

**OMC**






**VisualAI**

**Video Control**

**User Manual**

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Symbol Definition	
	<b>WARNING:</b> Indicates information that a potentially hazardous situation which, if not avoided, could result in serious injury or death.
	<b>RISK OF ELECTRICAL SHOCK:</b> Indicates information that Potential shock hazard where HAZARDOUS LIVE voltages greater than 30V RMS, 42.4V peak, or 60V DC may be <b>accessible</b> .
	<b>ESD HAZARD:</b> Indicates information that Danger of an electro-static discharge to which equipment may be sensitive. Observe precautions for handling electrostatic sensitive devices
	<b>ATTENTION:</b> Identifies information that requires special consideration.
	<b>TIP:</b> Identifies advice or hints for the user.

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# Video Control

## Section 1 Overview

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In order to improve the supervision efficiency of product information, more and more field applications require monitors not only to monitor production data, but also to provide functions such as visual monitoring of important equipment and safety monitoring of the factory environment. Meanwhile, the monitors are required to fully cover the field without blind spots, and the linkage between video surveillance and DCS surveillance should be strengthened.

The video control RealPlayCtrl.ocx is an OCX control developed according to the standard COM protocol and can be seamlessly connected into the graphics of the control system. At present, this control supports core functions such as video surveillance display and PTZ control for mainstream video manufacturers (referring to Hikvision and Dahua). If the cameras of other manufacturers support the onvif protocol, they can be connected to video control via Hikvision or Dahua's hard disk recorders.

This video control has two modes: configuration period and operation period. The configuration period is used for property parameter configuration, and the operation period is used for video display and PTZ control.

## Section 2 Video Access

The network structure diagram of OMC system is shown in the Figure 2-1. The video control is installed when you install the VisualAI component. It's deployed at the IES (Intelligent Engineer Srtation) and used in the Graphics Builder of High-performanceHMI component.

The operating station that pops up the video window must add an additional network card to connect to the camera network.

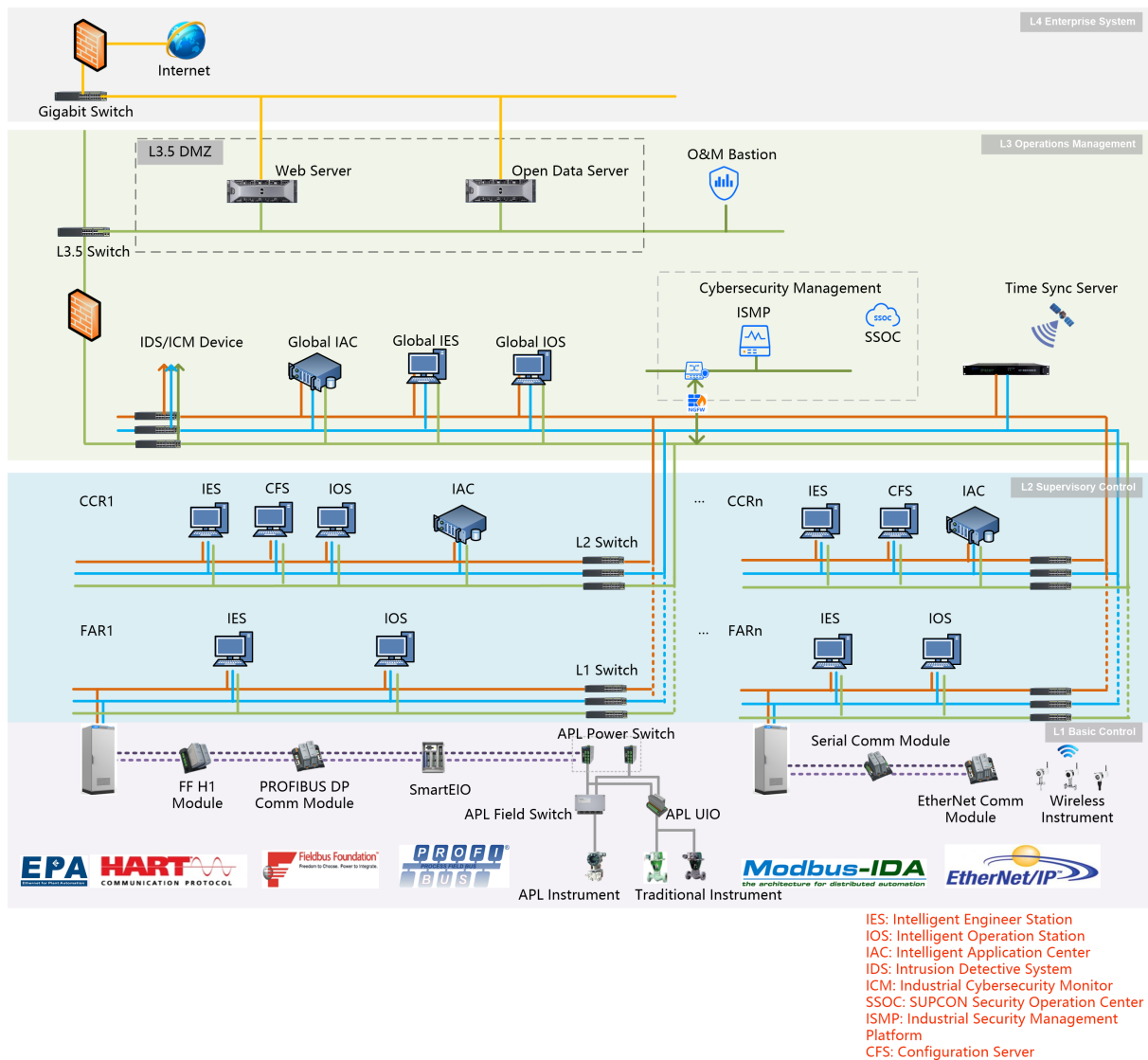


Figure 2-1 System networking



**Tip:**

Subsequent descriptions are all based on High-performanceHMI by default. Control

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**systems other than High-performanceHMI will be marked.**


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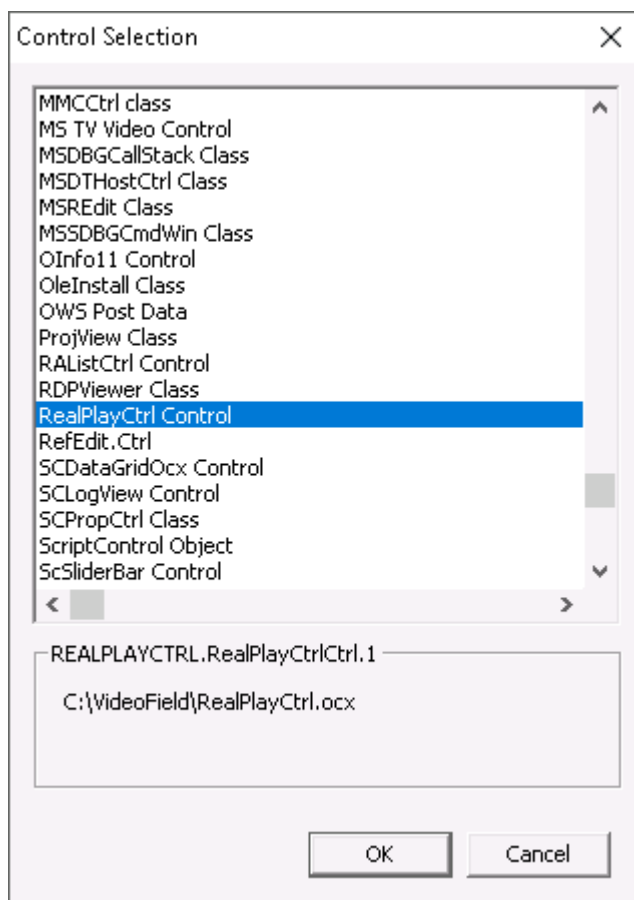
## Section 3 Configuration Period

### 3.1 Configure Control Properties


In the graphic drawing software, you can add video controls to the graphic and configure the related properties.

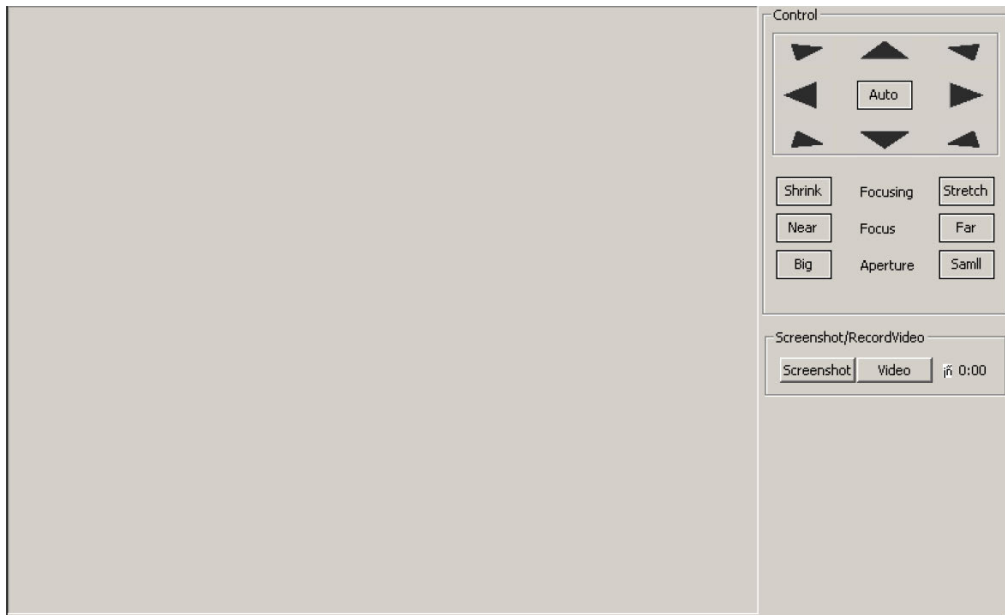
The steps to add video controls are as follows:

- 1) Create a new graphic, then left-click the control button , and the Control Selection box pops up. Select the video control “RealPlayCtrl”, and click “OK”, as shown in Figure 3-1.



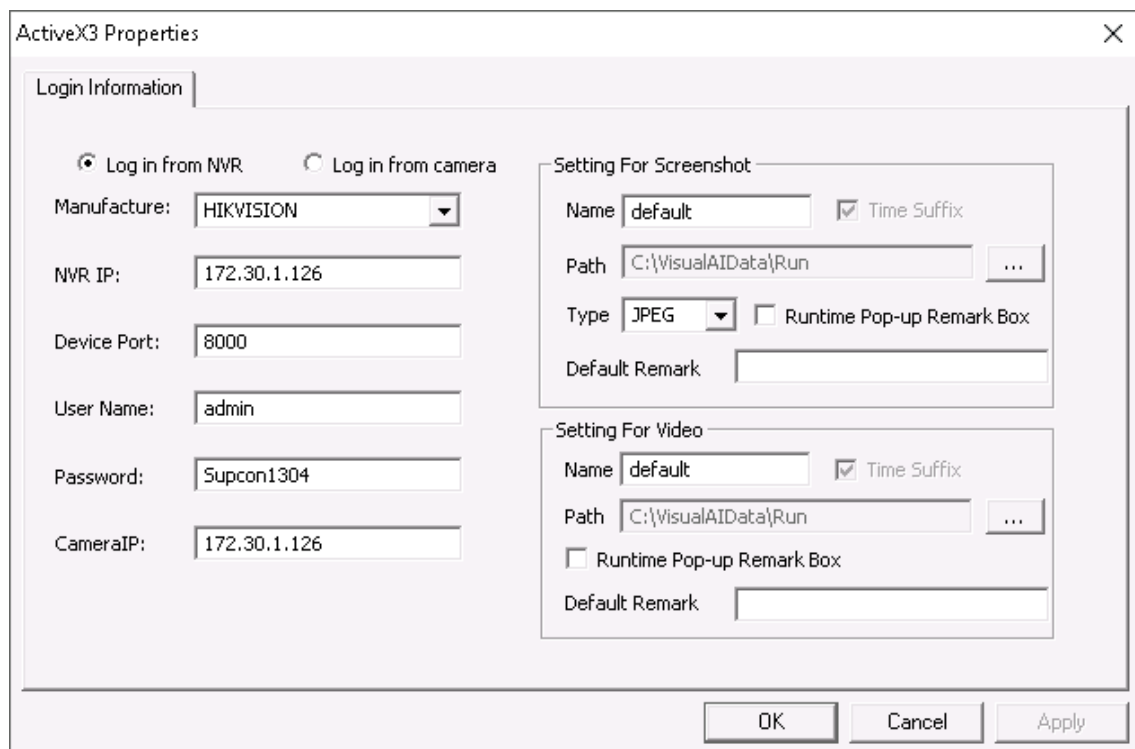
**Figure 3-1 Video Controls Selection**

- 2) Move the cursor to the drawing area, the cursor is shaped . Hold down the left mouse button to drag, and then release the left mouse button, a video control graphic object will occur, as shown in the following figure.



**Figure 3-2 Video Control Graphic Object**

- 3) Right-click on the control and select the “Properties”, or simply double-click the control graphic, the property setting dialog box pops up.



**Figure 3-3 Control Properties Settings**

- Login Configuration: Set basic parameters such as device manufacturer, NVR IP, port, user name and password. If the camera is connected with more than four clients, it is recommended to choose “Login from NVR”



Figure 3-4 shows two login configuration forms. The left form is for 'Log in from NVR' and the right form is for 'Log in from camera'. Both forms have the same fields: Manufacture (dropdown menu with 'HIKVISION' selected), NVR IP / CameraIP (text input with '127.0.0.1'), Device Port (text input with '8000'), User Name (text input with 'admin'), Password (text input with '12345'), and CameraIP (text input with '127.0.0.1').

**Figure 3-4 Login Configuration (left: Login from NVR; right: Login from Camera)**

There are two ways to set the video control properties: fixed property configuration and variable property configuration.

Figure 3-5 shows two login configuration forms. The left form is for 'Fixed Property Configuration' and the right form is for 'Variable Property Configuration'. Both forms have the same fields: Manufacture (dropdown menu with 'HIKVISION' selected), CameraIP (text input with '127.0.0.1' on the left and '@cameral\_ip@' on the right), Device Port (text input with '8000'), User Name (text input with 'admin' on the left and '@cameral\_user@' on the right), and Password (text input with '12345').

**Figure 3-5 Login Configuration (left: Fixed Property Configuration; right: Variable Property Configuration)**

- Fixed Property Configuration: Specify the properties of manufacturer, IP, user name, password and port, as shown in Figure 3-5 (left side).

In this property configuration mode, only the fixed video screen can pop up in the graphic diagram. The information of IP, port, user name and password are based on the actual display.



**Tip:**

**Currently, only cameras manufactured by Dahua and Hikvision are supported.**

- Variable Property Configuration: Information of IP, user name, password and port are replaced by alias, as shown in Figure 3-5 (right side).  
Set the pop-up graphic and point-group in the dynamics of the main graphic object, so as to correspond the actual information to the alias. By setting the variable property and point-group, the dynamics of each graphic object can be configured with different point-group, so as to obtain videos from various cameras.




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**Tips:**

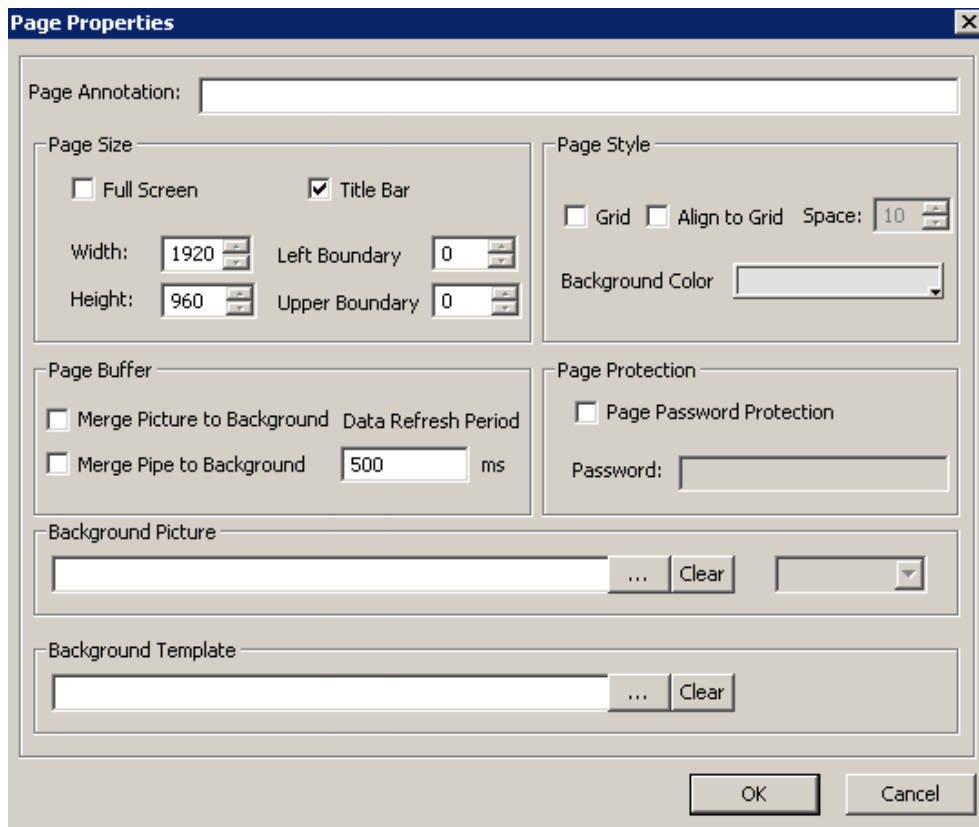
**The alias must begin with @ and end with @, without @, = or such characters in between.**

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- 4) As shown in Figure 3-3, you can configure the operation parameters of screenshot and videos respectively.
  - Name: elements of screenshot, “default” by default. The name can be as much as 64 characters and can be modified. “Time Suffix” is ticked by default. The format of name is “Name\_Date\_Time”, such as “default\_20191015\_193705”.
  - Path: the storage path of screenshots or videos. Click  to select the path.
  - Type: the format type of screenshot, including “JPEG” and “BMP”. Select from the drop-down box.
  - Default remark: the remark information of screenshot or video, with a maximum length of 64 characters.
  - Runtime Pop-up Remark Box: Set whether to pop up remark box in the runtime of screenshot or video-recoding. Tick to pop up, otherwise not to pop up. If ticked, you can modify the default remark.
- 5) After finishing configuring the properties, you can adjust the size of video control graphic and that of graphic diagram to make the control graphic fill up the graphic diagram as possible.
- 6) Finally, select [Document / Save as / Pop up graphic], and save the diagram as “pop-up graphic”.

## 3.2 Video Graphic Configuration

Select the menu command [Settings / Page Properties], or select “Page Properties” by right-clicking the blank area of the drawing area, then the setting interface “Page Properties” pops up, as shown in the following figure.



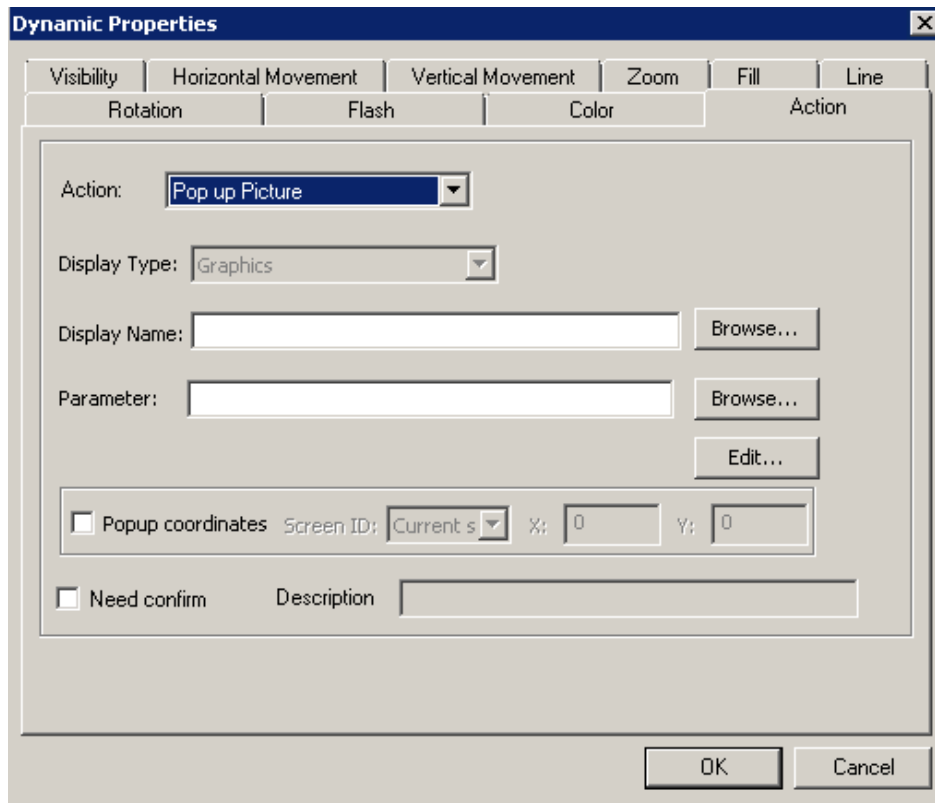
**Figure 3-6 Setting Page Properties**

In the “Page Properties” interface, the user can check the “Title Bar” to configure the window size.

### 3.3 Add Video Screen

After configuring the video control properties, you need to associate the specified camera image with the corresponding graphic. The steps are as follows:

1. In the main graphic, double-click the graphic or parameter that needs to be associated with the video screen, or select “Dynamic” in the right-click menu to open the “Dynamic Properties” interface.
2. Select the “Action” tab on the “Dynamic Properties” page.
3. Select “Pop up Picture” from the drop-down menu to the right of “Action” tab, as shown in the figure below.



**Figure 3-7 Interface of Dynamic Properties**

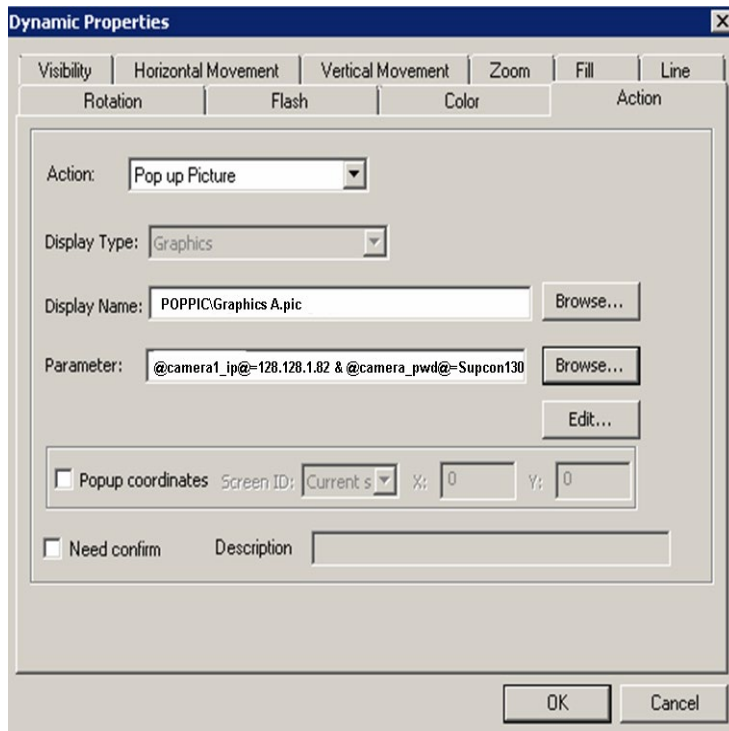
- Display Name

Click “Browse” button on the right of “Display Name”, and select the previously saved pop-up graphic diagram.

- Parameter

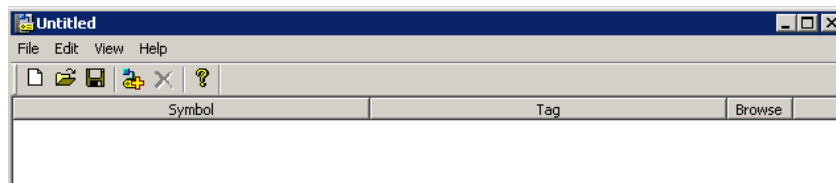
If the video control is configured with fixed properties, then you do not need to fill in parameters. The pop-up video is just the video signal of the corresponding IP camera. If the video control is configured with variable properties, you need to set the alias to match the actual information. There are two ways to configure the parameters.

- Directly set the parameters: Users can directly fill the alias and the actual information together in the text box. As shown in Figure 3-6, the parameter is “@camera1\_ip@=128.128.1.82 & @camera1\_pwd@=Supcon1304 & @camera1\_user@=admin”.




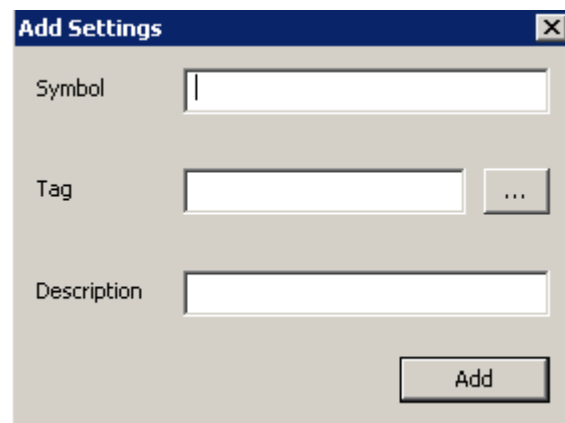
**Figure 3-8 Directly Set Parameters**

- Set the parameters by point-group:
  - 1) Click “Edit” on the right of “Parameter” to open the point-group configuration interface, as shown in Figure 3-9.



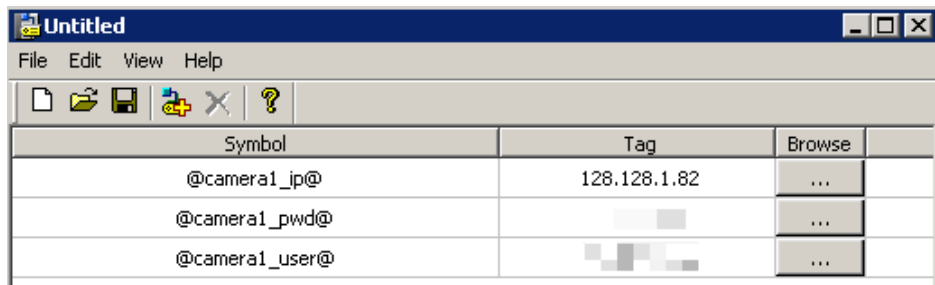
**Figure 3-9 Point-group Configuration Interface**

- 2) Click the button  in the toolbar, or select the menu command [Edit / Add], then the window “Add Settings” pops up, as shown in Figure 3-10.



**Figure 3-10 Add Settings**

- ◆ Symbol: the alias set in the variable properties configuration, such as @camera1\_ip@.
  - ◆ Tag: the actual information matches the alias. For example, @camera1\_ip@ corresponds to “128.128.1.81”.
  - ◆ Description: other information
- 3) After filling up the above content, click “Add”. Then the point-group configuration interface is shown as follows. Save and close the interface after completing configuration.



**Figure 3-11 Point-group Configuration Interface**

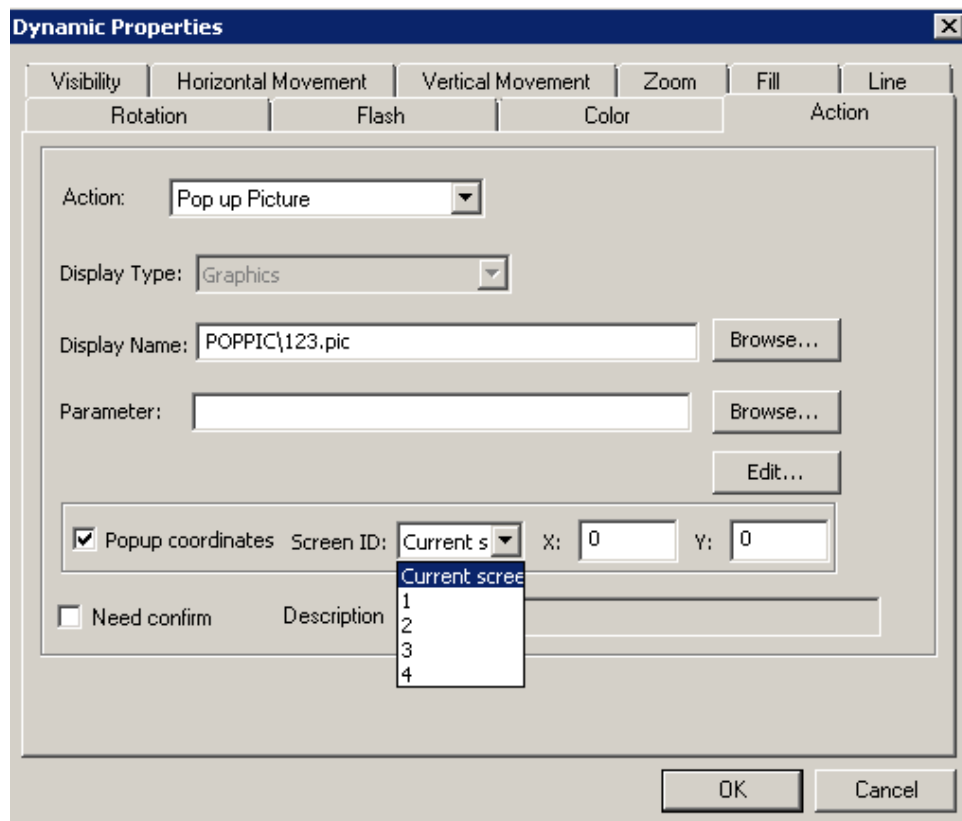
- 4) In the “Dynamic Properties” interface, as shown in Figure 3-7, click “Browse” on the right of “parameter”, and then select the previously point-group document. Users can replace the parameters of the video control by modifying the actual content, so as to change the surveillance video screen displayed in the same pop-up graphic.
- Control Graphic Location
- 1) After configuring the parameters, tick “Pop up coordinates” to set the relative coordinates X and Y of the screen and to control the location of the pop-up screen. If not ticked, the interface of the graphic is configured by default.



**Tip:**

In the dynamic properties of the pop-up picture, “Pop Up Coordinates” is not ticked by default.

- 2) As for screen ID, you can choose “Current Screen”, 1, 2, 3, 4, as shown in Figure 3-12.



**Figure 3-12 Dynamic Properties Interface (Variable Properties, point-group)**

- 3) After configuring the "Action" tab, click "OK" to save the modification.

## Section 4 Monitoring Period Screen

After completing the above configuration, the user can click on a graphic object associated with video screens during the monitoring period. Open the video screen, a camera monitor screen will be automatically displayed on the video control page, as shown in Figure 4-1.



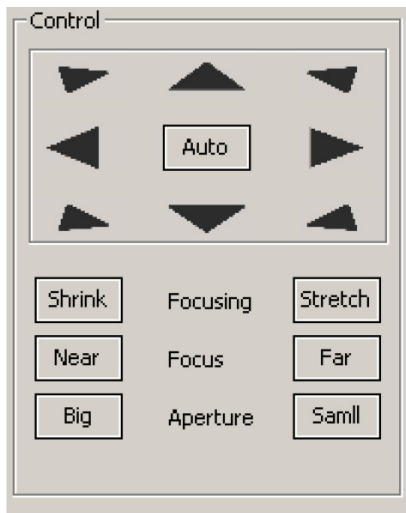
**Figure 4-1 Video Control Monitoring Screen**

The pop-up graphic only displays the camera monitoring screen. Click the green extending symbol on the right side of the screen to display the extended control panel.

### 4.1 PTZ Control

Users can control the PTZ of the camera through the control panel, as shown in the figure below.





**Figure 4-2 Extended Control Panel**

Currently, the camera actions supported by the video control include:

- Switch: up, down, left, right, top left, bottom left, top right, bottom right, auto rotation.
- Focusing: shrink or stretch.
- Focus: near focus or far focus.
- Aperture: big or small.



**Tip:**

The above functions are only applicable to the cameras with PTZ control functions.

The control supports configuration of picture quality, which can be set in the file “VisualAI.ini” in the installation directory. When “Quality” is 0, the picture quality is high; when “Quality” is not 0, the picture quality is low.

## 4.2 Screenshot / Video

During the operation period, you can perform screenshot or video-recording to archive the current screen.

### 4.2.1 Operating Instructions

In the interface shown in Figure 4-1, click “screenshot” to perform the screenshot operation on the current screen. Click “Video” to record videos. The video will count from the current time, and you can click “End video” to save the recording. The recording period is shown on the right side of the “video” button.

If you tick “Runtime Pop-up Remark Box” during configuration, a text-editing box will pop up for you to add remarks to the screenshots or videos while you are saving them. If it is not ticked,

default remark set in the configuration period will be adopted. As for the description of configuration period, please refer to the section “Configure Control Properties”.


#### **4.2.2 View Files**

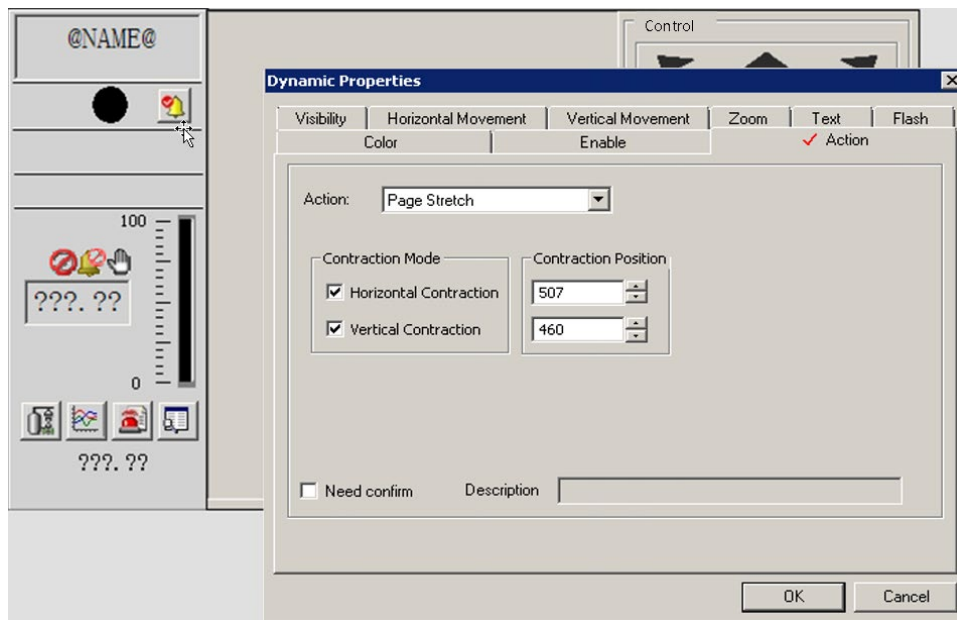
Through the address which is set in the control property dialog box, you can view the saved screenshots and videos. For details, please refer to "Configure Control Properties".

## Section 5 Other Applications Instruction


### 5.1 Global Function Block Panel Configuration

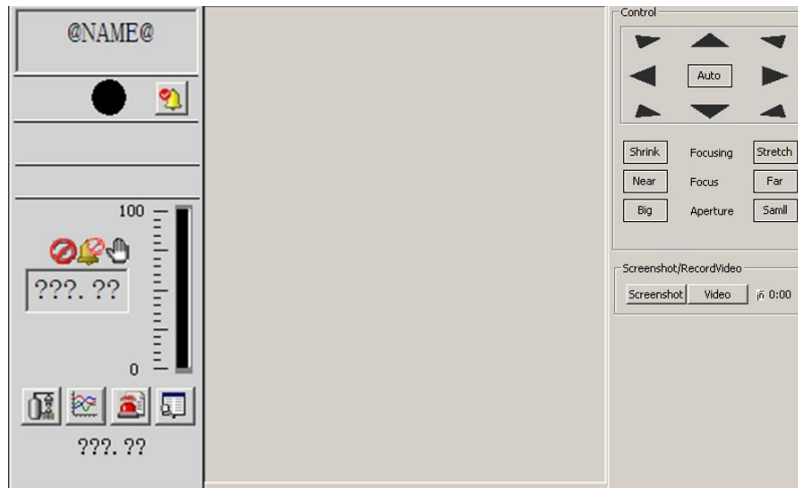
Video Controls are supported in the global function block panel. The configuration steps are as follows:

1. Open the interface of High-performanceHMI, select the global function block under the global function block library in the tree directory on the left side to add video controls. Select the panel in the configuration property list on the right, and click "Edit".
2. Open the edit page of the panel in the graphic drawing software, and add a rectangle of equal height on the right side of the panel as an extended panel of the global function block.
3. Click the screen adjustment button  and select "dynamic" in its right-click menu. When the dynamic property dialog box pops up, select the tab "Action". Select "Page Stretch" for the action. If you tick "Horizontal Contraction" for the shrinking method, the shrinking value is the total width of the original panel and the rectangular extended panel; if you tick "Vertical Contraction", the shrinking value is the height of the original panel. The interface is shown in the figure below. Click OK to save the changes.



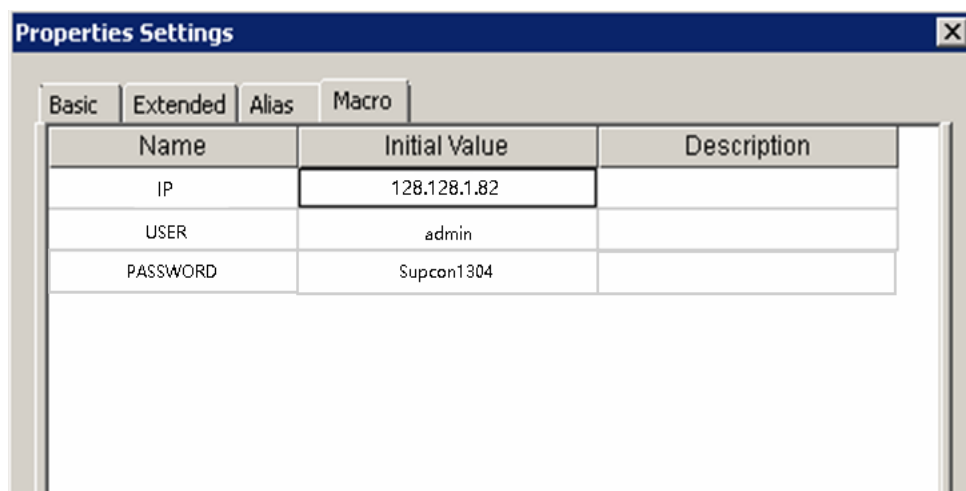
**Figure 5-1 Add Extended Panel**

4. Left-click the control button , insert a video control in the rectangle which serves as an extended panel, and then set the properties of the inserted video control, as shown in Figure 5-2. As for the detailed configuration steps, please refer to Section 3. Save the configuration and close the graphic drawing software after finishing step 4.



**Figure 5-2 Add Video Controls**

- Return to the configuration management software and select “Parameter” in the global function block configuration property list. Then select “Edit” in the right-click menu of “Parameter”, the “Properties Settings” dialog box pops up. Click the “Macro” tab to set the name and the initial value (can be blank).



**Figure 5-3 Macro Setting of Global Function Block**

- After setting the global function blocks, select the user program under the control station in the tree directory. Create a new user program, and add the global function block tag. By changing the actual information of the alias in the “Macro” tab, you can change the screen displayed during the monitoring period. Save and publish the configuration, and open the adjustment screen of the global function block panel to display the corresponding video screens, as shown in Figure 5-4 and Figure 5-5.

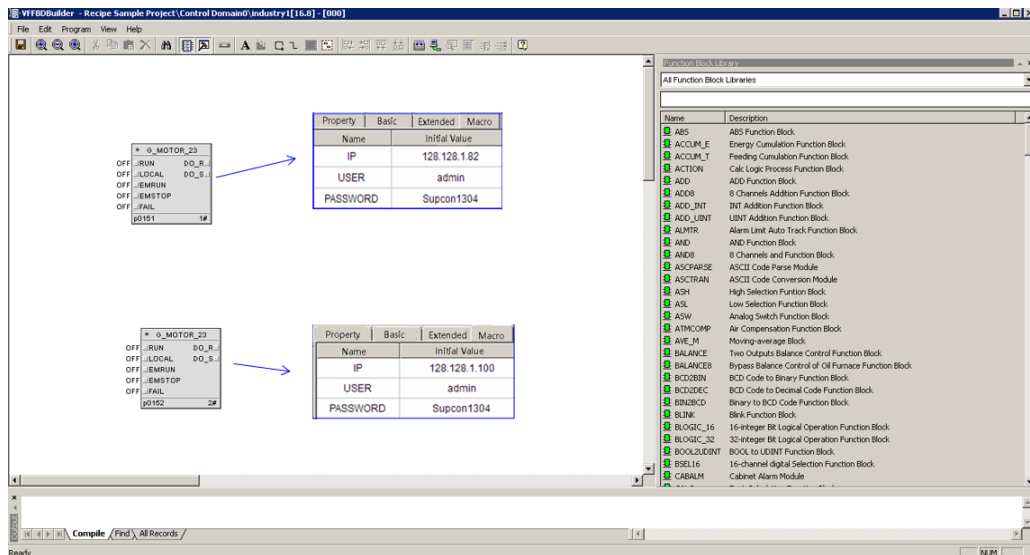


Figure 5-4 Property Settings of Global Function Block

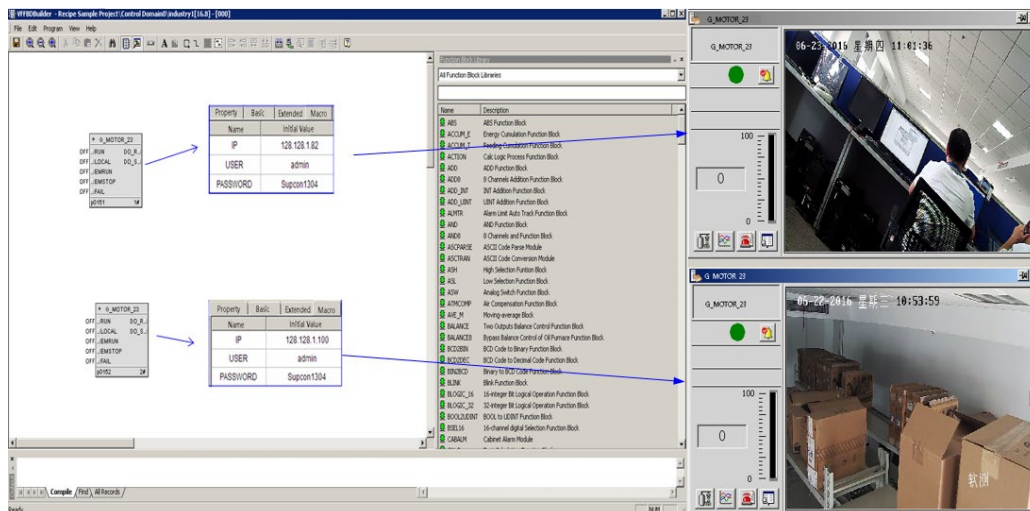


Figure 5-5 Videos Screens displayed by Different Settings

## 5.2 Automatic Pop-up Configuration

By scheduling, you can set the video window to automatically pop up in the case of tag alarm.




### Attention:

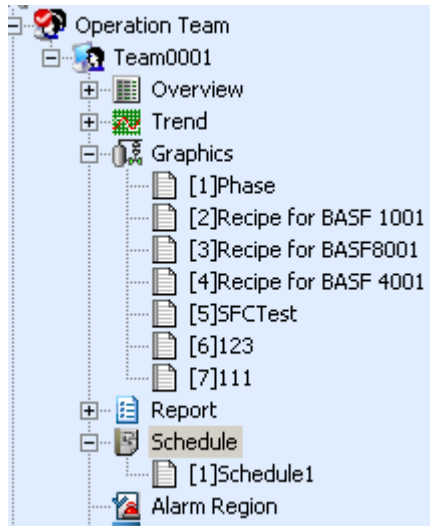
The position of picture window cannot be specified in the video window that pops up through scheduling settings.

The specific configuration steps are as follows.


1. Select an operation domain in the configuration management software, and select “Open

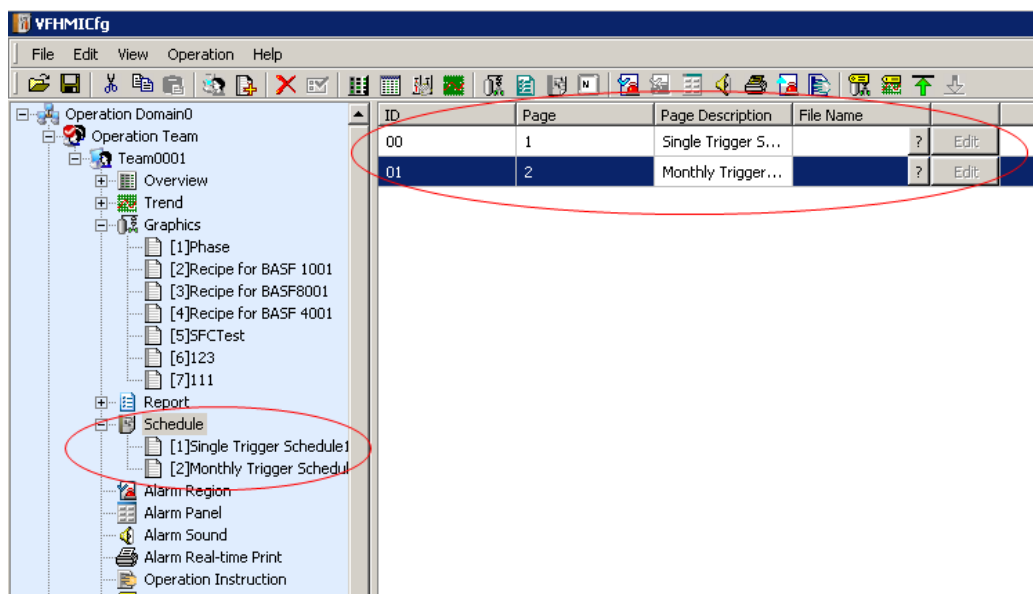
from Configuration Server” in the right-click menu to open the monitor management software.

- To add a schedule to an operation group, you can right-click the group and select the “Schedule” item in the pop-up right-click menu, or select [Operation Team / Add Schedule] in the menu bar, or simply click the icon  in the toolbar. With the schedule added, “Schedule 1” is created by default. The interface is shown below.




**Figure 5-6 Add a Schedule to Operation Group**

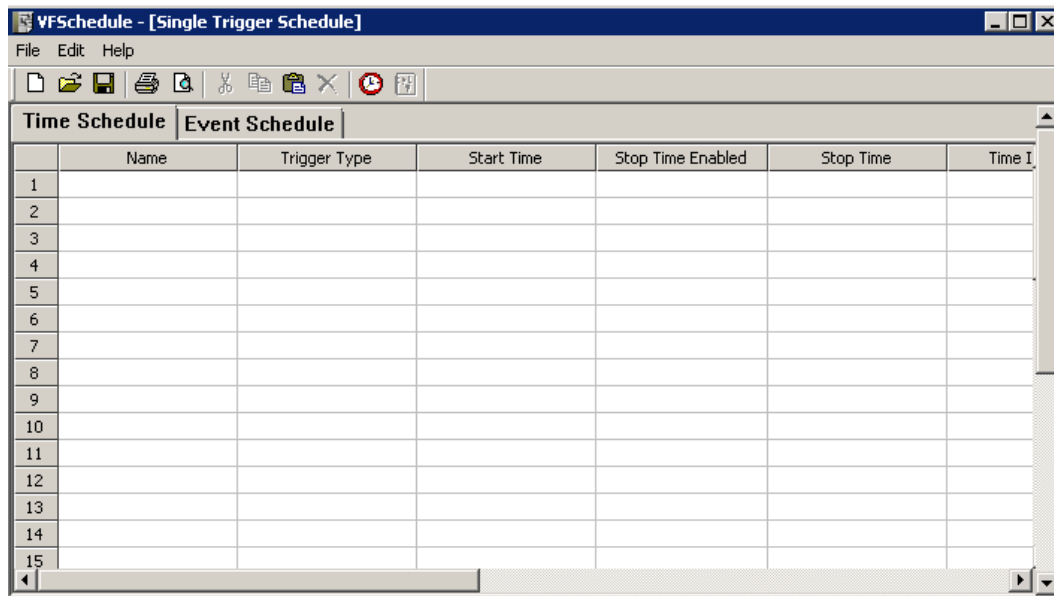
- To add a new schedule page, you can select “Add Page” in the right-click menu of “Schedule”, or select [Operation / Add] in the menu bar, or simply click the icon  in the toolbar. In the list on the right side, you can modify the page number and page description of the newly added schedule, as shown in Figure 5-7.



**Figure 5-7 Successful Addition of Schedule Page**

- Enter a file name in “File name” (for example: Single Trigger Schedule), or you can click the icon  to select an existing schedule file, then the edit button becomes operable.


Double-click “Single Trigger Schedule” in the configuration tree or click the “Edit” button, then the schedule configuration interface pops up, as shown below.




**Figure 5-8 Interface of Schedule Configuration**



**Tip:**

Select the existing schedule file by clicking the icon . When the schedule file is selected, the page description is changed to the file name of the selected schedule file at the same time.

- To add “Event Schedule”, you can select [Edit / Add Event Operation] in the menu bar, or click the icon  in the toolbar. Then the dialog box “New Event Operation” pops up, and you can configure the events of which the video screens need to automatically pop up. The interface is as follows.

**New Event Operation**

**Schedule Information**

Name: Event1

Description: the corresponding monitor screen

**Event Information**

Data Source: [ ]

Event Type: When it is true Time Interval: 0:01:00

**Operation Information**

Operation: Popup Graphics

Graphics Name: POPPIC\Flowchart A.pic Open...

Parameter: Flowchart A point-group

OK Cancel

**Figure 5-9 New Event Action Items**

- Schedule information: the name and description of the event.
  - Event information: configure the event to trigger automatic pop-up of video screen based on the actual needs.
  - Operation information: configuration of the automatic pop-up video screen.
    - ➤Operation: select “Pop up Graphic”.
    - ➤Graphic name: click “open” to select the graphic that needs to pop up.
    - ➤Parameter: enter the file name of the corresponding point-group, or directly enter character strings to match the alias parameters.
6. Click “OK” to save and close the schedule file.

## 5.3 Linkage Configuration with Video Server

Through the real-time data changes of the control system, the large screen display or the video wall of the video manufacturer can be switched in linkage.

The video linkage configuration is implemented through OPC, and there are two solutions:

- Solution 1: the data of control system is provided by OPC server, and can be configured and acquired by the video manufacturers. When the data is larger than the alarm threshold, the video manufacturers configure the linkage to make the specified video screen pop up on large screen or video wall.



- Solution 2: the OPC server is provided by the video manufacturer and connected to the control system in the form of OPC domain variables. When the real-time data of the control system is larger than an alarm threshold, set the domain variable as TRUE, otherwise set as FALSE. When the receiving value of the server changes, make the specified video screen pop up on large screen or video wall.

When the project is implemented, you can communicate with the video manufacturers and customers according to the actual situation, so as to determine the solution to achieve video linkage.

## Section 6 Precautions and Abnormal Prompts

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### 6.1 Precautions

1. A maximum of 16 video screens are supported to pop up simultaneously at one single operation station. But due to the high CPU usage of the video operation, it is recommended to pop up less than 9 screens at the same time.
2. There is no limit to the number of controls that can be placed on each page of the graphic. But due to the high CPU usage of the video operation, it is recommended to place less than 4 controls on one page.
3. The controls added in the graphic screen cannot be too close to other graphic elements of the graphic, especially those configured dynamic. Otherwise, the controls will flash.
4. If the video monitor operation station has a 64-bit operating system or an English operating system, you need to manually install the program (root directory of OMC installation package Disk\Setup\Video\setup\common\vc redistrib\_x86.exe), otherwise the video in the control cannot be displayed.
5. The total number of camera client connections is determined by the camera's own specifications, that is, the total number of video windows opened at the same time by the same camera is limited.
6. The video control is supported by the camera equipment of Hikvision and Dahua.
  - Camera equipment of Hikvision is CH-HCNetSDK (Windows32)  
V5.2.5.25\_build20160923.
  - SDK version of Zhejiang Dahua Technology Co., Ltd.:  
800\_444202\_General\_NetSDK\_Chn\_Win32\_IS\_V3.46.0.R.160926

Technically, VisualAI supports all video cameras and hard disk recorders of Dahua and Hikvision. Meanwhile, on the premise that both the camera and the hard disk recorder support the onvif protocol, cameras of other manufacturers can be connected to VisualAI through the hard disk recorder. If there is any inapplicable camera or hard disk recorder, please consult the customer service of the corresponding brand.

### 6.2 Abnormal Prompt and Error Analysis

During the real-time monitoring of the control system, if the video control fails to play the video, an error prompt will be displayed in the middle of the pop-up graphic, as shown in the following figure:

Fail to connect device, device offline or connection timeout due to network

**Figure 6-1 Diagram of Control Error**

As for Hikvision cameras, the specific error values and the corresponding implications are shown in Table 6-1.

**Table 6-1 List of Error Displayed on Hikvision Camera Interface**

Error value	Error message
1	User name or password is incorrect. The user name or password entered during registration is incorrect.
5	The total number of device connections exceeds the maximum.
7	Fail to connect the device. The connection is timed out due to the device being offline or network problems.
8	Fail to send to the device.
9	Fail to receive data from the device.
10	Receiving data from device is timed out.
14	Execution of device command is timed out.
17	Parameter error. The input or output parameter given in the SDK interface is blank, or the parameter format or value does not meet the requirements
XX	Error message will not be described in the screen. As for detailed error message, please refer to Table 6-2.

**Table 6-2 List of Error Value and Corresponding Message of Hikvision Cameras**

Error value	Error message
0	No error.
1	User name or password is incorrect. The user name or password entered during registration is incorrect.
3	SDK is not initialized.
5	The total number of device connections exceeds the maximum.
7	Fail to connect the device. The connection is timed out due to the device being offline or network problems.
8	Fail to send to the device.
9	Fail to receive data from the device.
10	Receiving data from device is timed out.
14	Execution of device command is timed out.
17	Parameter error. The input or output parameter given in the SDK interface is blank, or the parameter format or value does not meet the requirements

Error value	Error message
41	SDK resource allocation error.
43	The buffer is too small. The buffer for receiving device data or storing pictures is insufficient.
44	Error in creating SOCKET.
46	The number reaches the maximum. The number of registered connections and previewed connections exceeds the maximum number supported by the SDK.
47	User does not exist. The registered user ID is cancelled or unavailable.
52	The number of users logging in to the device reaches the maximum.
64	Error in loading Player Sdk in the current directory.
65	Cannot find a function entry in Player Sdk.
66	Error in loading DSsdk in the current directory.
72	Fail to bind socket.
73	The socket connection is interrupted. This error is usually due to a broken connection or unreachable destination.
83	The external IP channel is not online during preview.
84	Fail to load StreamTransClient, the standard protocol communication library.
85	Fail to load transpackage library.

As for Dahua's cameras, the specific error values and the corresponding implications are shown below.

Error value	Error message
0	No error.
-1	Unknown mistake.
1	Windows system error.
2	Network error, probably due to network timeout.
3	Device protocol does not match.
4	Invalid handle.
5	Fail to open channel.
6	Fail to close channel.
7	User parameter is invalid.
8	SDK initialization error.
9	SDK cleanup error.
11	Error in opening decode library.
12	Error in closing decode library.
17	Real-time data is already saved.
18	Real-time data is unsaved.
twenty one	Error in verifying returned data
twenty two	Not enough cache.
29	CLientSDK is not initialized.
100	The password is incorrect.
101	Account does not exist.
102	Login return is timed out.
103	Account is logged in.
104	Account is locked.
105	Account has been blacklisted.
106	Insufficient resources; busy system.
107	Fail to connect to the host.

Error value	Error message
108	Fail to connect network.
110	The number of connections exceeds the maximum.
111	Only support 3rd generation protocol.
309	Cannot be set now.
310	Invalid data configuration.

## Section 7 Revision

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*Table 7-1 Retrofit List of Versions*

Data Version	Applicable Product Model	Descriptions
V1.0 (20220815)	OMC VisualAI V2.10.00.06	First edition.
V1.1 (20230828)	OMC VisualAI V2.10.00.09	Update the network structure diagram