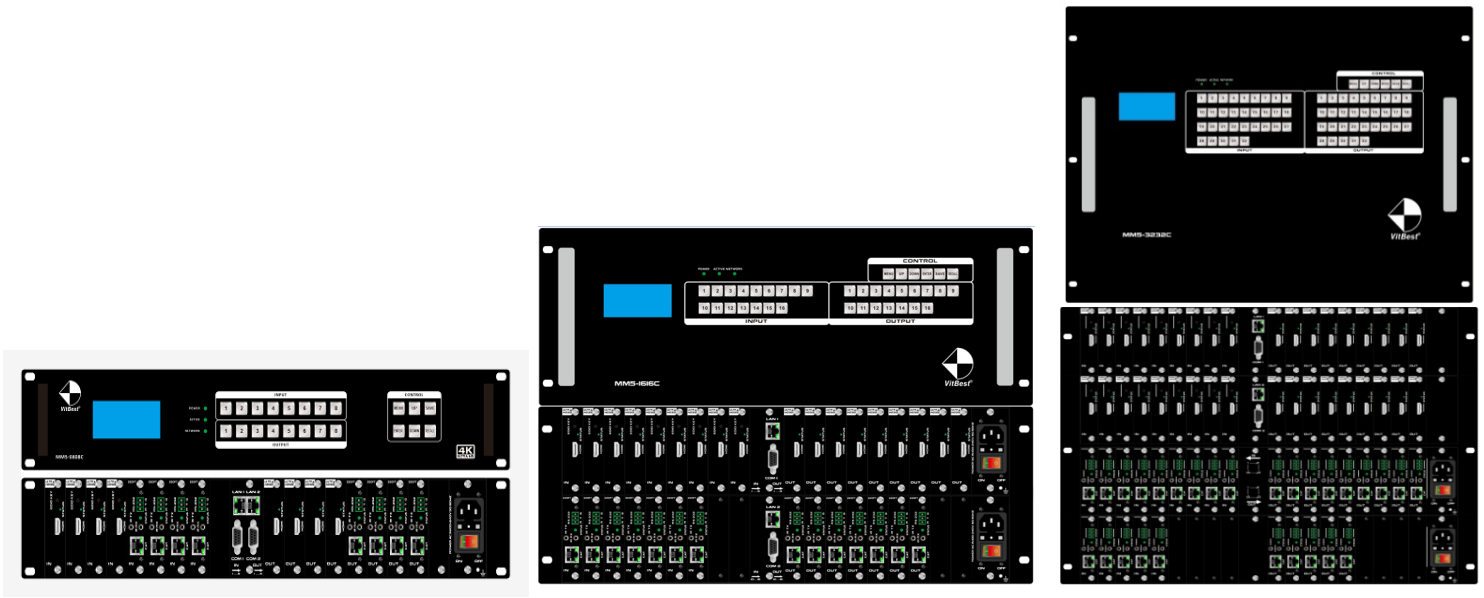
MM5-0808C/1616C/3232C

Modular Matrix Switcher of MM5 Series

User Manual

Ver. 1.4



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.

Contents

1. Product Introduction

The VitBest's MM5 series modular matrix switcher has 3 models: MM5-0808C/1616C/3232C. 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;
- 1 channel 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 t0 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-embedded function;
- Support 4K60, HDMI2.0 4:4:4 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

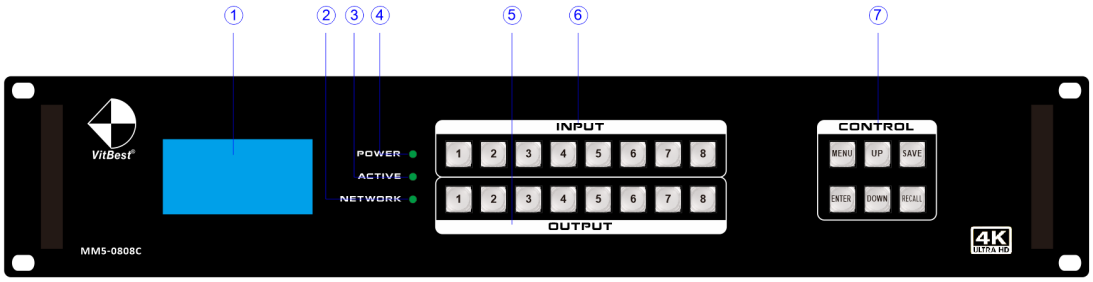
Model	MM5-0808C	MM5-1616C	MM5-3232C
Description	8x8 modular chassis	16x16 modular chassis	32x32 modular chassis
Input Card	1 Channel 1 Card, support HDMI, DVI, 3GSDI, VGA, YPBPR, CVBS, HDBaseT, Fiber Optic		
Output Card	1 Channel 1 Card, support HDMI, DVI, 3GSDI, VGA, YPBPR, CVBS, HDBaseT, Fiber Optic		
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*88(2U)mm	482*390*178(4U)mm	482*390*355(8U)mm
Weight	6KG(No cards)	12.5KG(No cards)	25KG(No cards)
Consumption	17W(No cards) 57W (With MC5-IN-HDMI Input Card x 8pcs & MC5-OUT-HDMI Output Card x 8pcs **Capacity of Power Supply: 300W**	21W(No cards). 21W(Without cards) 101W (With MC5-IN-HDMI Input Card x 16pcs & MC5-OUT-HDMI Output Card x 16pcs **Capacity of Power Supply: 300W**	30W(No cards). 190W (With MC5-IN-HDMI Input Card x 32pcs & MC5-OUT-HDMI Output Card x 32pcs **Capacity of Power Supply: 500W**
Power Supply	AC 110V-240V 50/60HZ		
Working Temp	-10℃ - 50℃		
Storage Temp	-25℃ - 55℃		

4. Packing Details

Matrix switch chassis with customized configuration .....1 unit
Power cord .....1 pcs

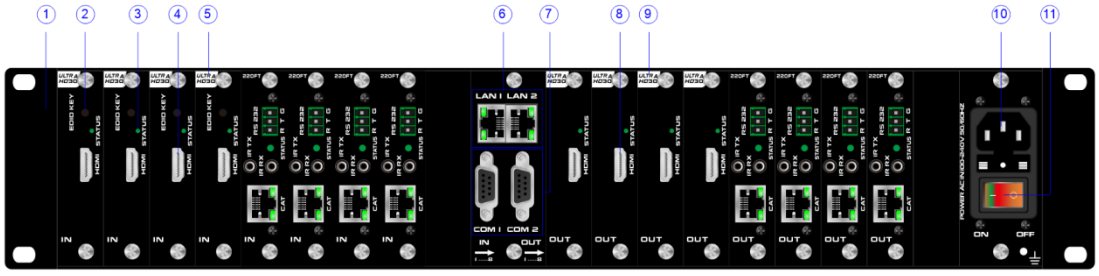
5. Panel Diagram

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	NETWORK	Flashing while using the WEB control operation	
⑤	OUTPUT	Output buttons with background light, from 1~9 input buttons	
⑥	INPUT	Input 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

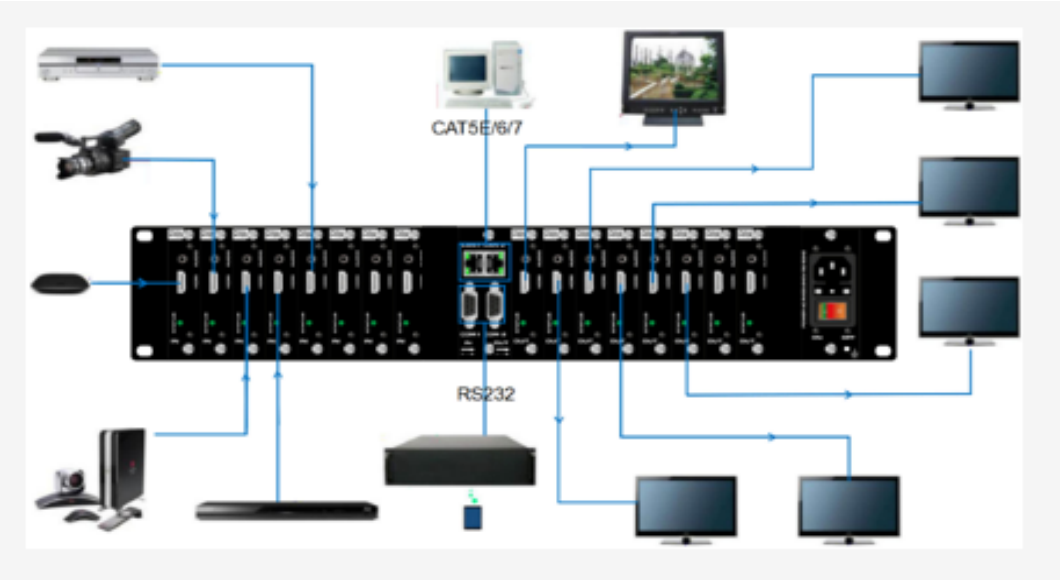
Rear Panel:



No.	Name	Description
①	Rack ear	For installing on the 19 inch Rack Cabinet
②	EDID key button	For reading and learning EDID
③	Status Indicator	Power on indicator

④	HDMI port	HDMI input card
⑤	Input slots	Supports DVI/HDMI/SDI/VGA/CVBS/YPbPr/FIBER/HDBaseT input
⑥	LAN Ports	Dual LAN ports for WEB/TCP/IP control
⑦	RS232 Ports	Dual RS232 ports for 3rd parties control
⑧	HDMI port	HDMI output card
⑨	Output slot	Supports DVI/HDMI/SDI/VGA/CVBS/YPbPr/FIBER/HDBaseT output
⑩	Power Port	AC 220V-240V 50/60Hz
⑪	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 1~8 eight input buttons, 1~8 eight 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 with

blue light. Users also can press the UP button to realize 1 to ALL switching;

- If need to cancel switching, can press the UP button again to cancel. Users also can press the DOWN button to cancel all outputs.

7.1.2 Scene Operation

- The system can save 40 scenes, after switching successfully in the SWITCH interface, press MENU button and switch to SCENE interface;
- Enter the wanted scene save number(1~40), 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 scenes, the 8x8 only support 8 scenes, 16x16 only supports 16 scenes, 32x32 only supports 32 scenes due to the chassis limits.

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

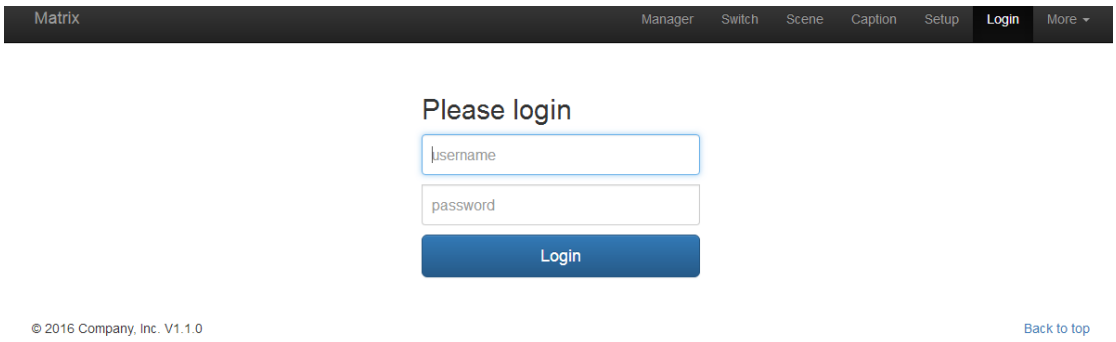
- Via MENU button switch to VIEW interface, will display the current switching status.

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

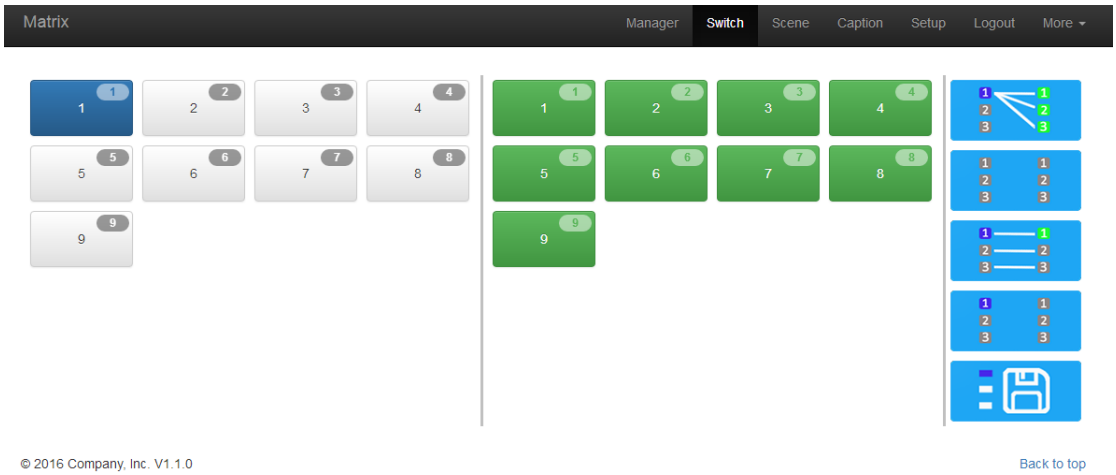
Accordingly to connected LAN port, enter the corresponding IP address, if using the LAN1, then enter 192.168.0.80 in the browse(Recommend with Google browse) as below:



Note: The default user name and password is the 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: MM5-0808C has 8 buttons, MM5-1616C has 16 buttons, MM5-3232C has 32 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

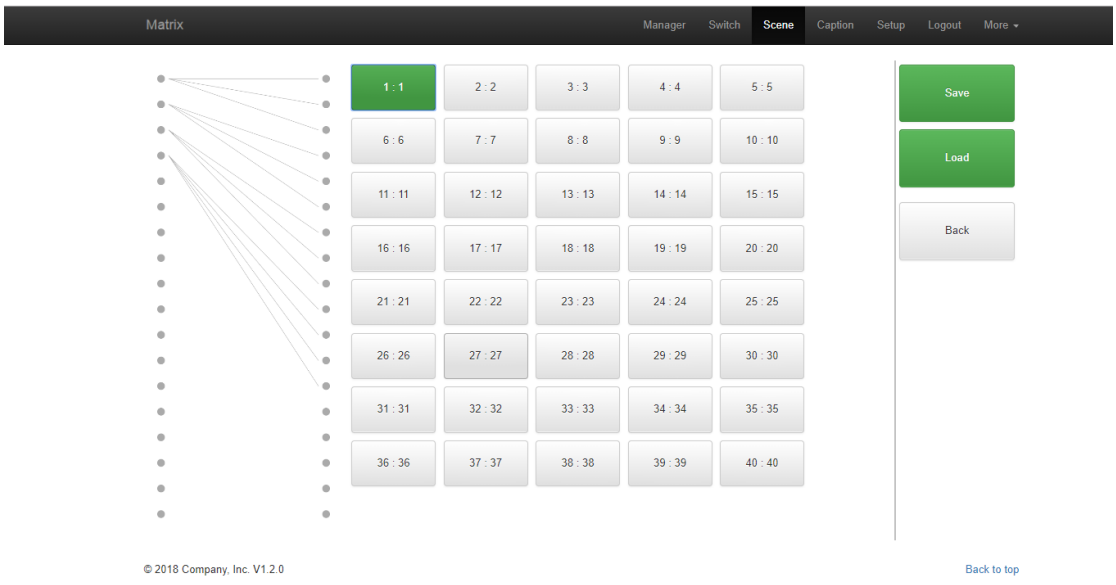
If need to switch off the input, first click the input number, then click the 2nd button at the right side

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 40 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.

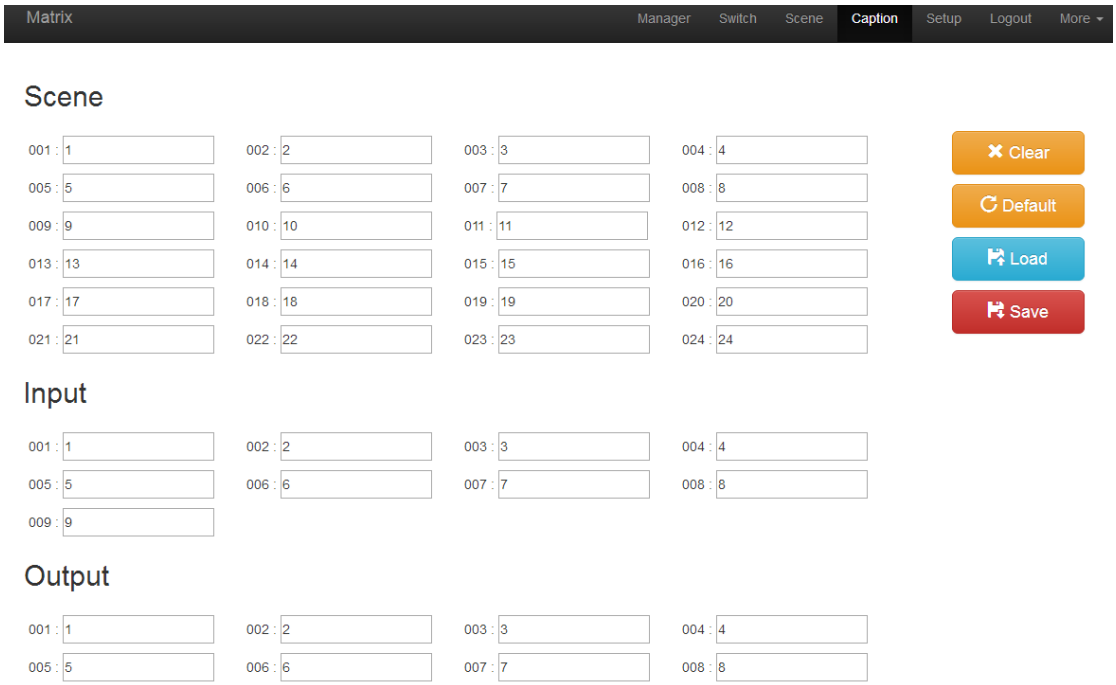
If want to recall the saved scenes: Select the wanted scene number in the middle, then click Load button to recall

Click Back button to return back the Switch interface.

7.2.4 Caption:

For changing the input, output and scenes' name

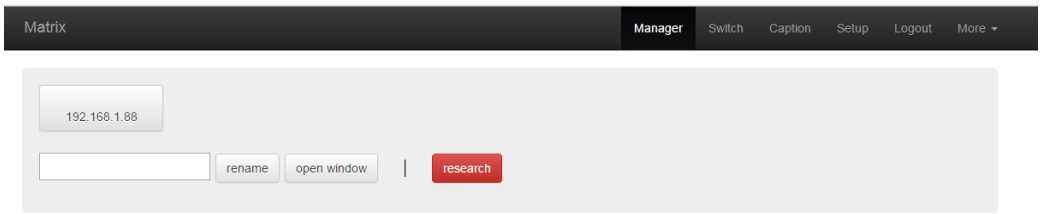
There are 3 parts on the left side, the first one is for Scene, middle one is for Input and the last one is for the Output. And there are 4 buttons on the right side, Clear for clearing all the names, Default for returning back to default status, Load is for syncing, click Load can recall all the saved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



7.2.5 Manager

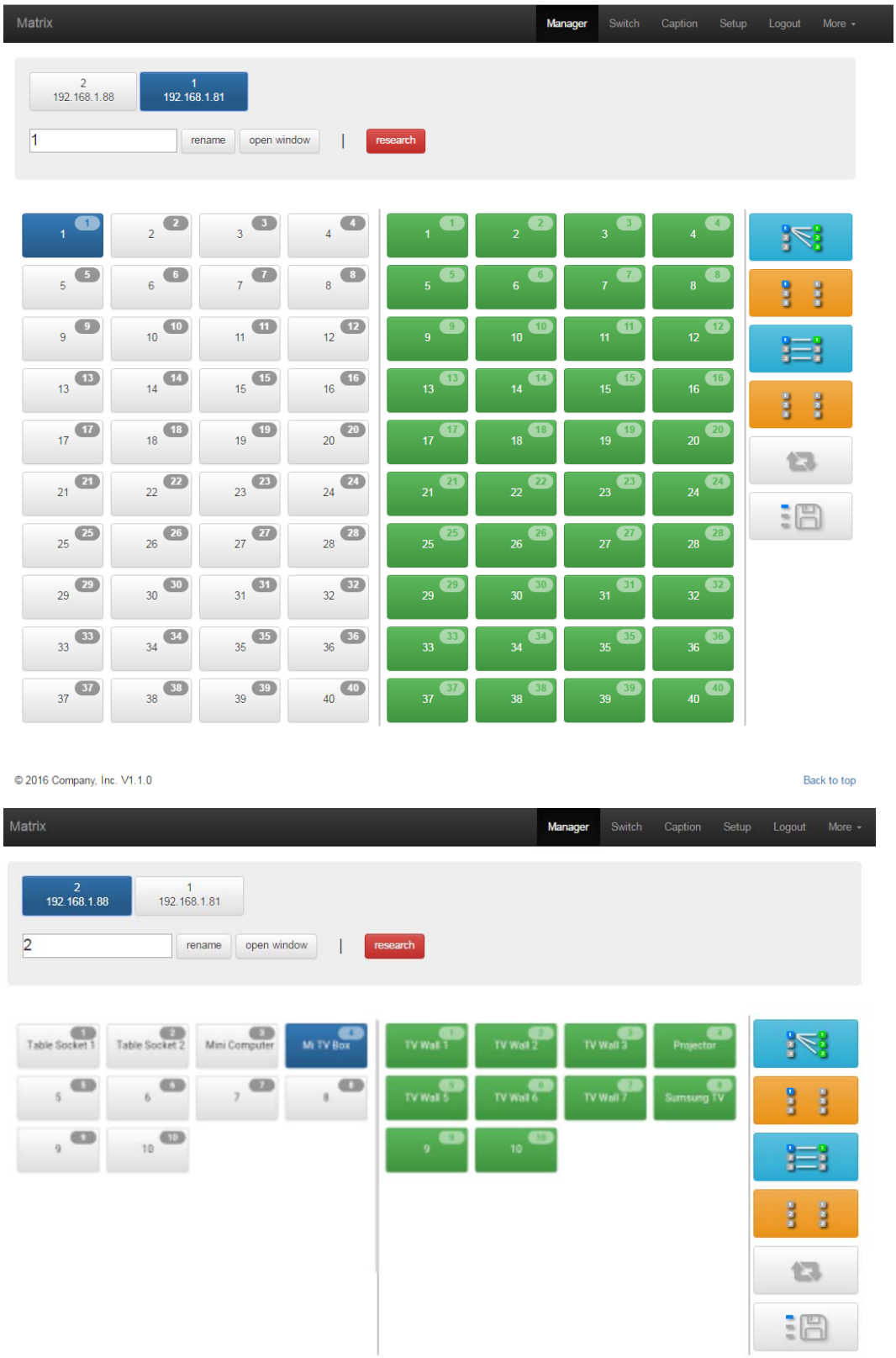
Centralization Manage interface:

Click Manager can realize many matrices centralized controlling



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:



7.2.6 Setup

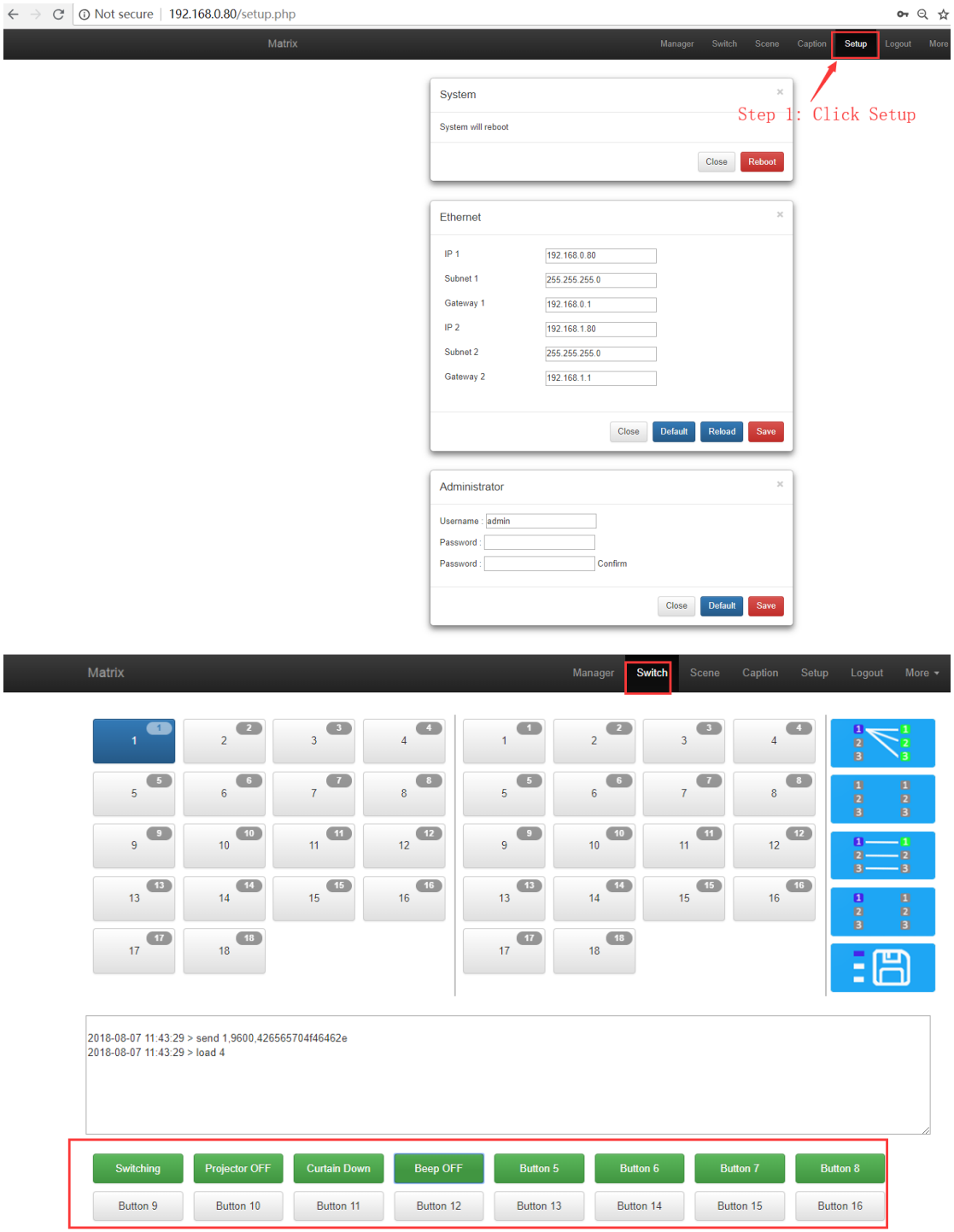
Set up interface:

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

Ethernet: for changing IP address accordingly

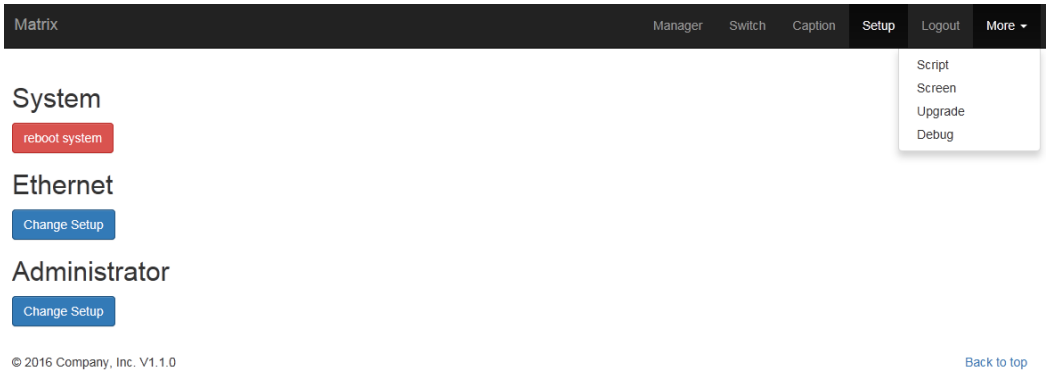
Administrator: For changing the Login user name and password

Multifunction Buttons: For controlling the surrounding equipment



7.2.7 More:

Upgrading: Click Upgrade can realize new software upgrading



7.3 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 （important ）:

- **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".**

- 1, 2, 3, 4 are the input/ output number, it depends on the controlling matrix. Such as it's a 8x8, then the effective range is 1~8, if beyond this range will be treated as error commands.
- Commands controlling examples:

Switch input 1 to all outputs: 1All.

Eg. Switch input 3 to all outputs: 3All.

Switch as one to one: All1.

Eg. After sending commands All1. , the current switching status will be 1->1, 2->2,……

Switch commands: 1X2. and **1X2&3&4.**

Eg 1. Switch input 3 to output 5: 3X5.

Eg 2. Switch input 3 to output 5, 6, 7, 8: 3X5&6&7&8.

Save current switching status to Mode Y: SaveY.

Eg. Save the current switching status to mode 7: Save7.

Recall the saved mode Y: RecallY.

Eg. Recall the saved mode 7: Recall7.

Buzzer on and off:

Buzzer on can hear a beep sound while switching: BeepON.

Buzzer off can't hear the beep sound while switching: BeepOFF.

Detail for : UDP&TCP Client and RS232 to control the Modular Matrix Switcher

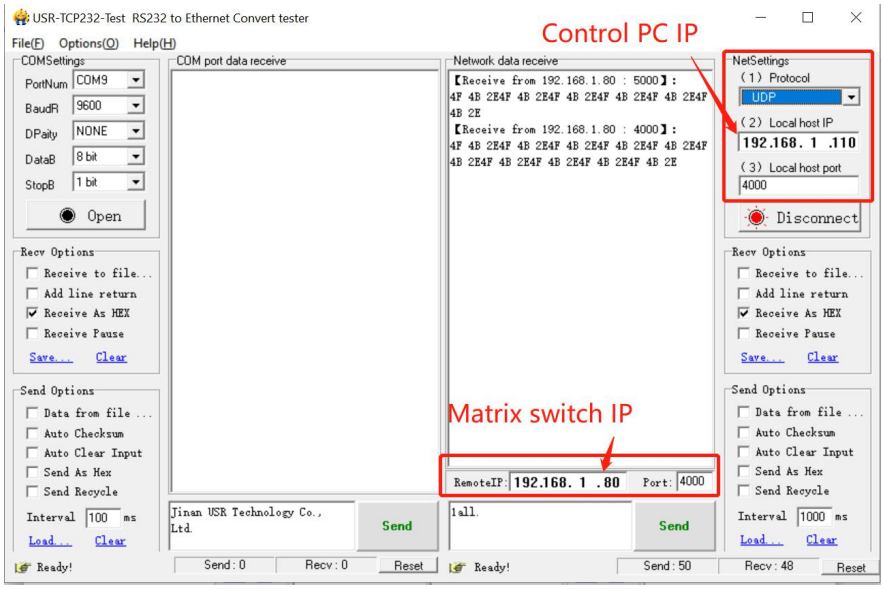
The modular matrix switcher series can support the UDP&TCP&Serial/COM port control, please see the steps in as below:

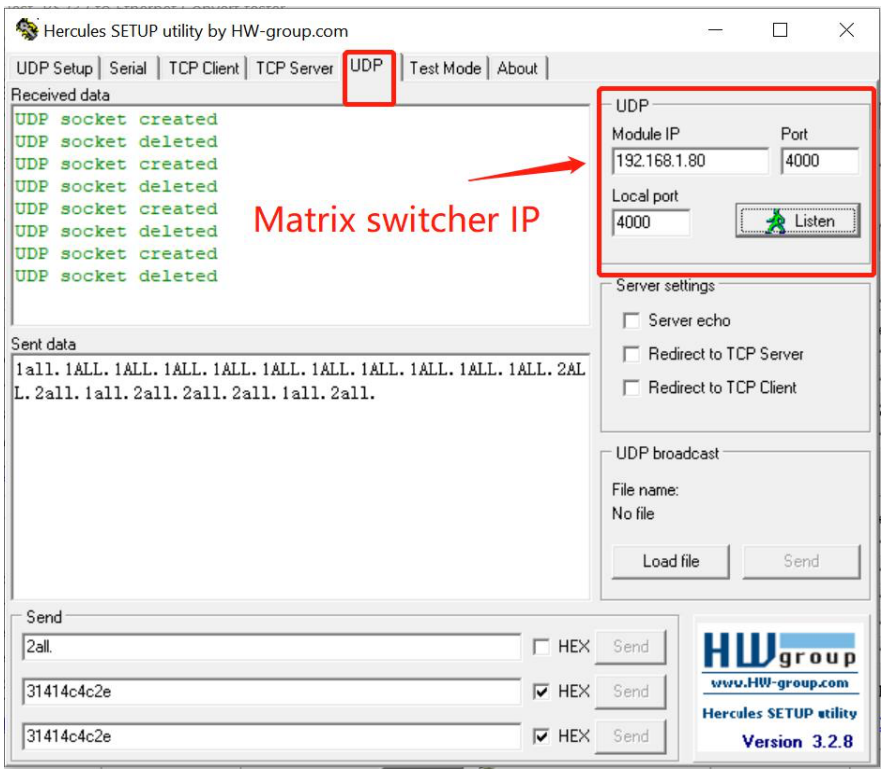
UDP:

Users will need to make sure the control PC and the matrix switch are in the same network. The port number is 4000

We recommend 2 software(**TCP-UDP-RS232 Helper** and **hercules_3-2-8**)

The default IP address of the matrix switcher **LAN1:** 192.168.0.80, **LAN2:** 192.168.1.80



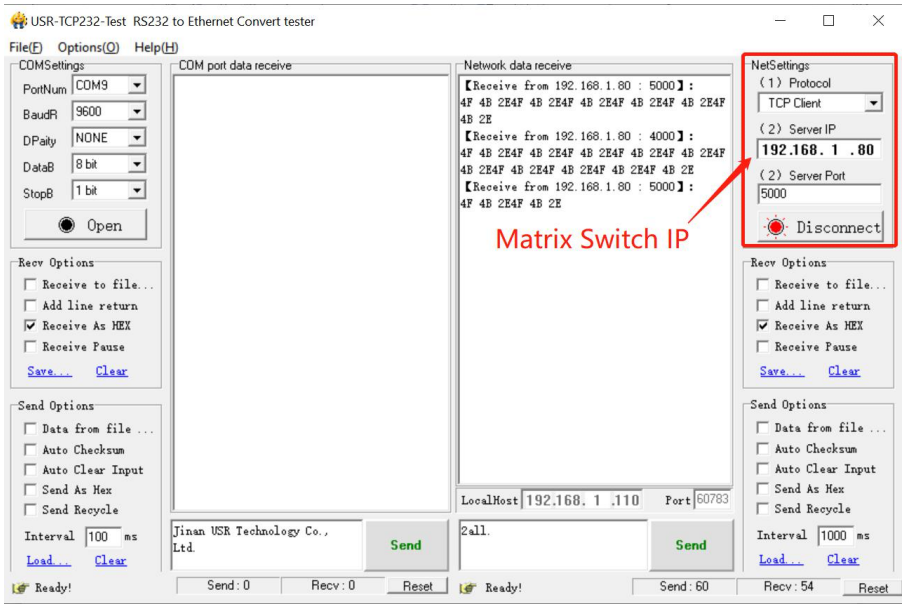


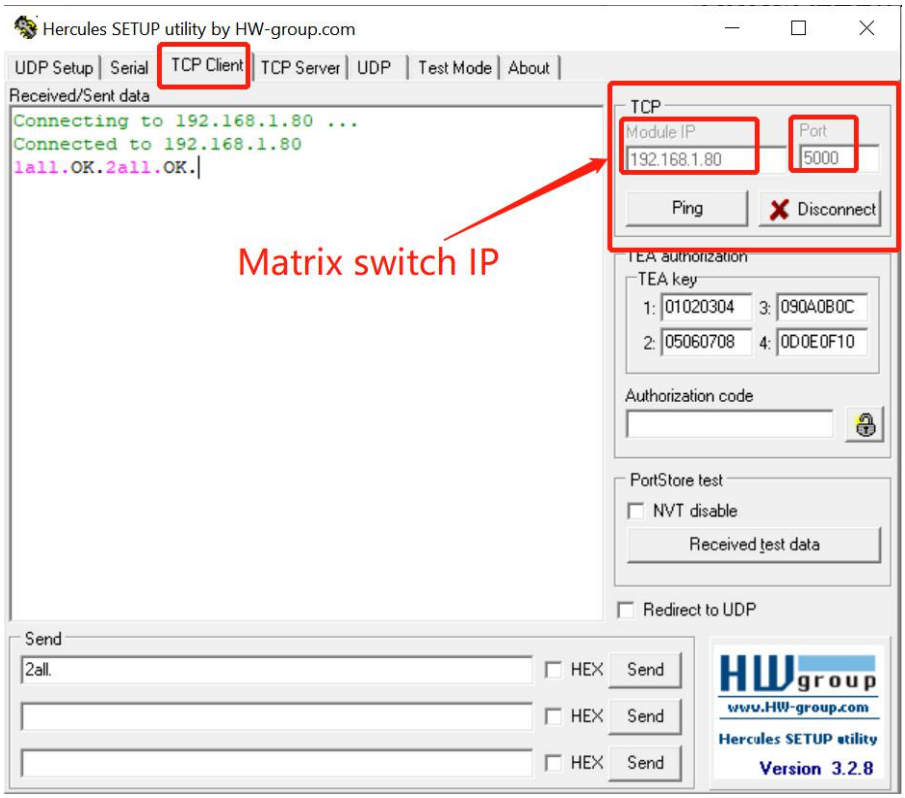
TCP Client

The port number is 5000

We recommend 2 software(**TCP-UDP-RS232 Helper** and **hercules_3-2-8**).

The default IP address of the matrix switcher LAN1: 192.168.0.80, LAN2: 192.168.1.80





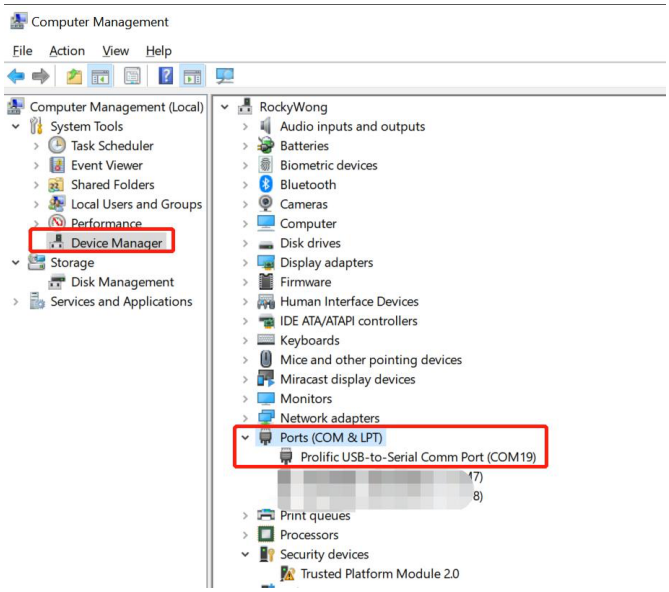
Serial/COM port control

We recommend 2 software(**TCP-UDP-RS232 Helper** and **hercules_3-2-8**).

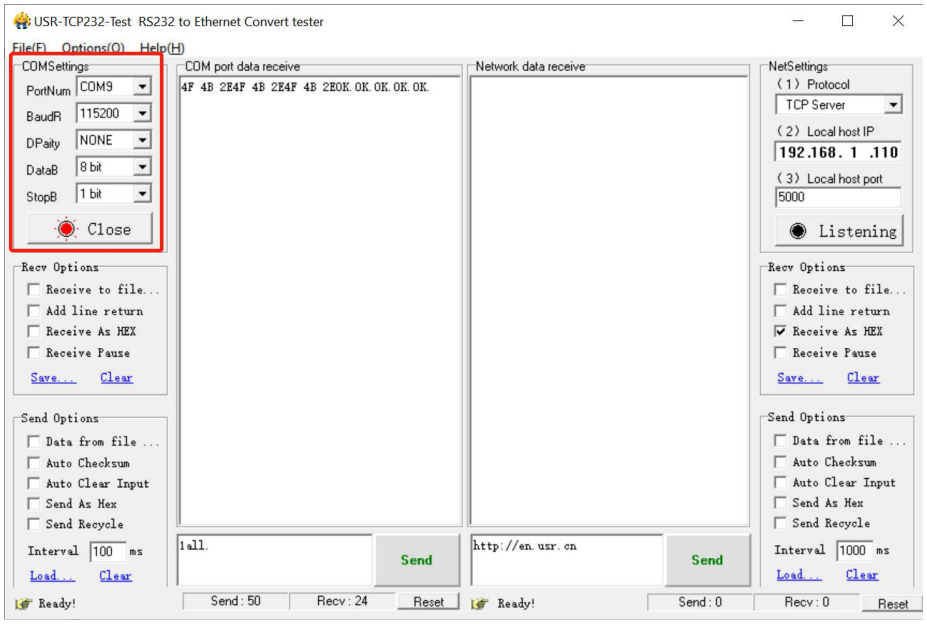
The default baud rates for the matrix switcher **COM1:** 115200 , **COM2:** 115200

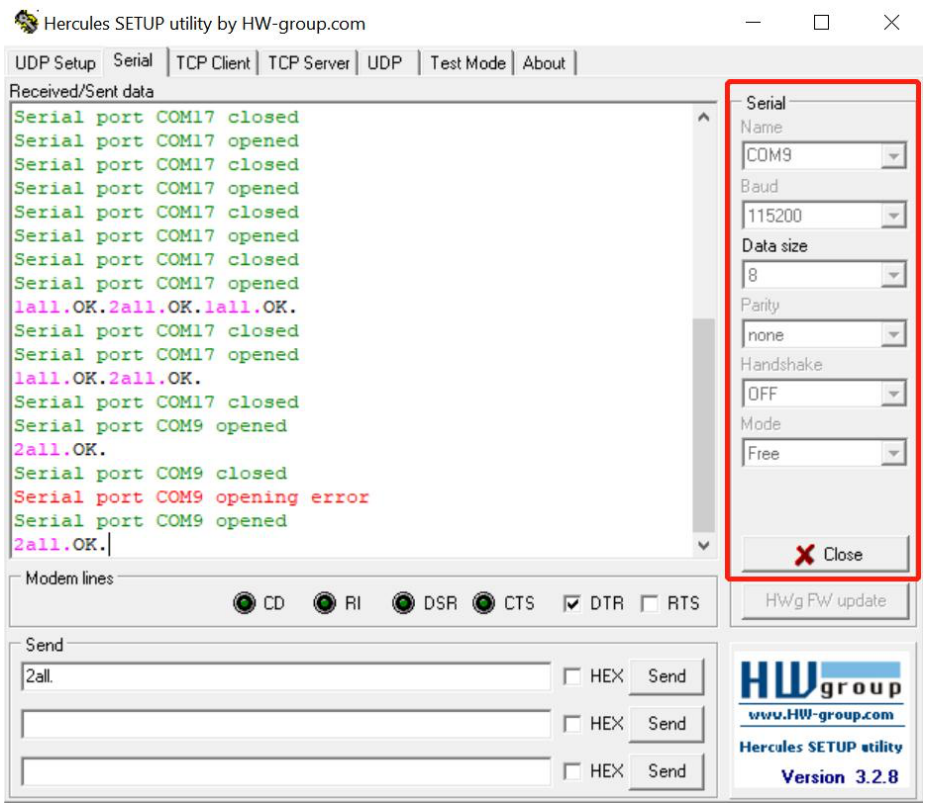
Data bit: 8bit **Check Parity:** NONE **Stop Bits:** 1 bit

Users will need to check and ensure use the available COM ports on the PC through the Device manager on the PC:



After found the available COM port number, user can use the RS232 control software to control the matrix switcher by sending the RS232 codes:





Control commands:

Baud Rate 1/ COM 1	**115200**	
Baud Rate 2/ COM 2	**115200**	
Data bits	**8**	
Stop Bits	**1**	
Check Bits	**NONE**	
TCP/IP Port:	**5000**	
UDP Port	**4000**	
Function description	**ASCII**	**HEX**
Input 1 to All 9 Outputs	1All.	31414c4c2e
Input 2 to All 9 Outputs	2All.	32414c4c2e
Input 3 to All 9 Outputs	3All.	33414c4c2e
Input 4 to All 9 Outputs	4All.	34414c4c2e
Input 5 to All 9 Outputs	5All.	35414c4c2e
Input 6 to All 9 Outputs	6All.	36414c4c2e
Input 7 to All 9 Outputs	7All.	37414c4c2e
Input 8 to All 9 Outputs	8All.	38414c4c2e
Input 9 to All 9 Outputs	9All.	39414c4c2e
Check input 1 switching status	1?.	313f2e
Check input 2 switching status	2?.	323f2e
Check input 3 switching status	3?.	333f2e
Check input 4 switching status	4?.	343f2e
Check input 5 switching status	5?.	353f2e
Check input 6 switching status	6?.	363f2e
Check input 7 switching status	7?.	373f2e
Check input 8 switching status	8?.	383f2e
Check input 9 switching status	9?.	393f2e
Switch all the channels to be one to one 1->1，2->2，3->3.....	All1.	414c4c312e
Input 1 to Output 1, output 2, output 3, output 4	1X2&3&4.	315832263326342e
Save current switching status to Preset/Scene 1	Save1.	53617665312e
Save current switching status to Preset/Scene 2	Save2.	53617665322e
Save current switching status to Preset/Scene 3	Save3.	53617665332e
Recall Preset/Scene 1	Recall1.	526563616c6c312e
Recall Preset/Scene 2	Recall2.	526563616c6c322e
Recall Preset/Scene 3	Recall3.	526563616c6c332e
Recall Preset/Scene 4	Recall4.	526563616c6c342e

Input 1 to Output 1	1X1.	3158312e
Input 1 to Output 2	1X2.	3158322e
Input 1 to Output 3	1X3.	3158332e
Input 1 to Output 4	1X4.	3158342e
Input 1 to Output 5	1X5.	3158352e
Input 1 to Output 6	1X6.	3158362e
Input 1 to Output 7	1X7.	3158372e
Input 1 to Output 8	1X8.	3158382e
Input 1 to Output 9	1X9.	3158392e
Input 2 to Output 1	2X1.	3258312e
Input 2 to Output 2	2X2.	3258322e
Input 2 to Output 3	2X3.	3258332e
Input 2 to Output 4	2X4.	3258342e
Input 2 to Output 5	2X5.	3258352e
Input 2 to Output 6	2X6.	3258362e
Input 2 to Output 7	2X7.	3258372e
Input 2 to Output 8	2X8.	3258382e
Input 2 to Output 9	2X9.	3258392e
Input 3 to Output 1	3X1.	3358312e
Input 3 to Output 2	3X2.	3358322e
Input 3 to Output 3	3X3.	3358332e
Input 3 to Output 4	3X4.	3358342e
Input 3 to Output 5	3X5.	3358352e
Input 3 to Output 6	3X6.	3358362e
Input 3 to Output 7	3X7.	3358372e
Input 3 to Output 8	3X8.	3358382e
Input 3 to Output 9	3X9.	3358392e
Input 4 to Output 1	4X1.	3458312e
Input 4 to Output 2	4X2.	3458322e
Input 4 to Output 3	4X3.	3458332e
Input 4 to Output 4	4X4.	3458342e
Input 4 to Output 5	4X5.	3458352e
Input 4 to Output 6	4X6.	3458362e
Input 4 to Output 7	4X7.	3458372e
Input 4 to Output 8	4X8.	3458382e
Input 4 to Output 9	4X9.	3458392e
Input 5 to Output 1	5X1.	3558312e
Input 5 to Output 2	5X2.	3558322e

Input 5 to Output 3	5X3.	3558332e
Input 5 to Output 4	5X4.	3558342e
Input 5 to Output 5	5X5.	3558352e
Input 5 to Output 6	5X6.	3558362e
Input 5 to Output 7	5X7.	3558372e
Input 5 to Output 8	5X8.	3558382e
Input 5 to Output 9	5X9.	3558392e
Input 6 to Output 1	6X1.	3658312e
Input 6 to Output 2	6X2.	3658322e
Input 6 to Output 3	6X3.	3658332e
Input 6 to Output 4	6X4.	3658342e
Input 6 to Output 5	6X5.	3658352e
Input 6 to Output 6	6X6.	3658362e
Input 6 to Output 7	6X7.	3658372e
Input 6 to Output 8	6X8.	3658382e
Input 6 to Output 9	6X9.	3658392e
Input 7 to Output 1	7X1.	3758312e
Input 7 to Output 2	7X2.	3758322e
Input 7 to Output 3	7X3.	3758332e
Input 7 to Output 4	7X4.	3758342e
Input 7 to Output 5	7X5.	3758352e
Input 7 to Output 6	7X6.	3758362e
Input 7 to Output 7	7X7.	3758372e
Input 7 to Output 8	7X8.	3758382e
Input 7 to Output 9	7X9.	3758392e
Input 8 to Output 1	8X1.	3858312e
Input 8 to Output 2	8X2.	3858322e
Input 8 to Output 3	8X3.	3858332e
Input 8 to Output 4	8X4.	3858342e
Input 8 to Output 5	8X5.	3858352e
Input 8 to Output 6	8X6.	3858362e
Input 8 to Output 7	8X7.	3858372e
Input 8 to Output 8	8X8.	3858382e
Input 8 to Output 9	8X9.	3858392e
Input 9 to Output 1	9X1.	3958312e
Input 9 to Output 2	9X2.	3958322e
Input 9 to Output 3	9X3.	3958332e
Input 9 to Output 4	9X4.	3958342e

Input 9 to Output 5	9X5.	3958352e
Input 9 to Output 6	9X6.	3958362e
Input 9 to Output 7	9X7.	3958372e
Input 9 to Output 8	9X8.	3958382e
Input 9 to Output 9	9X9.	3958392e

8. Trouble Shooting and Attention

No signal on the display?

- Make sure all the power code are well connected;
- Check the display switcher and make sure it is in good condition;
- Make sure the DVI cable between the device and display is 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 is 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 1 (One) year following the date of purchase from the Company or its authorized distributors.

9.2 Warranty limitations and exceptions

Except for 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

Attachment A:

Input and output cards for MM5-0808C/1616C/3232C

Note: All the above cards can work with MM5-0808C/1616C/3232C, BUT we suggest to use only 1080P, 4K60 or 4K30 pass-through cards on one chassis instead of mixing use 1080P and 4K60 or 4K30 cards together.

Input Cards		
1080P Seamless Switching Cards		
MAV		SupportUniversal(HDMI/DVI/VGA/YPBPR/CVBS) input with adapter; Support 3.5mm audio embedded; HDCP compliant, resolution up to 1080P@60, 8-pin DIP resolution adjustment for up/down scalling; Support Seamless switching effect;
HDMI		Support HDMI input Support 3.5mm audio embedded HDCP compliant, resolution up to 1080P60, 8-pin DIP resolution adjustment for up/down scalling; support Seamless switching effect
SDI		Supports SD/HD/3G-SDI input and one loop out; Support 3.5mm audio embedded; Resolution up to 1080P60, 8-pin DIP resolution adjustment for up/down scalling; Support Seamless switching effect; SDI cable distance can up to 20m/60ft.
70m HDBaseT		Supports HDBaseT input, HDCP compliant; Supports RS232, bi-drectional IR; Distance up to 70m/220ft at 1080P60 over Cat5e/6/7; Support Seamless switching effect, POC function, 8-pin DIP resolution adjustment for up/down scalling; Can work any of our HDBaseT transmitter.
100m HDBaseT		Supports HDBaseT input, HDCP compliant; Supports RS232, bi-drectional IR; Distance up to 100m/330ft at 1080P60 over Cat5e/6/7; Support Seamless switching effect, POC function, 8-pin DIP resolution adjustment for up/down scalling; Can work any of our HDBaseT transmitter.

4K60 Seamless Switching Cards

4K60 HDMI2.0		Supports 4K60 HDMI2.0 input; Supports HDCP2.2; Supports 3.5mm audio embedded; Resolution up to 4K60 4:4:4, 8-pin DIP switch resolution adjustment for up/down scalling; support Seamless switching effect;
4K60 Fiber optic		Supports 1 SM/MM LC fiber input; Distance up to 2km at 4k@60; Support seamless switching effect, 8-pin DIP switch resolution adjustment for up/down scalling; Work with the 4K60 Fiber Optic Tx;

4K30 Pass-through Cards

4K30 HDMI		Support 4K30 HDMI input; HDCP compliant; Support EDID handshaking with EDID KEY button;
70m 4K30 HDBaseT		Supports HDBaseT input with one HDMI loop out, HDCP compliant; Distance up to 40m at 4K30 over single Cat6/7; Supports RS232, bi-directional IR POC(Power over Cable) function; Can work any of our HDBaseT transmitter.
100m 4K30 HDBaseT		Supports HDBaseT input with one HDMI loop out, HDCP compliant; Distance up to 70m at 4K30 over single Cat6/7; Supports RS232, bi-directional IR; POC(Power over Cable) function; Can work any of our HDBaseT transmitter.
4K30 Fiber optic		Supports 1 SM/MM LC fiber input; Distance up to 2km at 4k@30; Can work with 1 core DVI and 4k30 HDMI Tx

Output Cards		
1080P Seamless Switching Cards		
MAV		SupportUniversal(HDMI/DVI/VGA/YPBPR/CVBS) output with adapter; Support 3.5mm audio de-embedded; HDCP compliant, resolution up to 1080P@60, 8-pin DIP resolution adjustment for up/down scalling; Support Seamless switching effect.
HDMI		Support HDMI output; Support 3.5mm audio de-embedded; HDCP compliant, resolution up to 1080P60, 8-pin DIP resolution adjustment for up/down scalling; support Seamless switching effect.
HDMI-TV		Support HDMI output; Supports 3.5m audio de-embedded; HDCP compliant, resolution up to 1080P, 8-pin DIP resolution adjustment for up/down scalling. Supports TV Wall function; Support Seamless switching effect.

SDI		Supports SD/HD/3G-SDI output and one loop out; Support 3.5mm audio de-embedded; Resolution up to 1080P60, 8-pin DIP resolution adjustment for up/down scalling; Support Seamless switching effect; SDI cable distance can up to 20m/60ft.
70m HDbaseT		Supports HDBaseT output, HDCP compliant; Supports RS232, bi-drectional IR; Distance up to 70m/220ft at 1080P60 over Cat5e/6/7; Support Seamless switching effect, POC function, 8-pin DIP resolution adjustment for up/down scalling; Can work any of our HDBaseT receiver.
100m HDbaseT		Supports HDBaseT output, HDCP compliant; Supports RS232, bi-drectional IR; Distance up to 100m/330ft at 1080P60 over Cat5e/6/7; Support Seamless switching effect, POC function, 8-pin DIP resolution adjustment for up/down scalling; Can work any of our HDBaseT receiver.

4K60 Seamless switching Cards		
4K60 HDMI2.0		Supports 4K60 HDMI2.0 output; Supports HDCP2.2; Supports 3.5mm audio de-embedded; Resolution up to 4K60 4:4:4, 8-pin DIP switch resolution adjustment for up/down scalling; Supports Seamless switching effect.
4K60 Fiber optic		Supports 1 SM/MM LC fiber output; Distance up to 2km at 4k@60; Support seamless switching effect, 8-pin DIP switch resolution adjustment for up/down scalling; Work with the 4K60 Fiber Optic Rx.
4K30 Pass-through Cards		
4K30 HDMI		Support 4K30 HDMI output HDCP compliant
70m 4K30 HDBaseT		Supports HDBaseT output, HDCP compliant; Distance up to 40m at 4K30 over single Cat6/7; Supports RS232, bi-directional IR
		POC(Power over Cable) function; Can work any of our HDBaseT receiver.
100m 4K30 HDBaseT		Supports HDBaseT output, HDCP compliant; Distance up to 70m at 4K30 over single Cat6/7; Supports RS232, bi-directional IR POC(Power over Cable) function; Can work any of our HDBaseT receiver.
4K30 Fiber optic		Supports 1 SM/MM LC fiber output; Distance up to 2km at 4k@30; Can work with 1 core DVI and 4k30 HDMI Rx

Attachment B:

DIP Switches Operation Instruction

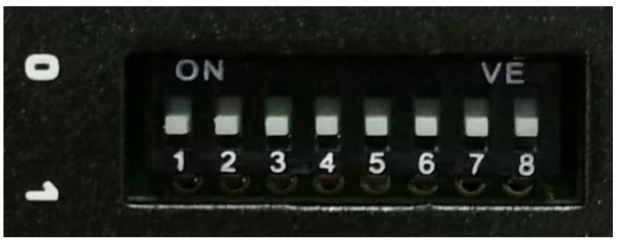
4K60 seamless switching cards:

4K60 HDMI2.0 Input Card DIP Switch

Customize Resolution					3.5mm Audio		Null				IR Function	
DIP 1	DIP 2	DIP 3	DIP 4	Description	DIP 5	Description	DIP 6	Description	DIP 7	Description	DIP 8	Description
0	0	0	0	1080P@60Hz	0	Using External audio	0	Null	0	Null	0	IR off
0	0	0	1	1080P@50Hz	1	Using HDMI audio	1		1		1	IR on
0	0	1	0	3840*2160@50Hz								
0	0	1	1	720P@60Hz								
0	1	0	1	1366*768@60Hz								
0	1	1	0	1024*768@60Hz								
0	1	1	1	3840*2160@30Hz								
0	1	0	0									
1	0	0	0	3840*2160@24Hz								
1	0	0	1	480P@60Hz								
1	0	1	0	720P@50Hz								
1	0	1	1	576P@50Hz								
1	1	0	0	3840*2160@60Hz								
1	1	1	0	4096*2160@60Hz								
1	1	1	1	4096*2160@50Hz								

4K60 HDMI2.0 Output Card DIP Switch

Customize Resolution					Customize Color Space			HDCP2.2		IR Function	
DIP 1	DIP 2	DIP 3	DIP 4	Description	DIP 5	DIP 6	Description	DIP 7	Description	DIP 8	Description
0	0	0	0	1080P@60Hz	1	1	RGB	0	HDCP On	0	IR off
0	0	0	1	1080P@50Hz	1	0	YUV422	1	HDCP Off	1	IR on
0	0	1	0	3840*2160@50Hz	0	0	YUV420				
0	0	1	1	720P@60Hz	0	1	YUV444				
0	1	0	1	1366*768@60Hz							
0	1	1	0	1024*768@60Hz							
0	1	1	1	3840*2160@30Hz							
1	1	1	1								
0	1	0	0	4096*2160@50							
1	0	0	0	4096*2160@30							
1	0	0	1	480P@60Hz							
1	0	1	0	720P@50Hz							
1	0	1	1	576P@50Hz							
1	1	0	1	1920*1200/60							
1	1	0	0	3840*2160@60Hz							
1	1	1	0	4096*2160@60Hz							



1080P seamless switching cards:

1080P Input Card DIP Switch

Customize Resolution				Input Source Select				Image or Audio Select			IR Function	
DIP 3	DIP 4	DIP 5	Description	DIP 7	DIP 1	DIP2	Description	DIP 6	Version	Description	DIP 8	Description
0	0	0	1024*768	1	0	0	CVBS Input	1	Version 1	Normal display	0	IR off
0	0	1	1360*768	1	0	1	YPBPR input	0		Image mirror	1	IR on
0	1	0	1920*1200	1	1	0	VGA input	1	Version 2	HDMI audio input		
0	1	1	720P/60	1	1	1	DVI input	0		3.5mm audio input		
1	0	0	Null	0			Signal Auto detect					
1	0	1	Null									
1	1	0	1080P/50									
1	1	1	1080P/60									

1080P Output Card DIP Switch

Resolution Set Up						Color Space		Image		IR	
D2	D3	D4	D5	D6	Description	D1	Description	D7	Description	D8	Description
0	0	0	0	0	1024*768@60	0	RGB	0	Image mirror	0	IR ON
0	0	0	0	1	800*600@60	1	YUV	1	Normal display	1	IR OFF
0	0	0	1	0	1280*800@60						
0	0	0	1	1	1280*1024@60						
0	0	1	0	0	1360*768@60						
0	0	1	0	1	1366*768@60						
0	0	1	1	0	1400*1050@60						
0	0	1	1	1	1440*900@60						
0	1	0	0	0	1680*1050@60						
0	1	0	0	1	1600*1200@60						
0	1	0	1	0	1920*1200@60						
0	1	0	1	1	1600*1200@60						
0	1	1	0	0	1680*1050@60						
0	1	1	0	1	1400*900@75						
0	1	1	1	0	640*480@75						
0	1	1	1	1	800*600@75						
1	0	0	0	0	480I@60						
1	0	0	0	1	576I@50						
1	0	0	1	0	480P@60						
1	0	0	1	1	576P@50						
1	0	1	0	0	1280*720@24						
1	0	1	0	1	1280*720@25						
1	0	1	1	0	1280*720@30						
1	0	1	1	1	1280*720@50						
1	1	0	0	0	1280*720@60						
1	1	0	0	1	1080I@50						
1	1	0	1	0	1080I@60						
1	1	0	1	1	1080P@24						
1	1	1	0	0	1080P@25						
1	1	1	0	1	1080P@30						
1	1	1	1	0	1080P@50						
1	1	1	1	1	1080P@60