | <input type="text"/> | <input checked="" type="radio"/> 1 <input type="radio"/> 2 | <input type="text" value="9600"/> |
| 16: Button 16 | <input type="text"/> | <input checked="" type="radio"/> 1 <input type="radio"/> 2 | <input type="text" value="9600"/> |

Multifunction buttons set up, total we have 16 multifunction buttons at present. We can rename the buttons, Type the HEX code for each button, and baud rate select. Then click “Save”.



7.2.7 More:

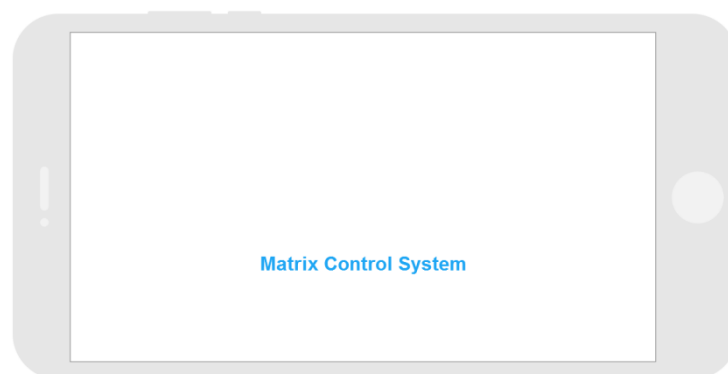
Upgrading: Click Upgrade can realize new software upgrading



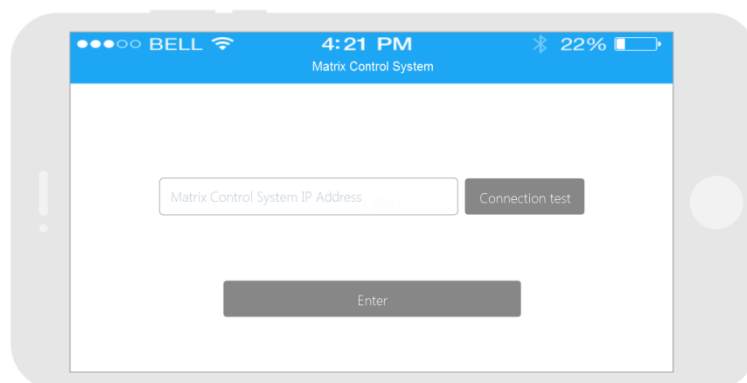
7.3 APP Control

It also can support IOS and Android APP control, users only need to well connected the matrix with the WIFI router or local network. Download the APP from the application store. The steps and interfaces show as below:

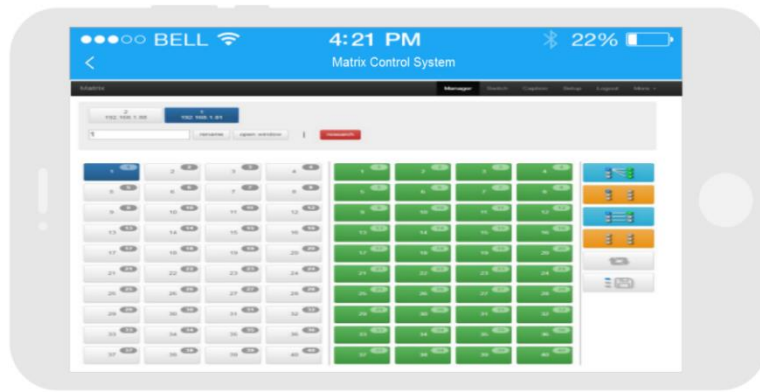
Step 1: Make sure the matrix well connected with the router or local network, and open the APP:



Step 2: Enter the IP address of the matrix:

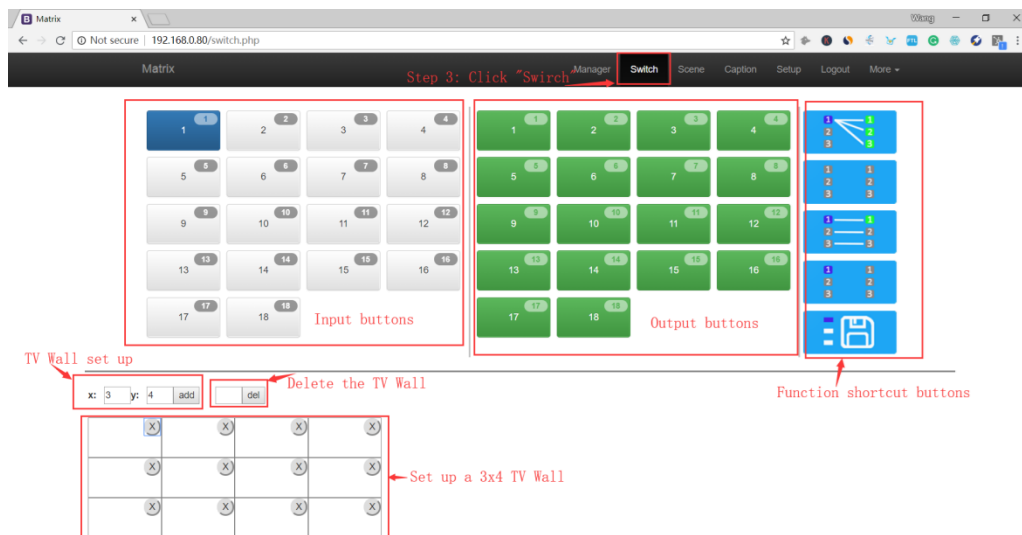


Step 3: After log in successfully, users can switch, change the inputs and outputs name directly.



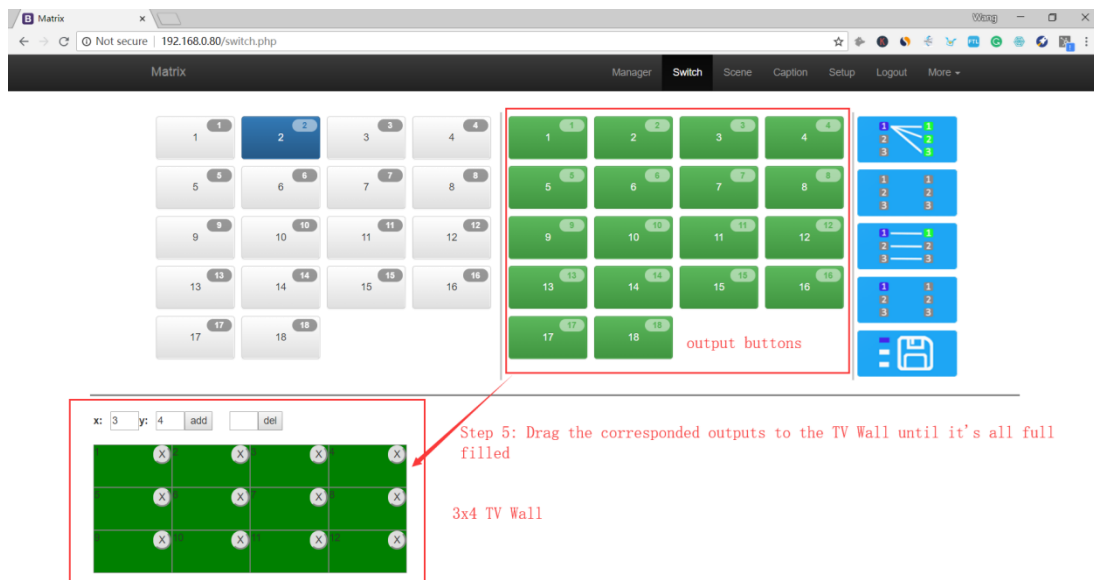
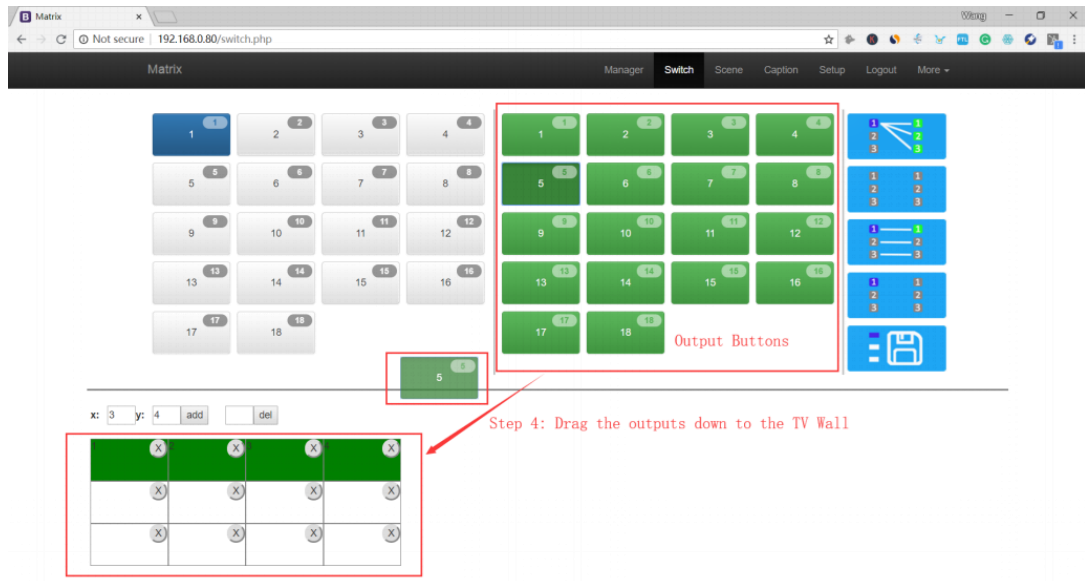
7.4 WEB GUI Video Wall Setup

After log in the system, under “Switch” interface, users can see the Video Wall setup or delete area:

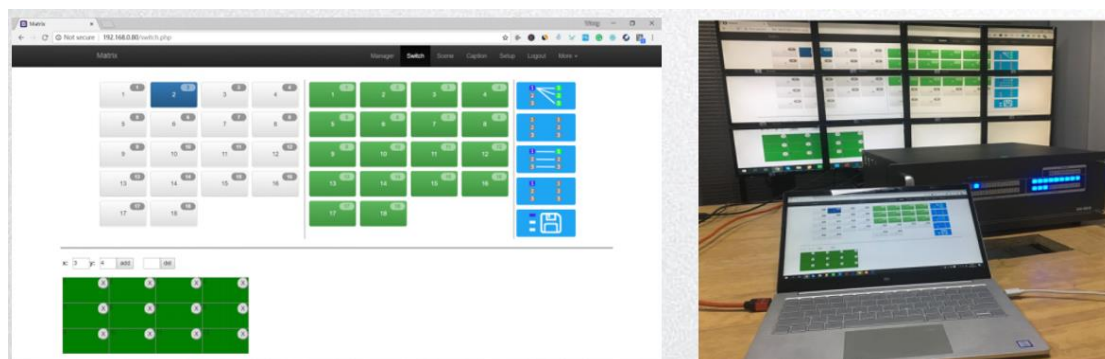


To setup a Video Wall, users only need to make sure the size of the Video Wall, such as a 3x4 video Wall, will only need to set “x:3, y:4”, then click “add”.

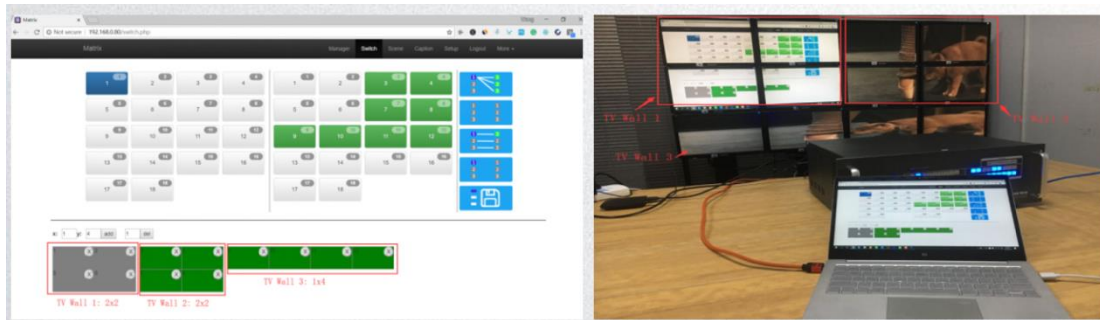
To Delete a video wall, will only need to enter the video wall number before the “del” icon.



Setup one 3x4 Video Wall:



Setup multiple Video Walls:



7.5 Central Control Commands

RS232 cable with straight-through connection(USB-RS232 can be used directly to control)

Communication protocol:

Baud rate: 115200

Data bit: 8

Stop bit: 1

Check bit: None

| Commands | Explanation | Function description |
|----------|--|---|
| YAll. | Y=1,2,3,4..... | Switch Input Y to all the outputs Eg. "1ALL." means switch input 1 to all outputs |
| All1. | One to one | Switch all the channels to be one to one. Eg.1->1, 2->2, 3->3..... |
| YXZ. | Y=1,2,3,4..... Z=1,2,3,4..... | Switch Input Y to Output Z Eg. "1X2." means switch Input 1 to output 2 |
| YXZ&Q&W. | Y=1,2,3,4..... Z=1,2,3,4..... Q=1,2,3,4..... W=1,2,3,4..... | Switch Input Y to Output Z, Q, W Eg. "1X2&3&4." means switch Input 1 to Output 2, 3, 4 |
| SaveY. | Y=1,2,3,4..... | Save current status to scene Y Eg. "Save2." means saving current status to Scene 2 |
| RecallY. | Y=1,2,3,4..... | Recall the saved scene Y Eg. "Recall2." means recall the saved Scene 2 |

| | | |
|----------|----------------|--|
| BeepON. | Beep sound | Buzzer on |
| BeepOFF. | | Buzzer off |
| Y?. | Y=1,2,3,4..... | Check the Input Y to outputs switching status Eg. "1?." means to check Input 1 switching status |

Note:

- Every command ends with a period "." and it can't be missing.
- The letter can be capital or small letter.
- Switch success will return as "OK", and failed will return as "ERR".

8. Trouble Shooting and Attention

No signal on the display?

- Make sure all the power code well connected
- Check the display switcher and make sure it's in good condition
- Make sure the the DVI cable between the device and display are short than 7 meters
- Reconnect the DVI cable and restart the system
- Make sure the signal sources are on
- Check the cables between the devices and displays are connected correctly.
- Dial the switcher 7 to 1, then dial the switcher1,2 and choose the corresponding inputs.
- Make sure the resolution less than WUXGA(1920*1200)/ 60HZ
- Make sure the display can support the output resolution.

9. After Sales

9.1 Warranty Information

The Company warrants that the process and materials of the product are not defective under normal use and service for 2 (2) year following the date of purchase from the Company or its authorized distributors.

If the product does not work within the guaranteed warranty period, the company will choose and pay for the repair of the defective product or component, the delivery of the equivalent product or component to the user for replacement of the defective item, or refund the payment which users have made.

The replaced product will become the property of the Company.

The replacement product could be new or repaired.

Whichever is longer, any replacement or repaired of the product or component is for a period of ninety (90) days or the remaining period of the initial warranty. The Company shall not be responsible for any software, firmware, information, or memory data contained in, stored in, or integrated with the product repaired by the customer's return, whether or not during the warranty period.

9.2 Warranty limitations and exceptions

Except above limited warranty, if the product is damaged by over usage, incorrectly use, ignore, accident, unusual physical pressure or voltage, unauthorized modification, alteration or services rendered by someone other than the Company or its authorized agent, the company will not have to bear additional obligations. Except using the product properly in the proper application or normal usage