



IP VIDEO WALL MATRIX SYSTEM

CVI8XM

CVI4MV2

CVI2MV2

User Manual

V2.04 072017

Preface

Important Information and safeguards before installation

1. Do not expose the device outdoors in rain or humid environment;
2. Do not use the device in hot closed environments without proper ventilation;
3. Do not spray liquid into the device, or add foreign materials;
4. Avoid installation in areas with flammable, explosive or corrosive gases;
5. To prevent fire, do not use non-approved power cables;
6. To ensure device safety, do not open or dismantle the unit or open cover under power;



Record the product identification information marked on the bottom of the unit. You will need the model and serial number to obtain technical support.

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Part1 HD IP Matrix Introduction

1.1 Product introduction

HD Network Digital IP Matrix can decode compressed video data from HD IP cameras or Computer platform software into HD digital signals that can be streamed into HD display monitors. Multiple display modes and configuration can be accomplished by keyboard, Wi-Fi connected tablets using IOS or Android Operating Systems and net client software, including video splitting & splicing.

HD IP Matrix can also invoke the configuration page via USB connected mouse.

The HD IP Matrix is suitable for most applications of Network video monitoring which requires image decoding and display on large format video walls, while promoting stable operation and simplicity.

It's simplicity of operation makes it ideal for IP Video stream network monitoring. Applications include but not limited to Smart / Safe City, Public transit (airport/bus station/subway), Schools, Campuses, Exhibition rooms, Power plants, Retail, meeting place, etc.

1.2 System capabilities overview

- HD IP Matrix supports up to 16 channels HDMI output per chassis
- It automatically detects optimum resolution for display equipment and can manually change the output resolution.
- Maximum supported display resolution: UHD 4K
- Support 4K、1080P、1080I、720P、D1 video formats
- Support standard H.265、H.264、MPEG4 coded stream
- Support max 32 channels 4K, 128 channels 1080P or 256 channels 720P decoding and display.
- Code stream is self-adaptive and manual configuration of main/sub-stream
- Support video splitting, Maximum 5x5 windows per screen splitting
- Support video output splicing and display, Single module maximum support 16 screens splicing
- Support specific branded IPC via Onvif, RTSP to video wall
- Support OSD, which allowed the superposition of title, time, alarm messages and so on
- Matrix configuration interface can be invoked with USB mouse
- Support remote configuration, import & export for parameters
- Support remote upgrade, reboot and other routine maintenance

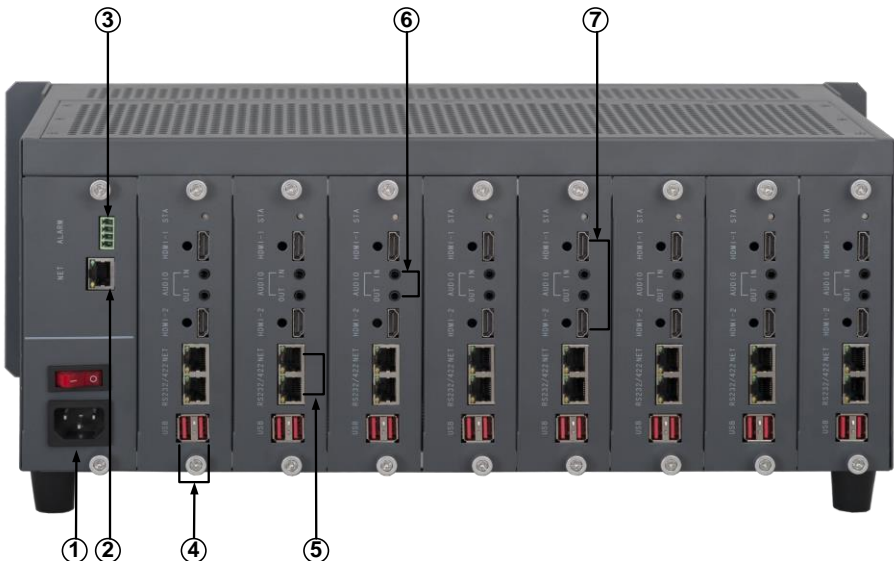
Part 2 Inspection before use

2.1 Open the package and inspect

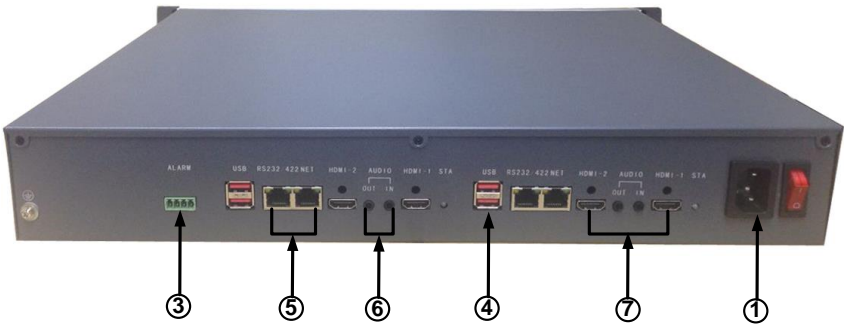
When you receive the HD IP Matrix, please check that the outer carton is not damaged. The protective packing material inside the carton can protect the device from most accidental impact during shipping. If no damage, then open the carton and verify the contents against your order. Verify that the power cable (or power supply), manual and software disk is included.

2.2 Panel illustration

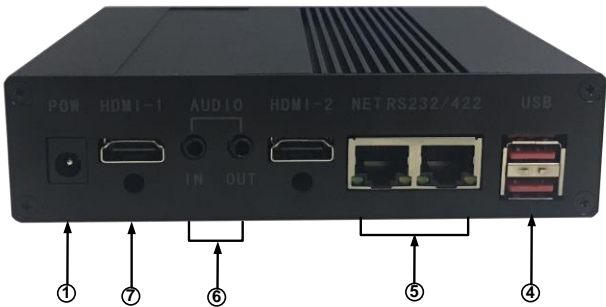
Product back panel: CVI8XM



Product back panel: CVI4MV2



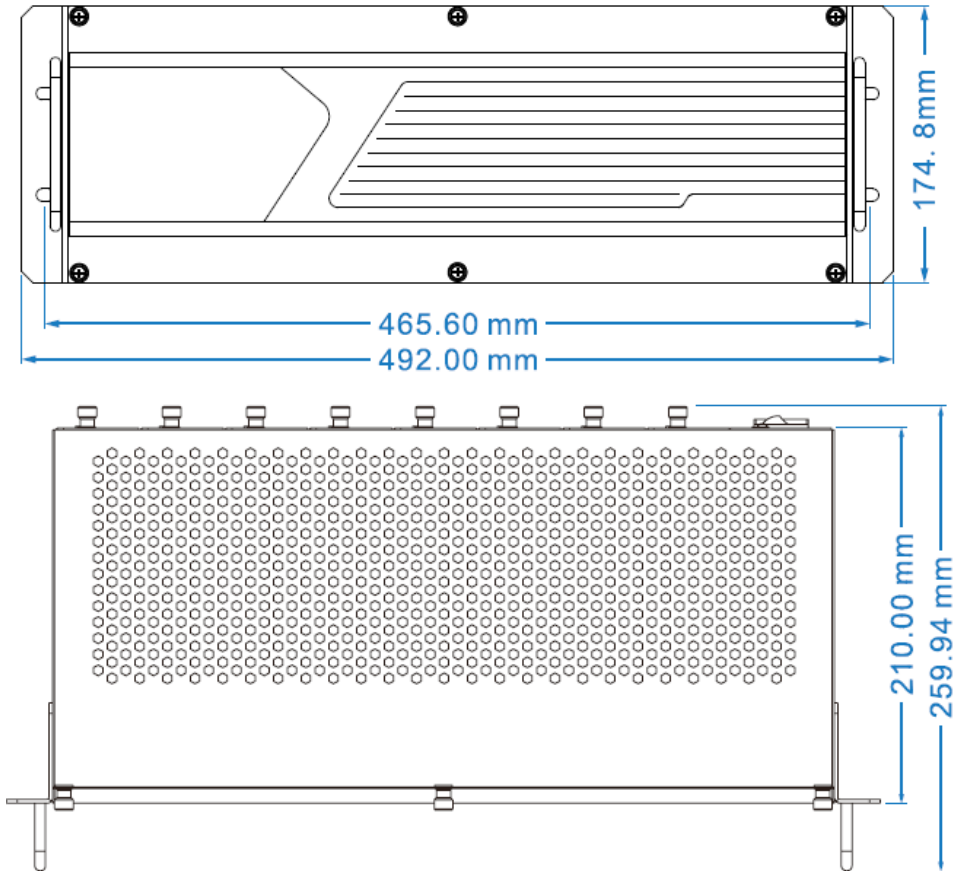
Product back panel: CVI2MV2



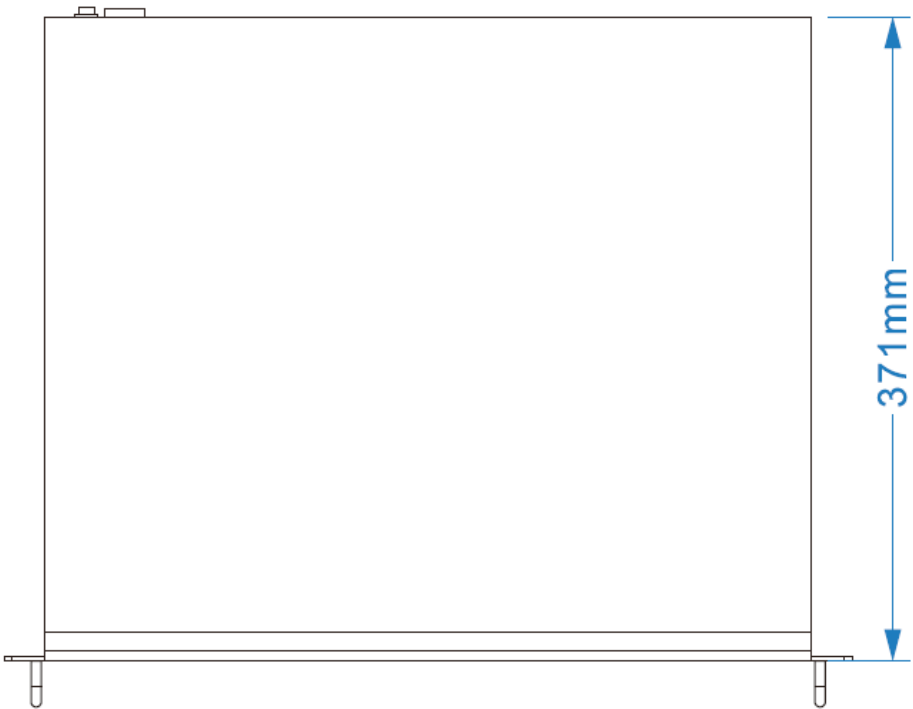
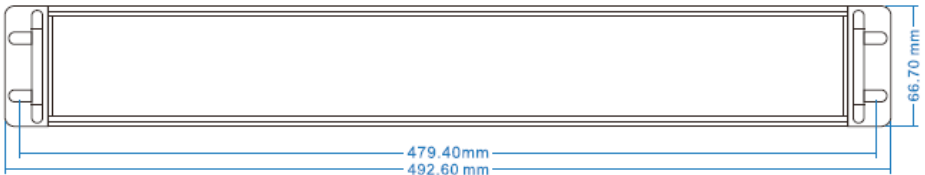
①	Power port & switch
②	NET cascade port (Reserved)
③	Alarm output port (Reserved)
④	USB 2.0 port
⑤	NET-LAN port, RS232/RS422 port (Reserved)
⑥	Audio in/out port (Reserved)
⑦	HDMI port

2.3 Dimensional drawings

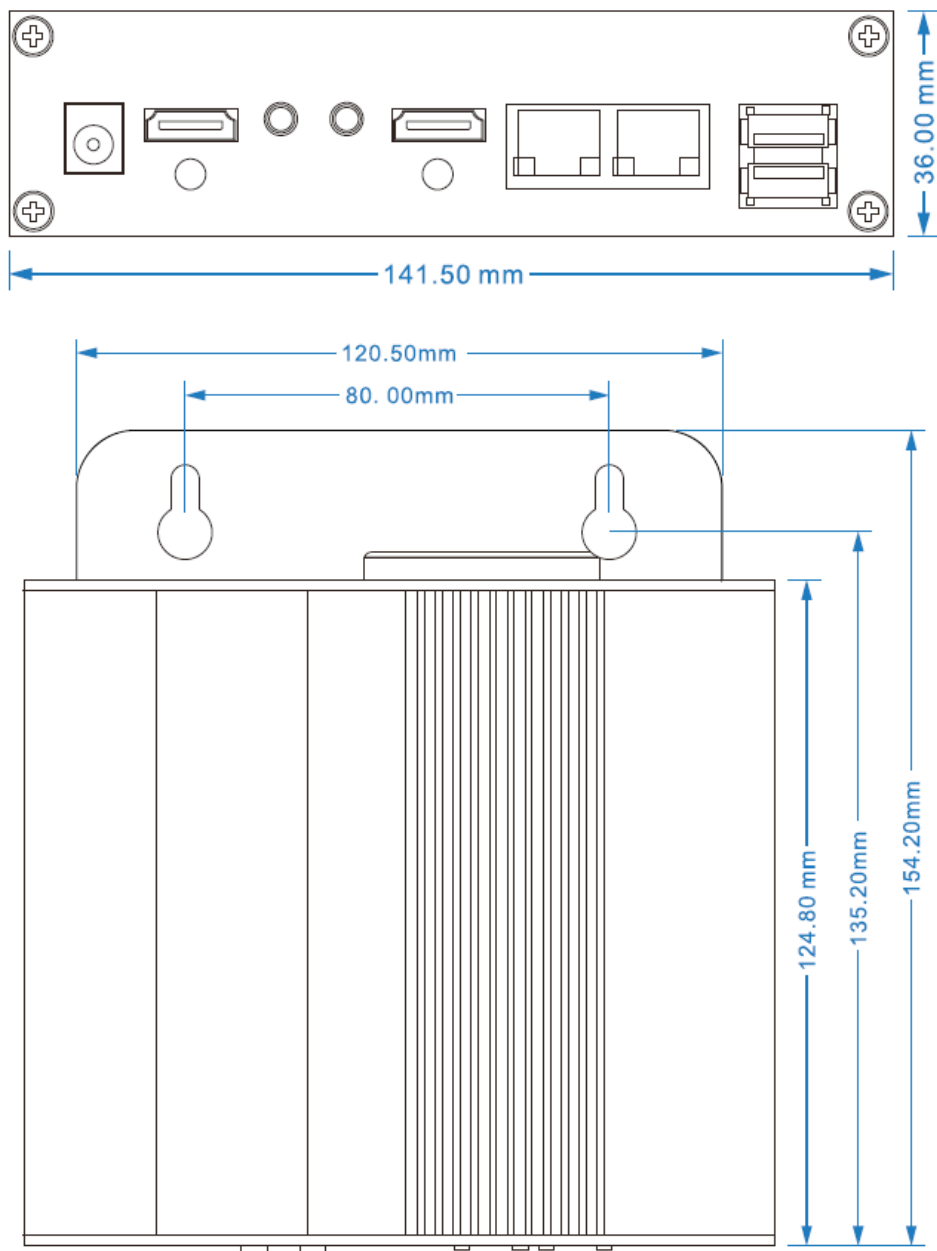
CVI8XM - HD IP Matrix switcher, dimensions (mm) are as follows:



CVI4MV2 Dimensions (mm) are as follows:



CVI2MV2 Dimensions (mm) are as follows:



Part 3 Installation and connections

HD IP Matrix is designed according to a standard 19" rack structure. It has 1RU and 4RU chassis configurations. When installed in standard 19" rack, you should observe certain spacing away from other equipment for adequate ventilation.

All connection ports are installed on the rear facing panel. Do not apply power until all connections are made and verified.

Note:

- 1. Please read this manual carefully before terminating any connections or applying power to the equipment. Improper connections or voltage settings may result in permanent damage.***
- 2. The power must be grounded to prevent shock or permanent damage, endangering human safety.***

NOTE: This user manual reflects the connection and operation of the CVI8XM 4RU chassis. The same software principles and operation also apply to the CVI4MV2 and CVI2MV2 units.

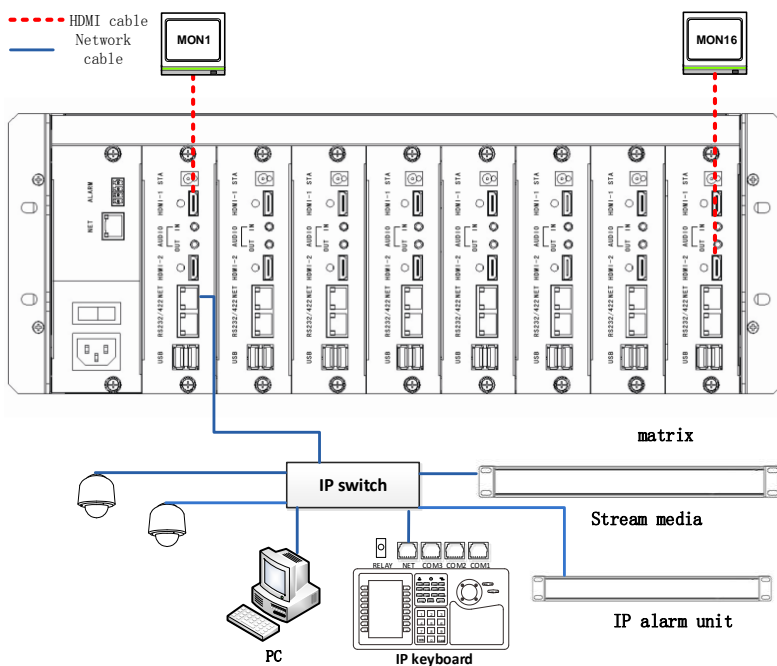
3.1 System connection

Make sure the HD IP matrix, any IP Cameras, Stream media server, IP matrix keyboard controller and Client computer are connected to the same LAN network switch. Each HDMI matrix output is connected to an HD video monitor using a high grade HDMI cable. Up to 16 HD screens can be spliced for monitoring.

Important: Please ensure IP address of client computer is configured in the same IP Scheme (octet) segment of HD IP Matrix.

Note:

Only one IP connection is required from the 1st IP Module when multiple units are present. Connecting more than one IP connection to the matrix using the available NET ports can improve the data flow in larger installations with high camera counts. If so, please address each Matrix card to a separate IP address using the IP Table Tab in configuration menu.



3.2 Network setup

After the hardware setup is completed, you will need to set the network parameters for the HD IP Matrix.

When using the HD IP Matrix for the first time, please use the IPConfig.exe software supplied to search the MAC address, IP address, subnet mask and gateway of the HD IP Matrix.

When using the keyboard controller for the first time, you should consult the user manual to set up the keyboard's IP address and gateway, then input the HD IP Matrix's IP address, port and press [save].

Note: please ensure to set computer's IP, keyboard's IP and Matrix's IP in the same octet segment.

3.2.1 IP address search

Using the IP Config search tool “IPConfig.exe”, you should see the user interface as shown in the following 3.1 figure:

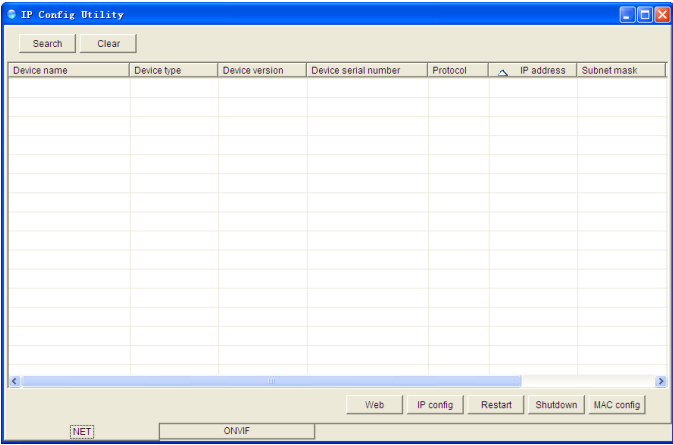


Fig 3.1 IP Config tool

Under “NET” tab, click “Search”, it will display the IP address of each equipment discovered in this LAN. The IP address of HD IP Matrix, is displayed as shown in figure 3.2:

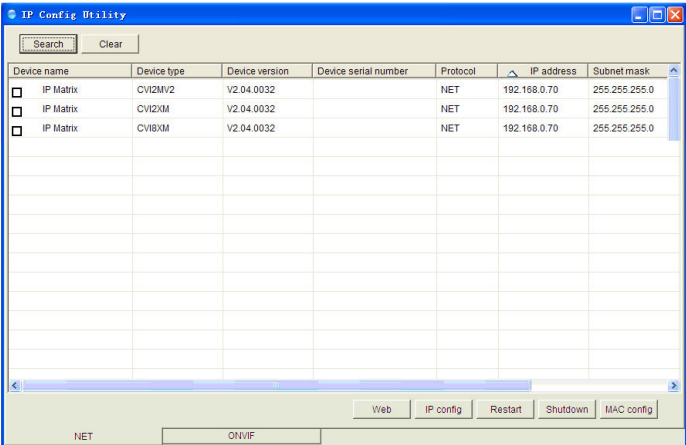


Fig 3.2 IP Config Search Info

Click “IP config” to set or modify the IP address, subnet mask, gateway, then to click “OK” to confirm.

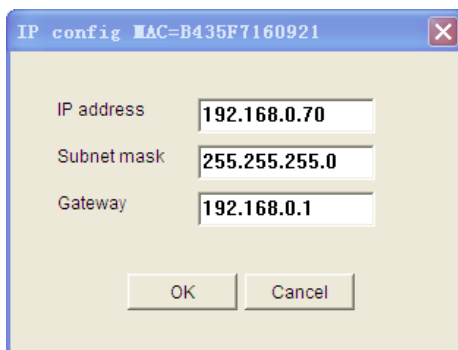


Fig 3.3 IP setup

Part 4 Matrix configuration

4.1 Log in to IP matrix configuration menu

After starting the device, the system requires users to log in.

IP address: Use IPConfig.exe to discover the Matrix IP address.

Note: Default factory IP address is 192.168.0.70

Extract the ConfigTool.zip and run “MatrixConfig.exe”. Select English as the preferred language on the top right corner, then input User name and Password to log in the HD IP Matrix configuration interface.

(Default User name: admin Pwd: 12345), 4.1 figure is below.



Fig 4.1 Matrix configuration login interface

Note: When mouse and keyboard are connected to the matrix's USB ports directly, user can invoke the matrix configuration interface directly on screen. Keyboard supports English language.

When logged in successfully, configuration interface will be displayed as in fig. 4.2 below (subject to equipment configuration ordered)

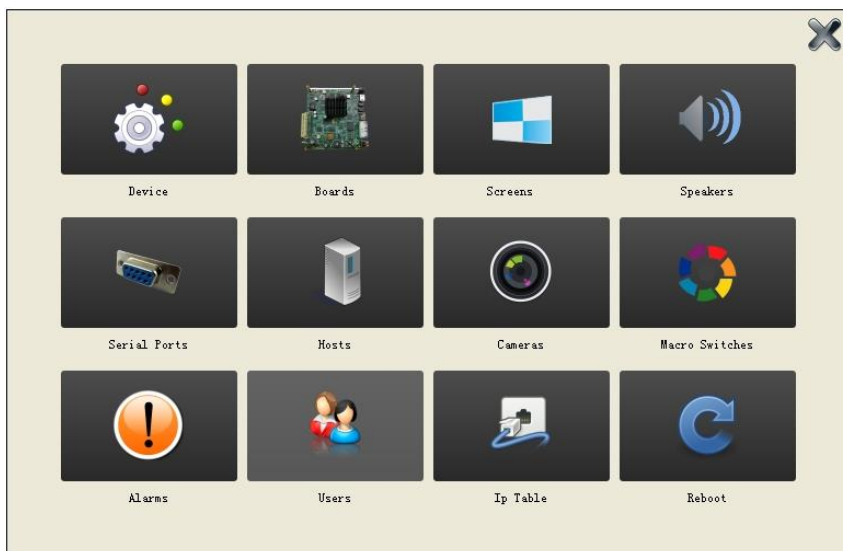


Fig 4.2 matrix configuration interface

【Device】: Check and set the equipped IP keyboard parameter, set the output code stream pattern and the OSD parameters.

【Hosts】: Check and set the access hosts parameter (Ex: Stream media or alarm gateway server, are separate standalone computers where different third part devices (DVR, NVR, IPC) are connected offering direct access). Certain level of customization is required for such interfaces to work. Please consult with your Sales person for available options.

【Cameras】: Check and set the access for IP cameras and RTSP devices

【Screens】: Check and set the output interface parameter

【Macro Switches】 : Set patrol, group, split switch functions.

【Alarms】 : Can realize link with networking alarm devices. (Optional Alarm server CV5060 EAPS is required. When installed access and alarm

Functions are accessible directly through the IP matrix.

【Users】: Check and set the users' ID and password

【IP Table】: Check and set the IP address of every single internal board.

Each board connected to the network increases available bandwidth and requires a unique IP address. Non-connected cards can be left blank.

【Reboot】: Reboots the matrix via software command.

4.2 Device configuration

4.2.1 System

Click “Device” at configuration interface and display the interface as below.

The screenshot displays the 'Device' configuration page. At the top, a navigation bar contains icons for various system components. On the left side, a sidebar shows the 'Device' icon and buttons for 'System', 'OSD', and 'Save'. The main content area is divided into four sections:

- Keyboard:** Service Port (1026), Site Id (1), and a checked checkbox for 'Mark Target Window'.
- Client:** Service Port (10200) and Heartbeat Interval (5).
- Code Stream:** Radio buttons for 'Self-adaptive' (selected) and 'Manual', with a dropdown menu showing 'Primary stream for all windows'.
- Source:** Reference Frame Number (5) with a dropdown arrow.

Fig 4.3 system

Click “System”, the Service Port and Site Id of IP keyboard can be configured, Service Port and Heartbeat Interval of Client can be checked. After desired configuration click “Save”.

Default setting of the bit stream is “Automatic” mode. You can manually configure three (3) optional bit stream modes:

- “Primary stream for all windows”;
- “Primary stream for full screen windows”;
- “Primary stream for 2x2 split windows”.

Number of reference frames: default 5, can be set 2-9.

The smaller the value, the more real-time the image is.

4.2.2 OSD

Click “OSD” in the “Device” tab to access the OSD configuration interface.

Fig. 4.4 as shown below.

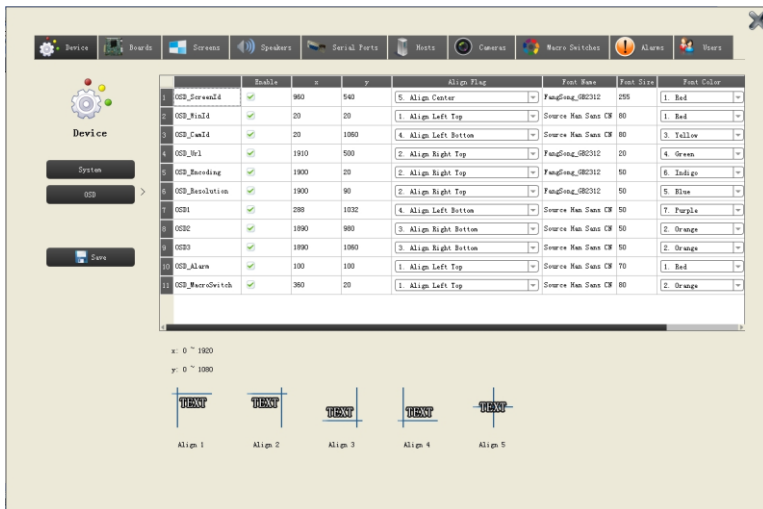


Fig 4.4 OSD

In this menu, the user can configure the OSD display, position and alignment, font style and size.

After any configuration changes click “Save” to apply your changes.

4.3 Host configuration

Click on tab “Hosts” at the matrix configuration interface and display the hosts interface as in Fig. 4.5 shown below.

Stream media server(5060-MRSP), alarm server(5060-EAPS) and Platform (HUAWEI-IVS) information is required.

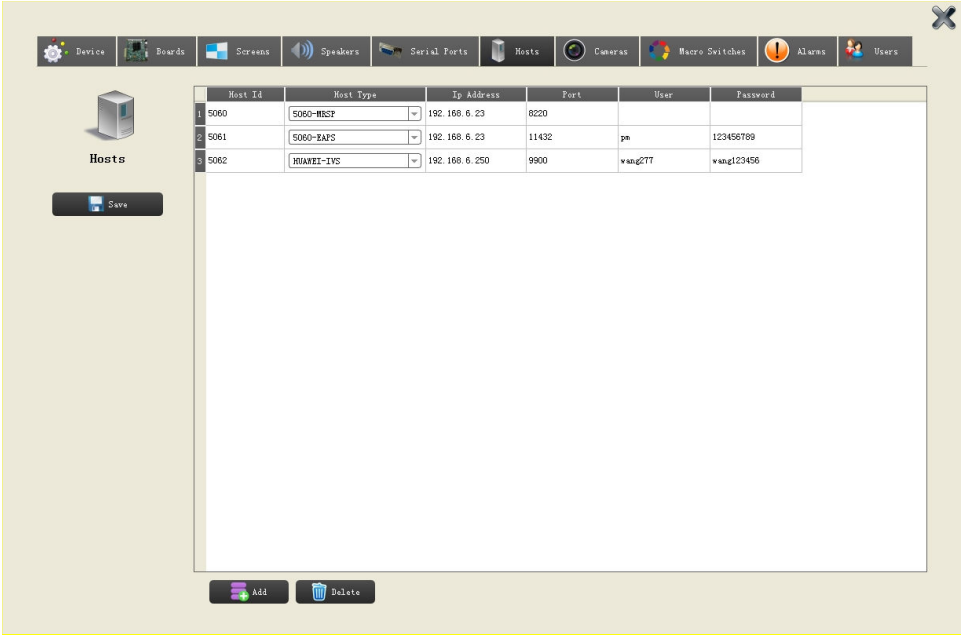


Fig4.5 stream media configuration

Host type can be 5060-MRSP , 5060-EAPS and HUAWEI-IVS .

- When host type is 5060-MRSP , IP address is 5060-MRSP host address;
Default port No. is 8220;
- When host type is 5060-EAPS, IP address is 5060-EAPS host IP address,
Default port No. is 11432, User name/password is pm/123456789.
- When host type is HUAWEI-IVS, IP address is HUAWEI server's,
Default port No. is 9900, User name/password is configured by HUAWEI client.

4.4 Camera Configuration

Click “Cameras” in the matrix configuration interface and come into cameras configuration interface. The IP cameras (Onvif compliant) will be listed here. Fig 4.6 as below.

Cam Id	Cam Name	Longitude	Latitude	Connect	OSD1	OSD2
1	97 192.168.6.201 VideoSourceConfig	0.0	0.0	ONVIF	hik2018onvif	hik2018onvif
2	192.168.6.210 VideoSourceConfig_1	0.0	0.0	ONVIF	2108onvif	
3	192.168.6.211 VideoSourceConfig	0.0	0.0	ONVIF	hik2118onvif	hik2118onvif
4	PE-2DRT2201W-A 192.168.6.207 VideoSourceConfig	0.0	0.0	ONVIF	hik2078onvif	hik2078onvif
5	192.168.6.111 VideoSourceConfig	0.0	0.0	ONVIF		
6	HIKVISION IS-2CR125-I 192.168.6.208 VideoSourceConfig	0.0	0.0	ONVIF	hik2088onvif	hik2088onvif
7	192.168.6.211 VideoSourceConfig	0.0	0.0	ONVIF		
8	Dahua 192.168.6.111 VideoSourceConfig_Channel1	0.0	0.0	ONVIF	dahua1118onvif	dahua1118onvif
9	192.168.6.111 VideoSourceConfig_Channel1	0.0	0.0	ONVIF		
10	ipcamera 192.168.6.2 vscname_ch0001	0.0	0.0	ONVIF	TD6_28onvif	TD6_28onvif
11	Dahua 192.168.6.112 VideoSourceConfig_Channel1	0.0	0.0	ONVIF		
12	192.168.6.204 VideoSourceConfig	0.0	0.0	ONVIF		
13	192.168.6.212 VideoSourceConfig	0.0	0.0	ONVIF		
14	Dahua 192.168.6.209 VideoSourceConfig...	0.0	0.0	ONVIF	dahua2098onvif	dahua2098onvif
15	dahua209	0.0	0.0	Forwarding	dahua2098MSP	dahua2098MSP
16	dahua111	0.0	0.0	Forwarding	dahua1118MSP	dahua1118MSP
17	dahua112	0.0	0.0	Forwarding	dahua1128MSP	dahua1128MSP
18	hik204	0.0	0.0	Forwarding	hik2048MSP	hik2048MSP
19	HIK207	0.0	0.0	Forwarding	hik2078MSP	hik2078MSP
20	HIK208	0.0	0.0	Forwarding	hik2088MSP	hik2088MSP

Fig 4.6 camera configuration

Click “Total” to show all identified IP devices including RTSP streams, ONVIF access & stream access.

One or more cameras can be “deleted” in this interface, and line number of each single page can be set to match user numbering scheme.

4.4.1 RTSP Video Stream Configuration

Select “RTSP” to display the RTSP interface as below.

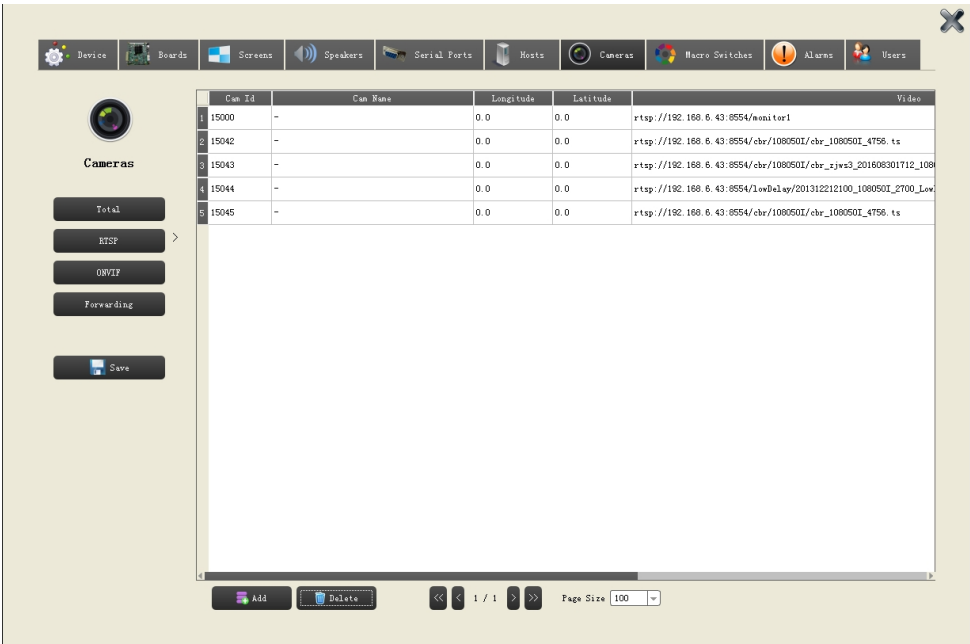


Fig 4.7 RTSP List

Click “Add” to manually edit the camera name, RTSP address, etc.

If you wish to remove a device, select the camera in the list and click “Delete” to delete a camera.

After any configuration changes click “Save” to apply your changes.

4.4.2 ONVIF configuration

Select “ONVIF” to display the ONVIF interface. Figure 4.8 as shown below.

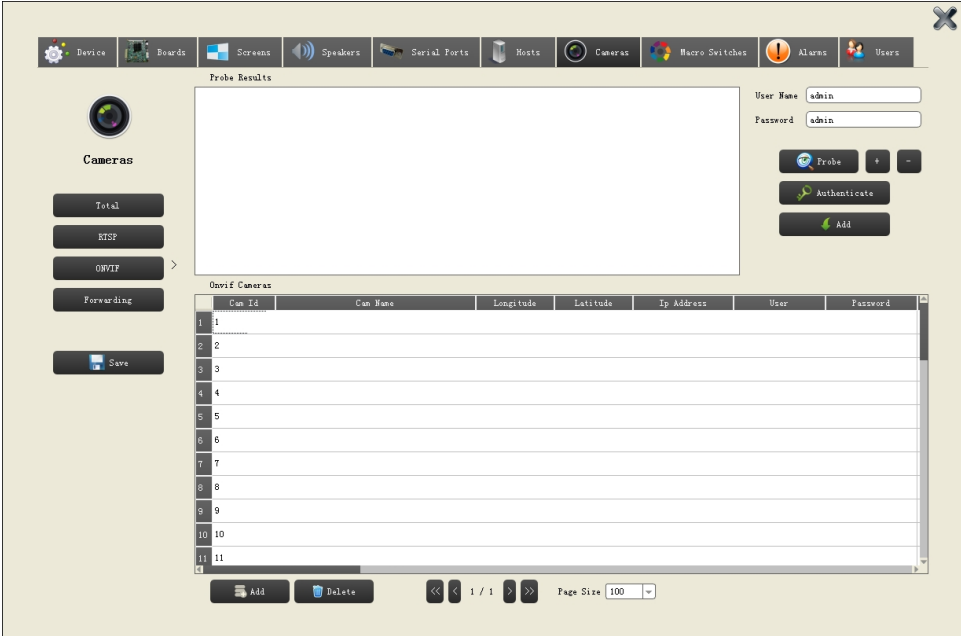


Fig 4.8 ONVIF List

Click on “Probe” to scan the LAN network matching the IP scheme of the matrix IP address. Example: If the IP address of the Matrix is et 192.168.0.70 the scan will discover any Onvif compliant cameras with the IP address 192.168.0.xxx

In the User name and password boxes enter the default user name and password for the admin account (assuming it is the same for all cameras).

Otherwise you will have to enter each camera’s respective user name and password credentials to authenticate and add them to the list.

Following the network scan any ONVIF compliant cameras will be shown on the list. Click “Authenticate” and verify by scrolling to the right of the Probe Results window that the cameras show Success for Authentication.

If they show Fail, enter the correct credentials and try again.

Select the verified cameras one by one or as a group (hold shift key down) and click “Add” to add them to the ONVIF list. Figure 4.9 shown as below.

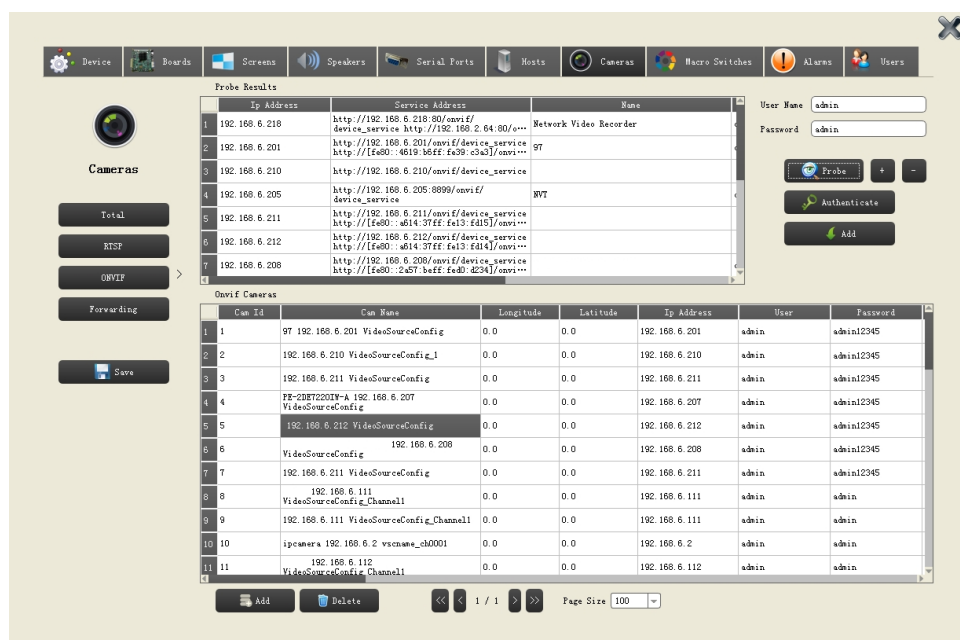


Fig 4.9 ONVIF access

Camera name, User name and Password can be modified when a camera is selected. Double Click on each field and enter the description or credentials.

Click “+” to manually add a camera configuration line, enter the camera IP address that needs authentication.

Click “-” to manually delete the selected camera configuration line.

Note: Default User name and Password while authenticating is “admin”.

4.4.3 IP Stream configuration

Select “ Forwarding” and display the forwarding interface.

Figure 4.10 as below.

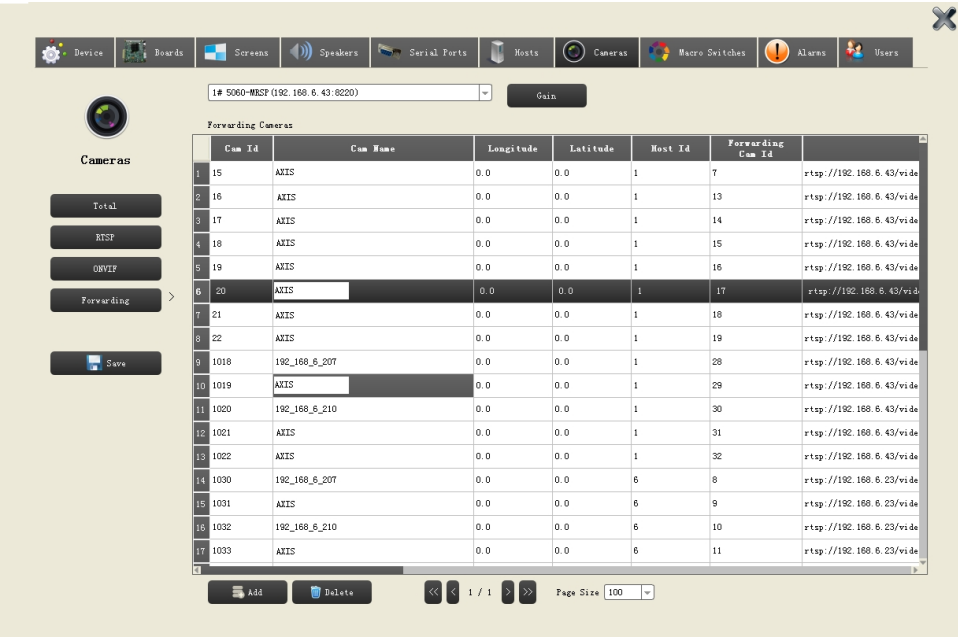


Fig 4.10 Forwarding list

In the forwarding tab interface, select a configured host No. in the combo box and click “Gain” to gain access to the forwarding camera.

Host No. will show up in the combo box when stream media server is registered in the **Hosts configuration tab**.

After clicking on “Gain”, the video streams which have access in the stream media server will be imported into camera list as shown in the picture above.

4.5 Video Screen configuration

Click “Screens” in the matrix configuration interface and display the screen configuration interface. Figure 4.11 as shown below.

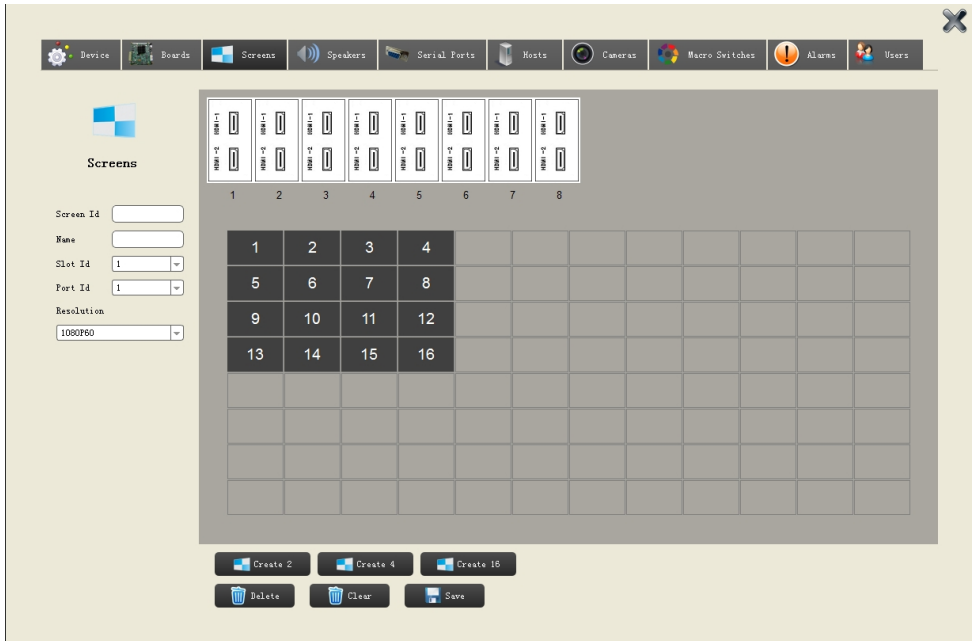


Fig 4.11 Screens configuration

The default configuration is a 4x4 display equal to 16 screen displays when entering the configuration menu. Click “Clear” to clear all screens or select one or more of them, then click “Delete” to delete the selected ones.

Screens parameters will display show in the left side of your window.

Screen ID and Name can be set as needed.

Slot ID, Port ID and resolution will be also displayed here and default resolution is 1080P 60fps.

Desired Resolution for each output can be set in the pull-down list. Selection must match maximum supported resolution of attached video monitor.

Click any Screen ID, and it will dynamically link the HDMI output of the board and indicate the corresponding output port of current screen. Figure 4.12 as shown below.

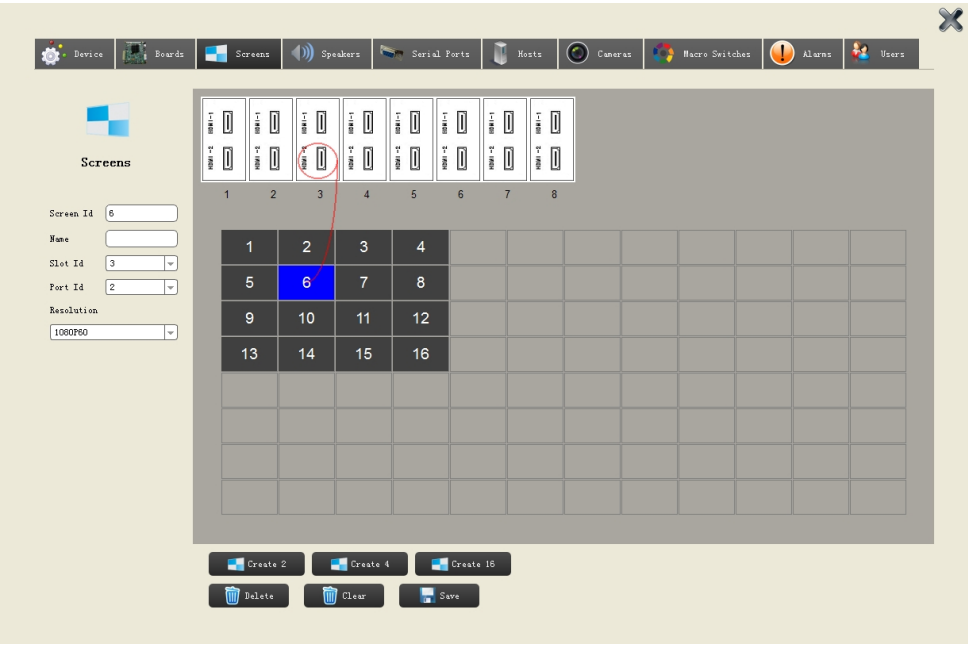


Fig 4.12 Screen link

4.6 Macro Switches

Click “Macro Switches” in the configuration panel and invoke the macro switches configuration interface, Fig 4.13 as shown below.

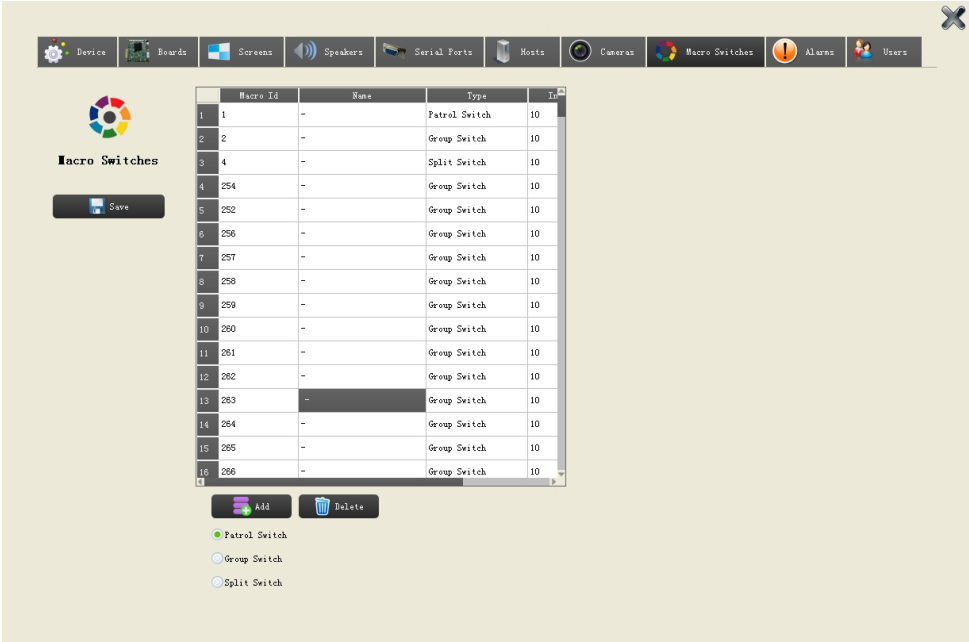


Fig 4.13 macro switches

Macro Switches: use a single command to call out a series of actions

In “Macro Switches”, user can configure “Patrol Switch”, “Group Switch”, “Split Switch”.

【Patrol Switch】 : specify one window to do auto-cycle viewing.

【Split Switch】 : specify one monitor to split then do auto-cycle viewing.

【Group Switch】 : specify a group of windows to do auto-cycle viewing at the same time.

4.6.1 Patrol Switch

Click “Patrol Switch”, the camera configuration area will display as Fig 4.14 as shown below.

Patrol switch: specify one window to do auto-cycle viewing

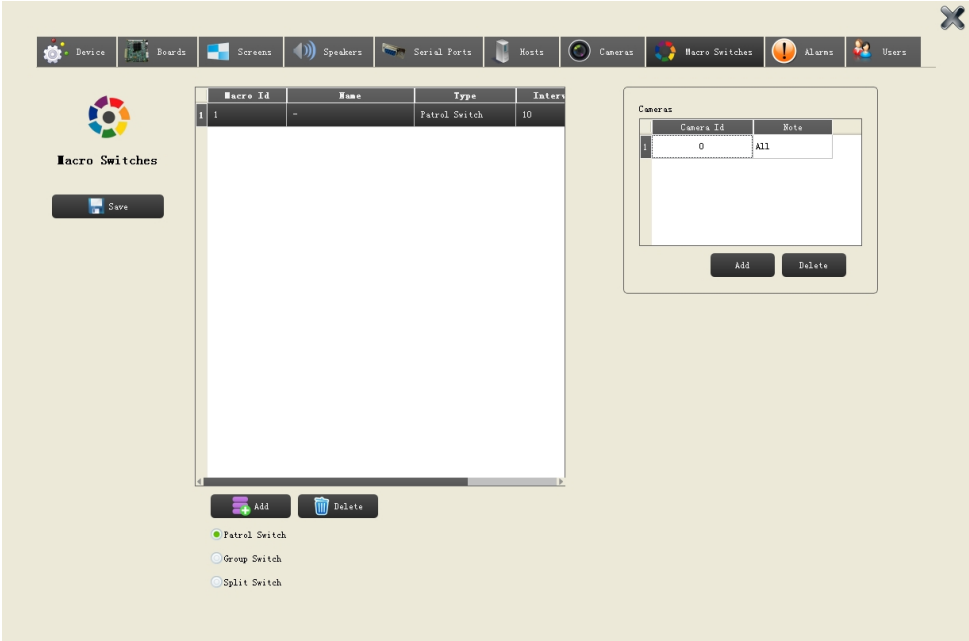


Figure 4.14 patrol switch

Note:

- (1) Default camera No. is “0”, it means select all cameras in the camera list.
- (2) User can add cameras by range, like “3-5”, it means 3, 4, 5 cameras are added in the patrol list.

4.6.2 Split Switch

Click “Split Switch”, Split mode and camera configuration will display at right area in Fig 4.15 as shown below.

Split switch: Specify one monitor to split then do auto-cycle viewing

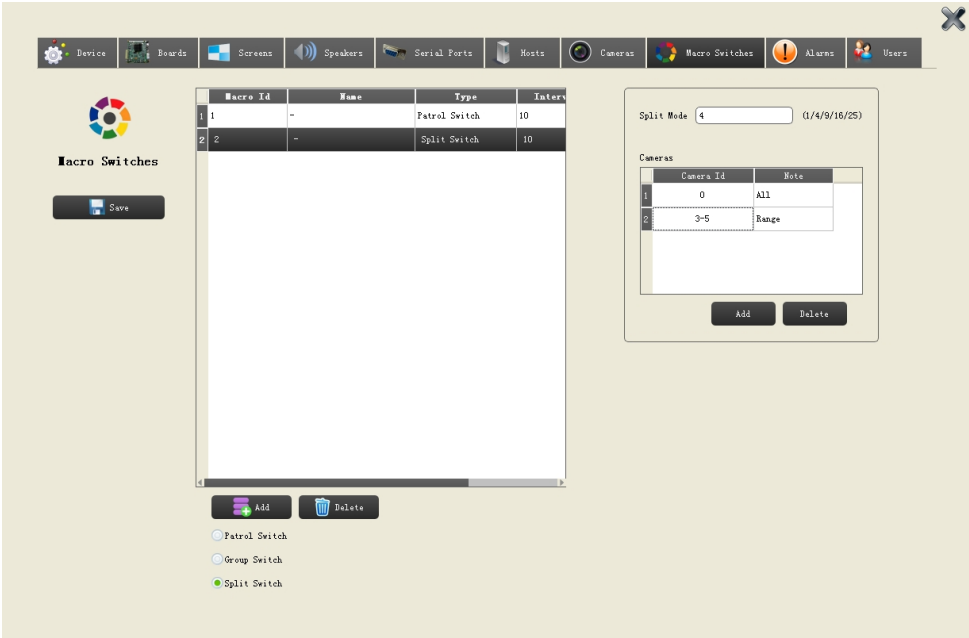


Figure 4.15 split switch

In “Split Switch”, select 1/4/9/16/25, add the camera No. in “Camera ID”, single, range, or all items can be added, also can add multi lines. After adding, all cameras in the list you can do Split Switch.

Note:

- (1) Default camera No. is “0”, it means select all cameras in the camera list.
- (2) User can add cameras by range, like “3-5”, it means 3, 4, 5 cameras are added in the split switch list.

4.6.3 Group Switch

Click “Group Switch”, Windows and camera configuration will display at right area in Fig 4.16 as shown below.

Group switch: Specify a group of windows to do auto-cycle viewing at the same time.

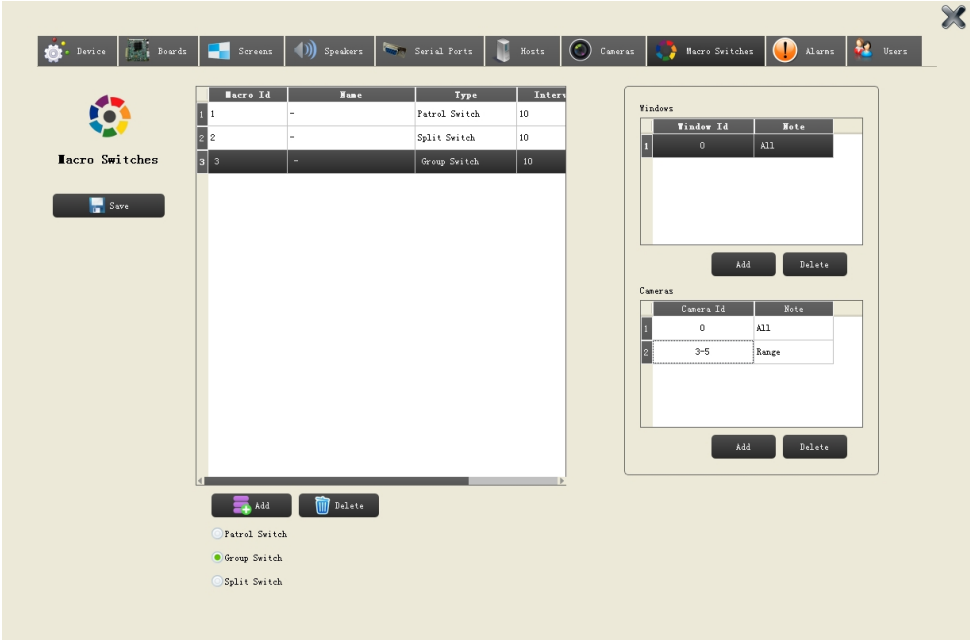


Figure 4.16 Group Switch

Input the “Window ID” and “Camera ID”, single, range, or all items can be added, also can add multi lines. After adding, all cameras in the list can do Group Switch.

Note:

- (1) Default camera No. is “0”, it means select all cameras in the camera list.
- (2) User can add cameras by range, like “3-5”, it means 3, 4, 5 cameras are added in the group switch list.

4.7 Alarms

Click “Alarms” in the matrix configuration interface and invoke the alarm configuration interface Fig 4.17 as shown below.

Only when alarm server is configured in the system, and registered in “Hosts”, alarm function can be configured in this tab after adding server in the pull-down list

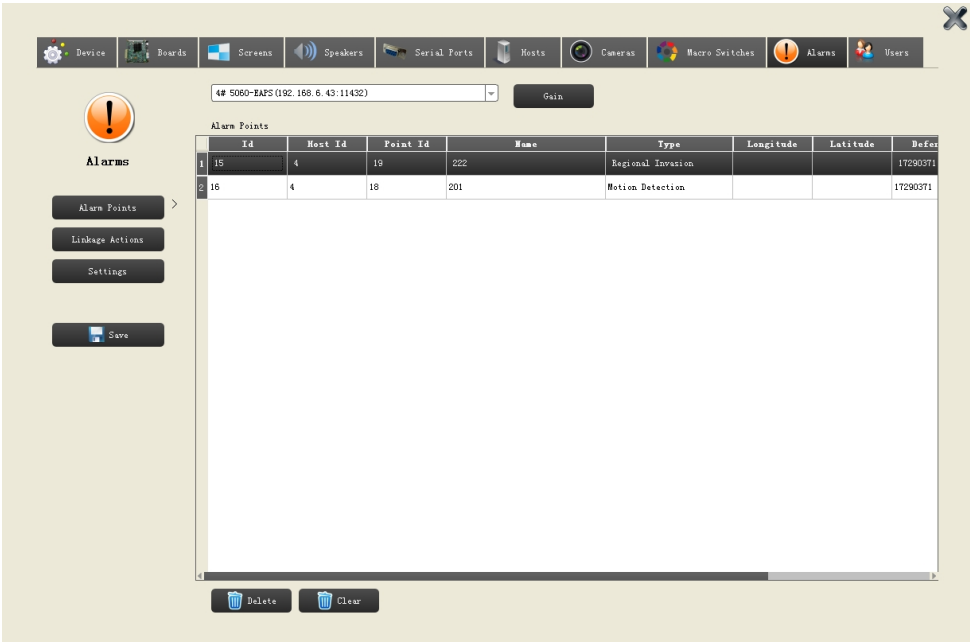


Figure 4.17 Alarm

It can obtain the alarm point of 5060-EAPS, can configure “linkage action”, “settings”. (requires additional hardware)

4.7.1 Alarm point

Click “Alarm point” as in Fig 4.18 as shown below.

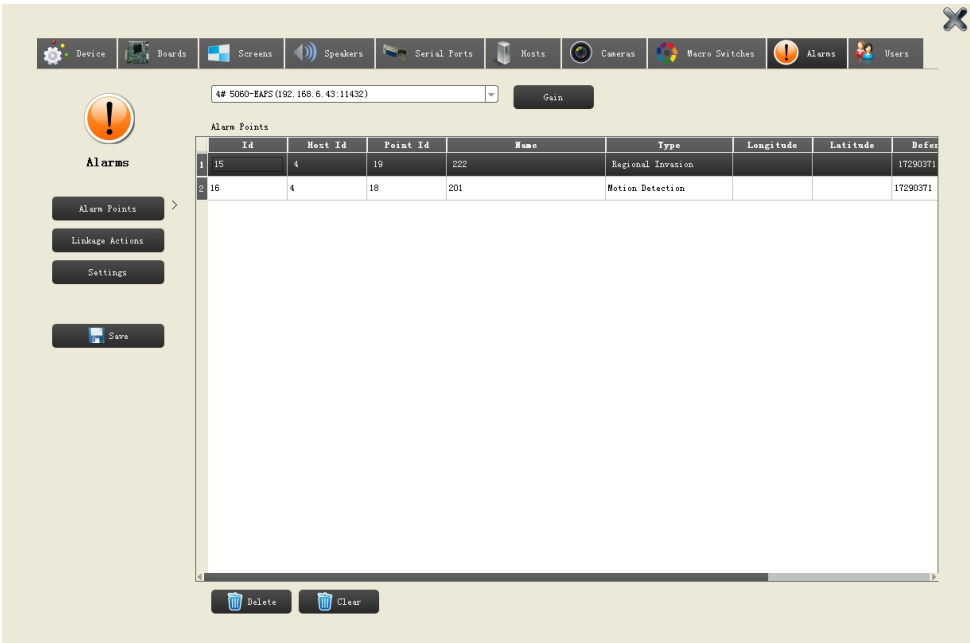


Figure 4.18 alarm point

In Alarm point tab, select alarm server host ID in the dropdown list and click “Gain”, the matrix can obtain all alarm point and related information from server.

4.7.2 Linkage actions

Click “linkage actions”, it will show alarm point and linkage actions configuration box as in Fig 4.19 as shown below.

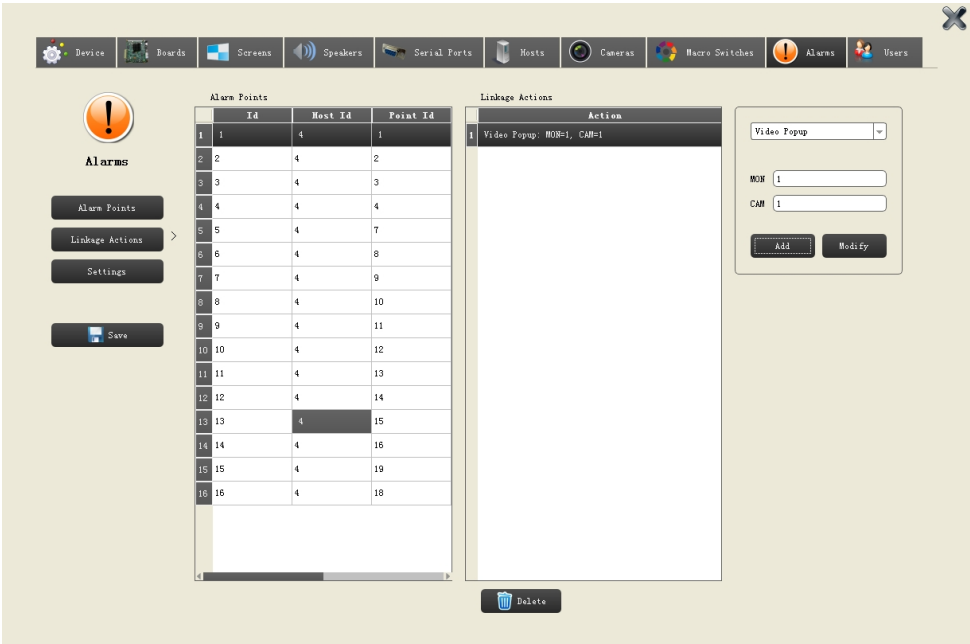


Figure 4.19 linkage actions

In “linkage actions” tab, select alarm point and configure the linkage actions when the alarm point is triggered.

Linkage actions can be video popup or go to preset.

Select “Video Popup”, input “MON” and “CAM”, then when alarm point is triggered, N MON will display M CAM (ex. 1MON, 2CAM).

Select “Go to Preset”, input “CAM” and “PRESET”, then when alarm point is triggered, M CAM N Preset will be called (ex.1CAM, 2PRESET).

4.7.3 Settings

Click “Settings” tab, it will show “settings” interface in Fig 4.20 shown below.

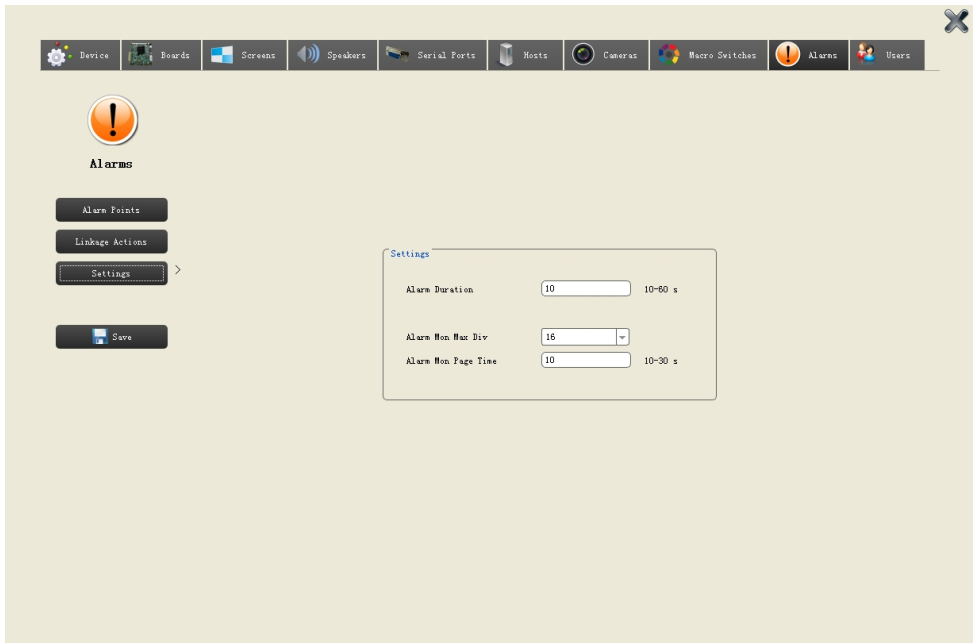


Figure 4.20 Settings

In “Settings” tab, “Alarm Duration” can be set, from 10-60 seconds options.
“Alarm Mon Max Div” (monitor reaction time after alarm) can be set 1-25 sec.
“Alarm Mon Page Time” (monitor dwell time) can be set from 10-30 seconds.

4.8 User configuration

Click “Users” in the matrix configuration interface and invoke the user configuration interface as in Fig 4.21 shown below.

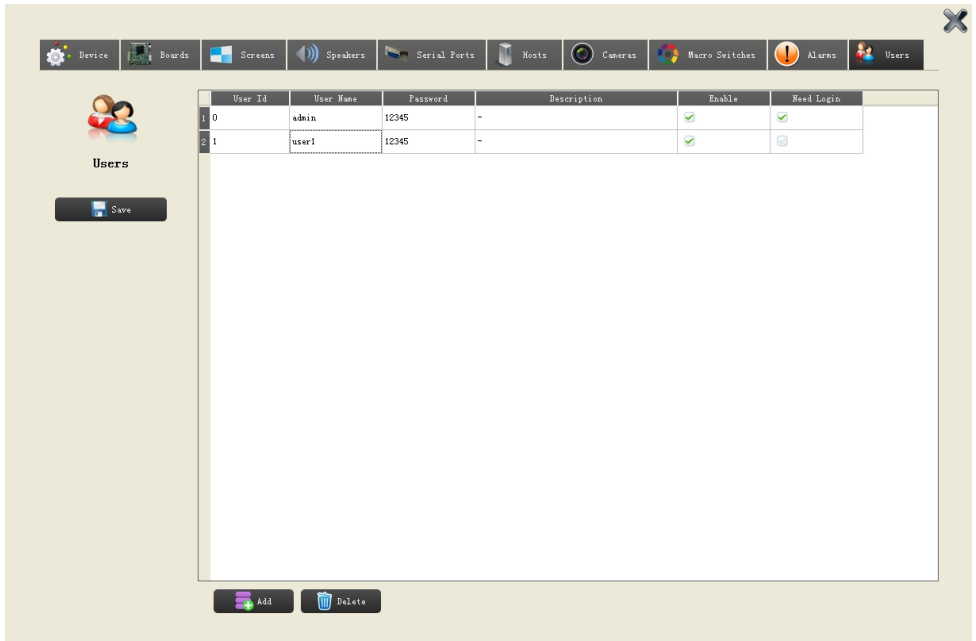


Fig 4.21 User configuration

A User can be added, deleted, and user name/password can be modified in the user configuration interface.

Default user ID is 0 for Admin account.

User name: admin; Password: 12345.

User ID: ID of user access to the keyboard

User name: ID of user access in configuration software.

Password: both for user in keyboard and software.

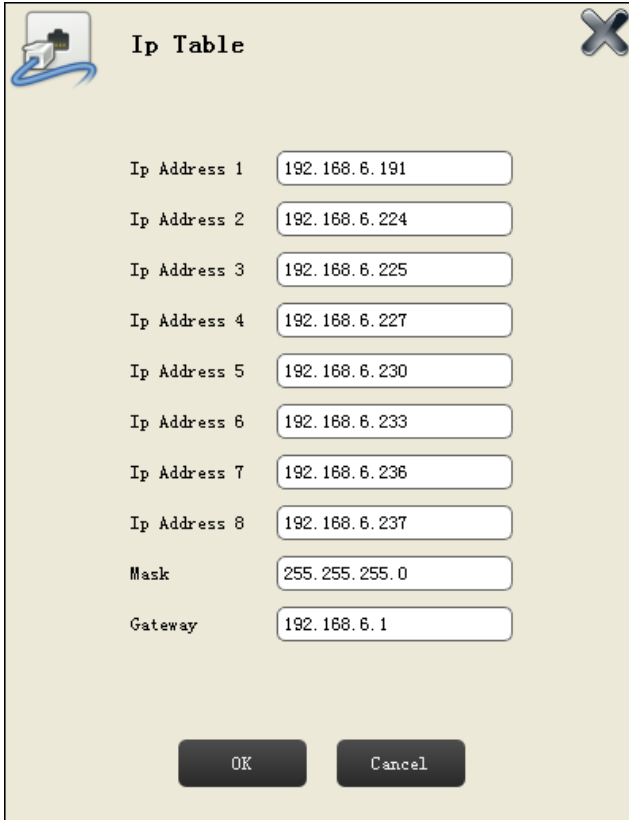
Description: description for the user.

Enable: enable the user

Need login: whether required login in keyboard

4.9 IP Table configuration

Click “IP Table” in the matrix configuration interface. Figure 4.22 as shown below.



Field	Value
Ip Address 1	192.168.6.191
Ip Address 2	192.168.6.224
Ip Address 3	192.168.6.225
Ip Address 4	192.168.6.227
Ip Address 5	192.168.6.230
Ip Address 6	192.168.6.233
Ip Address 7	192.168.6.236
Ip Address 8	192.168.6.237
Mask	255.255.255.0
Gateway	192.168.6.1

Fig 4.22 IP Table

External IP address, subnet mask, and gateway of every single board in the matrix can be set in the IP Table. Each IP address must be unique.

Note: IP address of each board in the matrix should be on the same network

Part 5 Appendix

5.1 Specifications and parameters

Specification and parameters

	Type	desktop	1U chassis	4U chassis
Output parameter	HDMI output	2CH	4CH	16CH for max
	Output resolution	HDMI1 support HDMI2.0 (maximum 4K); HDMI2 support HDMI1.4A (maximum 1080P@60Hz); Support 1024×768P@60Hz、 1280×720P@60Hz、1366×768P@60Hz、 1920×1080P@60Hz、3840×2160@30Hz, etc;		
External interface	Ethernet	Support 100M/1000M self-adaptive RJ45 Ethernet port.		
	USB port	Support USB 2.0 standard, Linux based access keyboard and mouse.		
	Serial port	Support RS232/RS422, RS232 debug port, RS422 reserved alarm functions		
Decode parameter	Type	H.265、H.264、MPEG4;		
	Resolution	4K、1080P、1080I、720P、D1		
	Capability	4CH 4K 16CH 1080P 32CH 720P 50CH D1 and below	8CH 4K 32CH 1080P 64CH 720P 100CH D1 and below	32CH 4K 128CH1080P 256CH 720P 400CH D1 and below

Other	Screen splitting	1/4/6/8/9/16/25		
	Screen splicing	1x2 / 2x1	2x2 max	4x4 max
	OSD	Supports English OSD character superposition; Monitor No., Window No., Camera No. display. Support title superposition.		

5.2 Keyboard operation instructions

Operating instruction

Function	Operation instruction
Monitor split	N (Monitor No.) + MON + M (1/4/6/8/9/16/25) + MULT
Camera switch	N (Window No.) + WIN + M (Camera No.) + CAM
Windows splice	SHOT + MON + N (top left corner win No. of matrix) + MON + M (bottom right corner win No. of matrix) + MON
Exit splicing	SHOT + WIN + N (win No. of splicing screen) + WIN
Patrol switch	N (Window No.) + WIN + M (current No.) + RUN
Stop patrol switch	N (Window No.) + WIN + M (current No.) + STOP
Group switch	M (current No.) + RUN
Stop group switch	M (current No.) + STOP
Split switch	N (Monitor No.) + MON + M (current No.) + RUN
Stop split switch	M (current No.) + STOP
Preset setting	N + (SHOT + PRESET)
Preset calling	N + PRESET
PTZ control	Control current PTZ motion control
CAM up switch	FWD
CAM down switch	BWD
Matrix Address switch	N (site No.) + M7
Keyboard lock	SHOT + LOCK
Keyboard unlock	LOCK

5.3 HD IP Matrix fault analysis and troubleshooting

In case of fault or trouble, please analyze possible cause as follows.

If the issue is not resolved please contact the dealer or manufacturer.

Failure or Trouble	Analysis	Resolution
Power indicator is off	Power fault	Check the power connector Check the power-supply
No image output	Single power supply	Check indicator of power supply;
	Display unit connection	Check the connection between the display and matrix. Check the HDMI cable and connector
Video output is abnormal	Display unit connection	Check the connection between display unit and matrix Examine the quality of HDMI cable.
Still/ frozen image	Network cable connection	Check the network connection for this image, check the green indicator light on Ethernet port. Check the Ethernet input port of this video, if the yellow light (data) blinking or not;

For any additional questions please contact our Technical support department at 469-635-6820 Monday through Friday 8:00 AM -5:00 PM CST.

Note: The information supplied in this manual is subject to change without prior notice.