speco technologies®

User Manual
4MP IP Camera

O4VB1/O4VB1M/O4VT1/O4VT1M

Please read this instruction carefully before operating the unit and keep it for further reference

Important Safeguards and Warnings

1. Electrical safety

All installation and operation here should conform to local electrical safety codes.
Use a certified/listed 12VDC Class2 power supply only.
Please note: Do not connect two power supplying sources to the device at the same time; it may result in device damage!
The product must be grounded to reduce the risk of electric shock.
Improper handling and/or installation could run the risk of fire or electrical shock.

2. Environment

Heavy stress, violent vibration or exposure to water is not allowed during transportation, storage and installation.
This product should be installed in a cool, dry place away from direct sunlight and heat sources.
Do not install the product in extreme temperature conditions.
Do not expose the camera to electromagnetic radiation. Otherwise it may result in CMOS sensor failure.
Do not block any ventilation openings.
Do not allow water and liquid intrusion into the camera.

3. Operation and Daily Maintenance

Please shut down the device and then unplug the power cable before you begin any maintenance work.
Do not touch the CMOS sensor optic component. You can use a blower to clean the dust on the lens surface.
Always use the dry soft cloth to clean the device. If there is too much dust, use a cloth dampened with a small quantity of neutral detergent. Finally use the dry cloth to clean the device.
Please use a professional optical cleaning method to clean the enclosure. Improper enclosure cleaning (such as using cloth) may result in poor IR functionality and/or IR reflection.
The grounding holes of the product are recommended to be grounded to further enhance the reliability of the camera.
Dome cover is an optical device, please don't touch or wipe cover surface directly during installation and use, please refer to the following methods if dirt is found.
Stained with dirt:
Use oil-free soft brush or hair dryer to remove it gently.
Stained with grease or fingerprint
Use oil-free cotton cloth or paper soaked with alcohol or detergent to wipe from the lens center outward. Change the cloth and wipe several times if it is not clean enough.

Warning

This camera should be installed by qualified personnel only.
All the examination and repair work should be done by qualified personnel.
Any unauthorized changes or modifications could void the warranty.

Statement

This guide is for reference only.
Product, manuals and specifications may be modified without prior notice. Speco Technologies reserves the right to modify these without notice and without incurring any obligation.
Speco Technologies is not liable for any loss caused by improper operation.

Regulatory Information

FCC conditions:
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
● This device may not cause harmful interference.
● This device must accept any interference received, including interference that may cause undesired operation.

FCC compliance:
This equipment has been tested and found to comply with the limits for a digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
● Reorient or relocate the receiving antenna.
● Increase the separation between the equipment and receiver.
● Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Note:
Before installation, check the package and make sure that all components are included.
Contact your rep or Speco customer service department immediately if something is broken or missing in the package.

Accessory name	Amount
Network Camera Unit	1
Junction Box	1
Quick Start Guide	1
Installation Accessories Bag	1
CD	1

Table of Contents

1 Introduction

Welcome

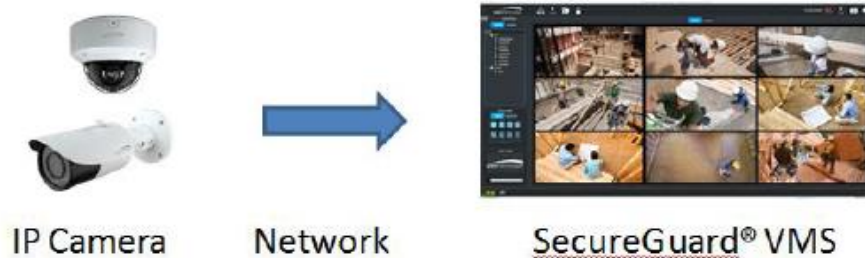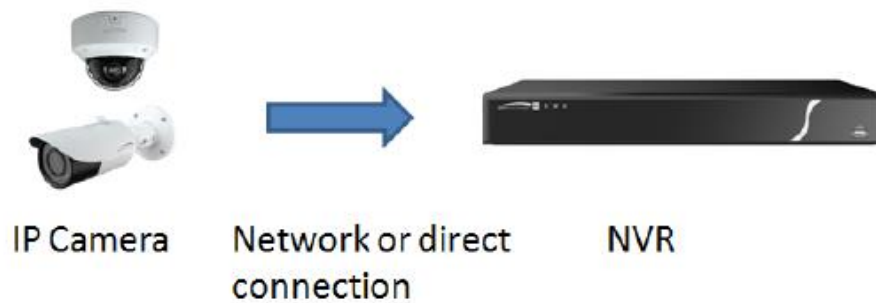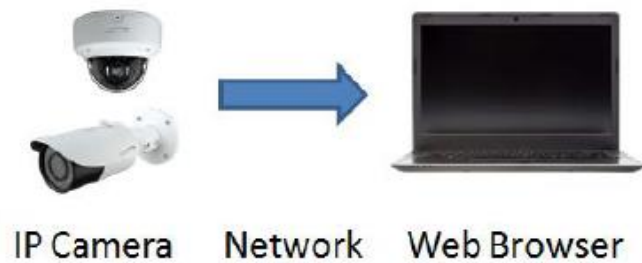Thank you for purchasing this network camera!
Please read this manual carefully before operating the unit and retain it for further reference.
Should you require any technical assistance, please contact Speco Technologies Technical Support at 1-800-645-5516.

Main Features
- Built-in PoE (Power over Ethernet)
- Integrated IR LEDs for clear vision in low light
- IP67 rated for outdoor installations
- Remote viewing support via web browser, mobile APP, and CMS/VMS

Applications

IP Camera   Network   Web Browser

IP Camera   Network or direct connection   NVR

IP Camera   Network   SecureGuard® VMS

2 Web Access and Login

The IP camera settings can be accessed via a web browser (Internet Explorer 8 and above) through the LAN.

● Access through IP Scanner
Network connection:

IP Camera   Router/Switch   Web Browser

① Make sure the PC and IP-Cam are connected on the same local network. The camera is set to DHCP by default and will be assigned an IP address by the DHCP server. Make sure that the local network has a DHCP server. Routers typically have a DHCP server built in.
② Install IP Scanner from the CD and run it after installation. IP Scanner is the tool for discovering the IP cameras on the local network.
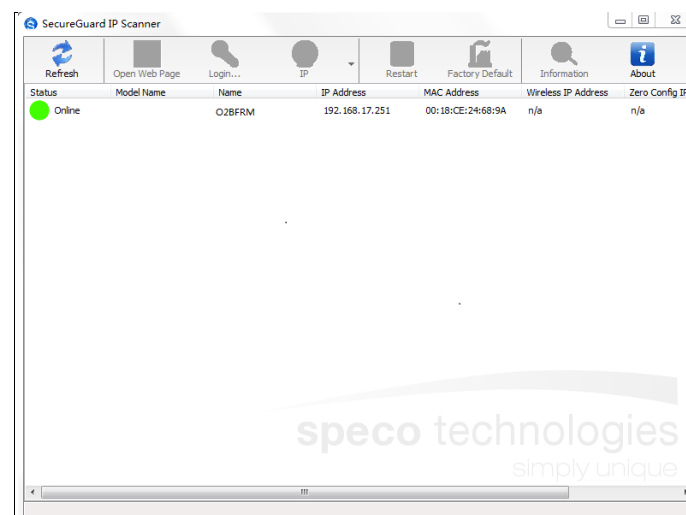
③ In the device list, the IP address, model number, and MAC address of each device will be listed. Select the applicable device and double click to open up the web viewer. You can also manually enter the IP address in the address bar of the web browser.
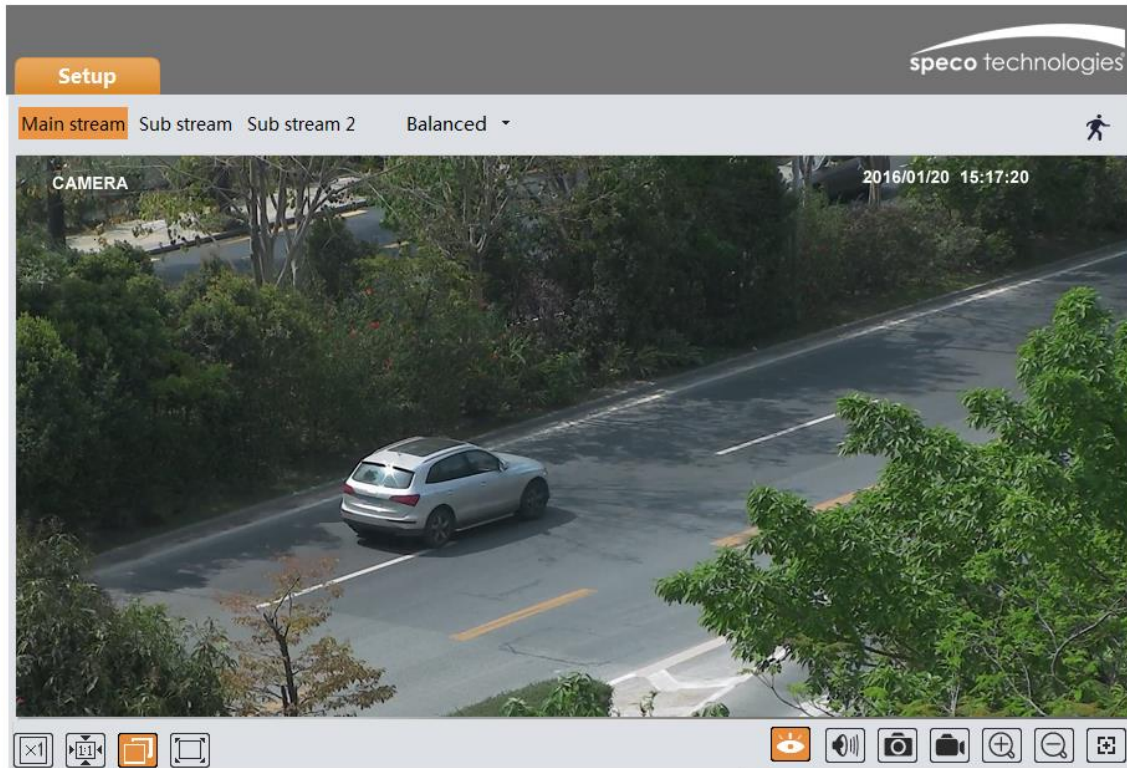

The login interface is shown above. Default user name is admin and password is 1234. After logging in, follow directions to install applicable plug-ins for viewing video.

The window below will be shown after logging in.

The following table describes the icons on the live view interface

Icon	Description	Icon	Description
×1	Original size of resolution		Start/stop local recording
1:1	Fit (correct scale)		Zoom/Focus control (for motorized models)
	Auto (fill the window)	SD	SD card recording indicator
	Full screen (show video only)		Object removal indicator
	Start/stop live view		Abnormal clarity indicator
	Enable/disable audio (only O4VT1/O4VT1M available)		Scene change indicator
	Snapshot		Line crossing indicator
	Zoom in (for motorized models)		Intrusion indicator
	Zoom out (for motorized models)		Motion alarm indicator

● All indicator icons above will flash in live view interface only when the corresponding events are enabled.
● In full screen mode, to exit, double click on the mouse or press the ESC key on the keyboard.
Click the zoom/focus control button to show the control panel. The descriptions of the control panel are as follows:

Icon	Description	Icon	Description
	Zoom -		Zoom +

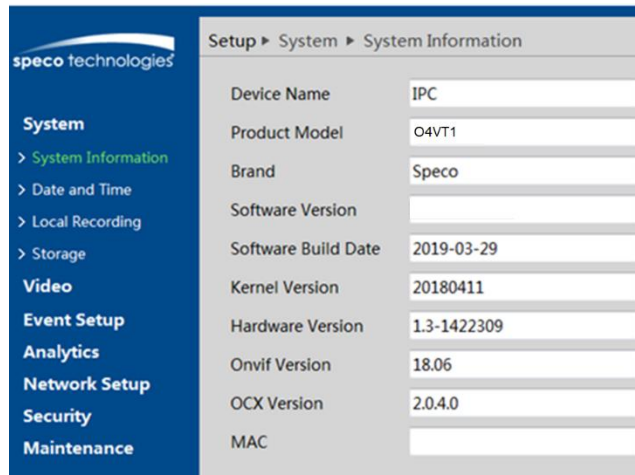| Icon	Description	Icon	Description
	Focus -		Focus +
	One key focus (used when image is out of focus after manual adjustment)		

Press the "Setup" button to go to the configuration interface.
Note: Wherever applicable, click the "Save" button to save the settings.

4.1 System Configuration

4.1.1 System Information

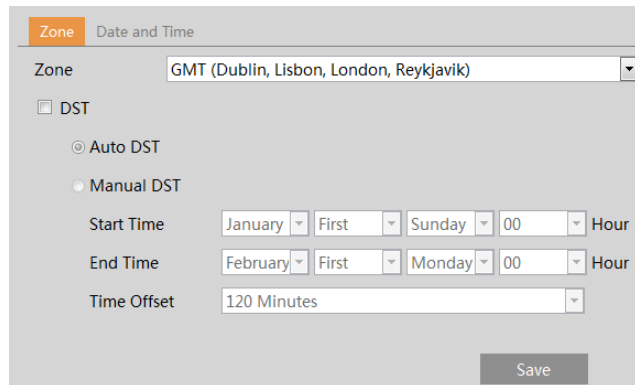In the "System Information" interface, the system information of the device is listed.
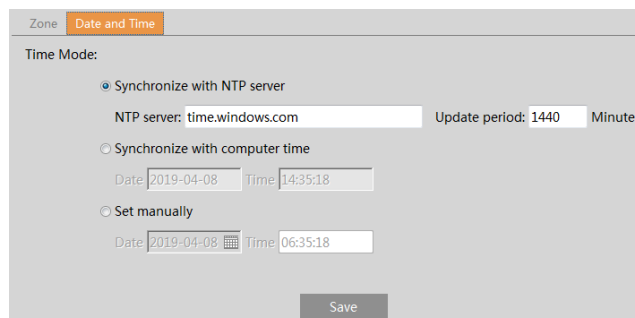
4.1.2 Date and Time

To set the time and date, go to System→Date and Time. Please refer to the following interface.

Select the applicable time zone and enable / disable DST as needed.
Click the "Date and Time" tab to set the time and date.

4.1.3 Local Recording

Go to System→Local Recording to set up the storage path of captured pictures and recorded videos on the local PC. There is also an option to enable or disable the bitrate display in the recorded files.

Save snapshots to	C:\Program Files\NetIPCamera	Browse
Save recording files to	C:\Program Files\NetIPCamera	Browse
Audio Recording	○ Open ● Close	
Bitrate Overlay	○ Open ● Close	

For the model with built-in MIC, there is also an option to enable or disable audio recording.

4.1.4 Storage

Go to System→Storage to go to the interface as shown below.

Management	Record	Snapshot
Total picture capacity	6090 MB	
Picture remaining space	834 MB	
Total recording capacity	54720 MB	
Record remaining space	128 MB	
State	Normal	
Snapshot Quota	10	%
Video Quota	90	%

Changes in the quota ratio need to be formatted before they become effective.

Eject   Format

● **SD Card Management**

When the card is used for the first time, click the "Format" button to format the SD card. **All data on the card will be cleared by clicking this button.**

Click the "Eject" button to stop writing data to the SD card. Then the SD card can be ejected safely.

Snapshot Quota: Set the capacity proportion of captured pictures on the SD card.

Video Quota: Set the capacity proportion of record files on the SD card.

● **Schedule Recording Settings**

1. Go to Storage→Record to go to the interface as shown below.

Management	Record	Snapshot
Record Parameters		
Record Stream	Main stream ▼	
Pre Record Time	No Pre Record ▼	
Cycle Write	Yes ▼	

2. Set record stream, pre-record time and cycle writing.

Pre Record Time: Set the time to record before the actual recording begins.

3. Set schedule recording. Check "Enable Schedule Record" and set the schedule.

Weekly schedule
Set the alarm time from Monday to Sunday for a single week. Each day is divided in one hour increments. Green means scheduled. Blank means unscheduled.
"Add": Add the schedule for a special day. Drag the mouse to set the time on the timeline.
"Erase": Delete the schedule. Drag the mouse to erase the time on the timeline.
Manual Input: Click it for a specific day to enter specific start and end times. This adds more granularities (minutes).

Day schedule
Set the alarm time for alarm a special day, such as a holiday.
Note: Holiday schedule takes priority over weekly schedule.

● **Snapshot Settings**
Go to System→Storage→Snapshot to go to the interface as shown below.

Set the format, resolution and quality of the image saved on the SD card and the snapshot interval and quantity and the timing snapshot here.
Snapshot Quantity: The number you set here is the maximum quantity of snapshots. The actual quantity of snapshots may be less than this number. Supposing the occurrence time of an alarm event is less than the time of capturing pictures, the actual quantity of snapshots is less than the set quantity of snapshots.

Timing Snapshot: Enable timing snapshot first and then set the snapshot interval and schedule. The setup steps of schedule are the same as the schedule recording (See Schedule Recording).

4.2 Video Configuration

Video Configuration includes Image Settings, Video/Audio Setup, OSD, Privacy Mask and Region of Interest.

4.2.1 Image Configuration

In the Image Settings interface as shown below, various settings can be adjusted, such as brightness, contrast, hue and saturation and so on. The common mode and day and night mode can be set up separately. The image effect can be quickly viewed by switching the configuration file.
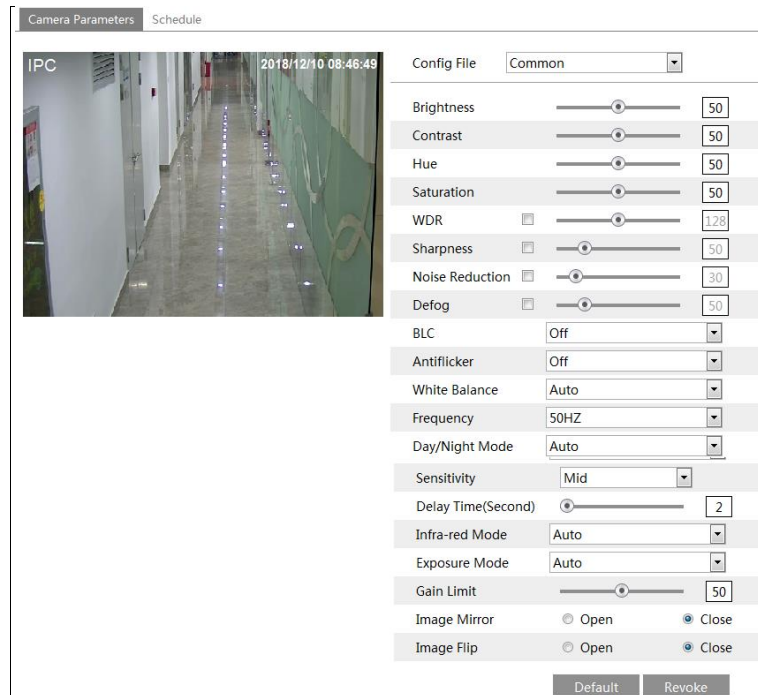
Brightness: Set the brightness level of the camera's image.
Contrast: Set the color difference between the brightest and darkest parts.
Hue: Set the total color degree of the image.
Saturation: Set the degree of color purity. The purer the color is, the brighter the image is.
WDR: WDR can adjust the camera to provide a better image when there are both very bright and very dark areas simultaneously in the field of the view by lowering the brightness of the bright area and increasing the brightness of the dark area. Recording will be stopped for a few seconds while the mode is changing from non-WDR to WDR mode.
Sharpness: Set the resolution level of the image plane and the sharpness level of the image edge.
Noise Reduction: Decrease the noise and make the image more thorough. Increasing the value will make the noise reduction effect better but it will reduce the image resolution.
Defog: Activating this function and setting an appropriate value as needed in foggy, dusty, smoggy or rainy environment to get clear images.
Backlight Compensation:
● Off: disables the backlight compensation function. It is the default mode.
● HLC: lowers the brightness of the entire image by suppressing the brightness of the image's bright area and reducing the size of the halo area.
● BLC: If enabled, the auto exposure will activate according to the scene so that the object of the image in the darkest area will be seen clearly.
Antiflicker:
● Off: disables the anti-flicker function. This is used mostly in outdoor installations.
● 50Hz: reduces flicker in 50Hz lighting conditions.
● 60Hz: reduces flicker in 60Hz lighting conditions.

White Balance: Adjust the color temperature according to the environment automatically.
Frequency: 50Hz and 60Hz can be optional.
Day/night Mode: Please choose the mode as needed.
Sensitivity: High, middle and low can be selected for switching back and forth from day to night modes.
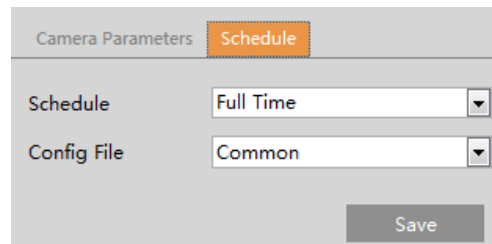**Infrared Mode**: Choose "ON", "OFF" and "Auto".
Exposure Mode: Choose "Auto" or "Manual". If manual is chosen, the digital shutter speed can be adjusted.
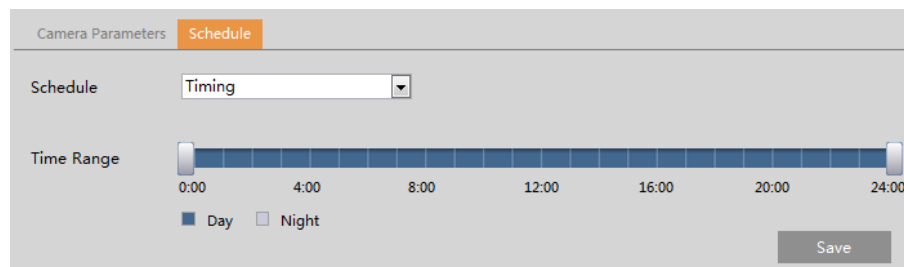**Image Mirror**: Turn the current video image horizontally.
Image Flip: Turn the current video image vertically.

Schedule Settings of Image Parameters:
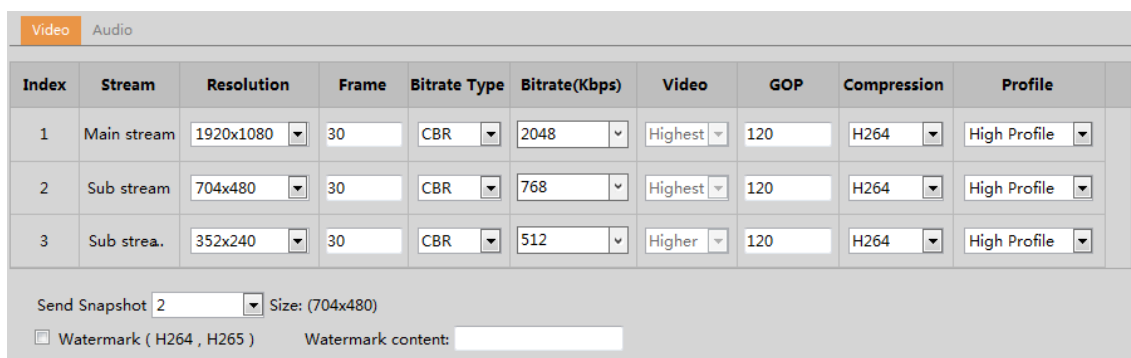Click the "Schedule" tab as shown below.

Set full time schedule for common, day or night mode and specified time schedule for day and night. Choose "Timing" in the drop-down box of schedule as shown below.

Drag " " icons to set the time of day and night. Blue means day time and blank means night time. If the current mode of camera parameters is set to "Timing", the image configuration mode will automatically switch between day and night according to the schedule.

4.2.2 Video / Audio Configuration

Go to Image→Video / Audio interface as shown below. In this interface, set the resolution, frame rate, bitrate type, video quality and so on subject to the actual network condition.

Index	Stream	Resolution	Frame	Bitrate Type	Bitrate(Kbps)	Video	GOP	Compression	Profile
1	Main stream	1920x1080	30	CBR	2048	Highest	120	H264	High Profile
2	Sub stream	704x480	30	CBR	768	Highest	120	H264	High Profile
3	Sub strea..	352x240	30	CBR	512	Higher	120	H264	High Profile

Send Snapshot 2 Size: (704x480)
☐ Watermark (H264 , H265)   Watermark content:

Click the "Audio" tab to go to the interface as shown below.

Three video streams can be adjustable.

Resolution: The size of image.

Frame rate: The higher the frame rate, the video is smoother.

Bitrate type: CBR and VBR are optional. Bitrate is related to image quality. CBR means that no matter how much change is seen in the video scene, the compression bitrate will be kept constant. VBR means that the compression bitrate will be adjusted according to scene changes. For example, for scenes that do not have much movement, the bitrate will be kept at a lower value. This can help optimize the network bandwidth usage.

Bitrate: it can be adjusted when the mode is set to CBR. The higher the bitrate, the better the image quality will be.

Video Quality: It can be adjusted when the mode is set to VBR. The higher the image quality, the more bitrate will be required.

I Frame interval: It determines how many frames are allowed between a "group of pictures". When a new scene begins in a video, until that scene ends, the entire group of frames (or pictures) can be considered as a group of pictures. If there is not much movement in the scene, setting the value higher than the frame rate is fine, potentially resulting in less bandwidth usage. However, if the value is set too high, and there is a high frequency of movement in the video, there is a risk of frame skipping.

Video Compression: H264 or H265 can be optional. If H.265 is chosen, make sure the client system is able to decode H.265.

Profile: For H.264. Baseline, main and high profiles are selectable.

Send Snapshot: How many snapshots to generate for an event.

Video encode slice split: If this function is enabled, smooth image can be gotten even though using the low-performance PC.

Watermark: When playing back the local recorded video in the search interface, the watermark can be displayed. To enable it, check the watermark box and enter the watermark text.

Audio Encoding: G711A and G711U are selectable.

**Audio Type**: LIN. Some models may support MIC type.

4.2.3 OSD Configuration

Go to Video→OSD interface as shown below.

Set time stamp, device name, OSD content and picture overlap here. After enabling the corresponding display and entering the content, drag them to change their position. Then click the "Save" button to save the settings.
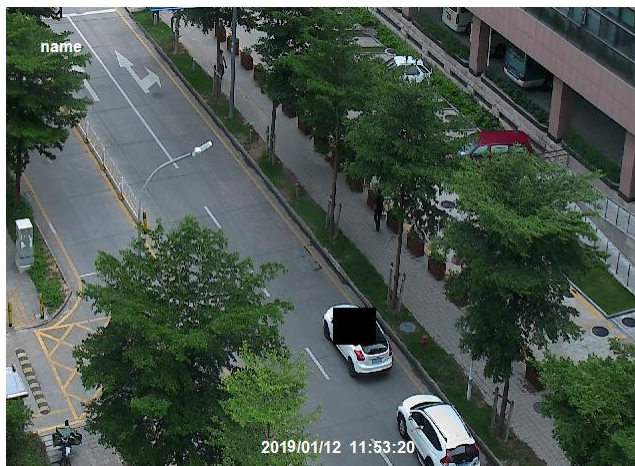
4.2.4 Video Mask

Go to Image→Video Mask interface as shown below. A maximum of 4 zones can be set up.
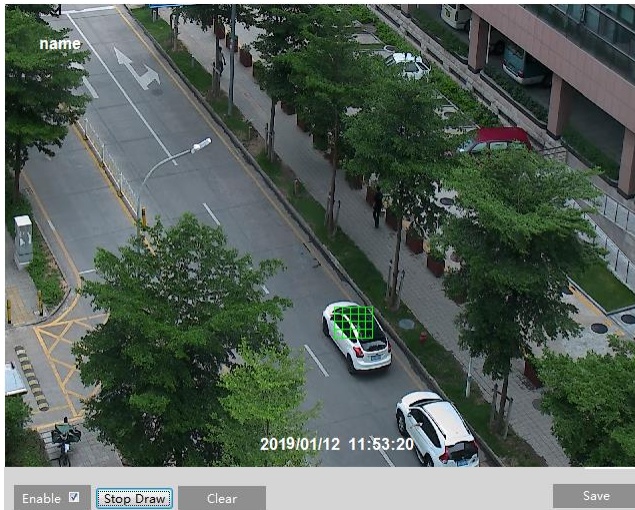
To set up video mask:
1. Enable video mask.
2. Click the "Draw Area" button and then drag the mouse to draw the video mask area.
3. Click the "Save" button to save the settings.
4. Return to the live to verify that the area have been drawn as shown as blocked out in the image.
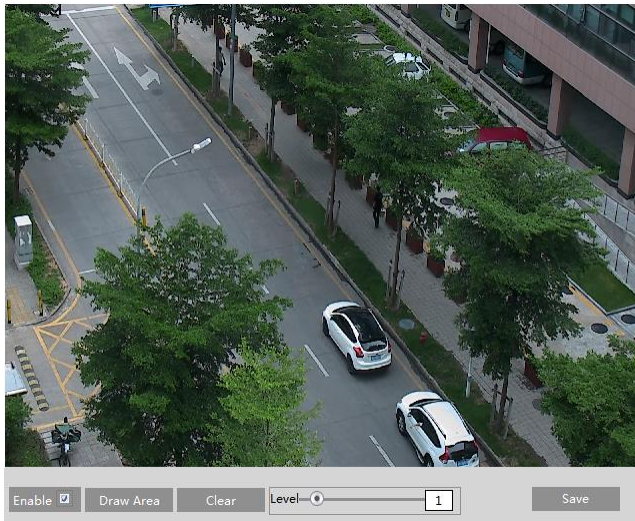

To clear the video mask:
Click the "Clear" button to delete the current video mask area.

4.2.5 ROI Configuration

Go to Image→ROI Config interface as shown below. An area in the image can be set as a region of interest. This area will have a higher bitrate than the rest of the image, resulting in better image quality for the identified area.

1. Check "Enable" and then click the "Draw Area" button.
2. Drag the mouse to set the ROI area.
3. Set the level.
4. Click the "Save" button to save the settings.
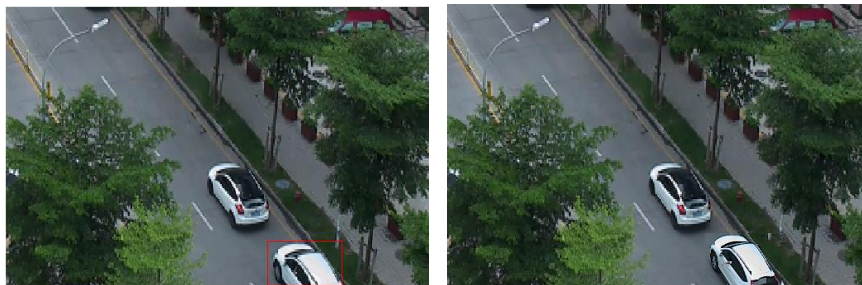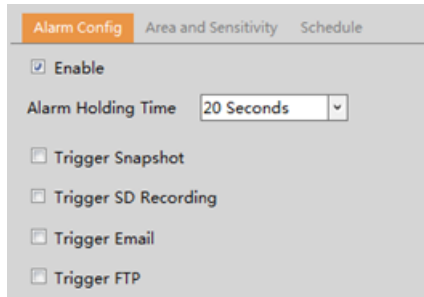

4.2.6   Zoom/Focus

This function is only available for the model with motorized zoom lens. Within this section, zoom and focus can be controlled. If the image is out of focus after a manual adjustment, one key focus can be used to set the focus automatically.
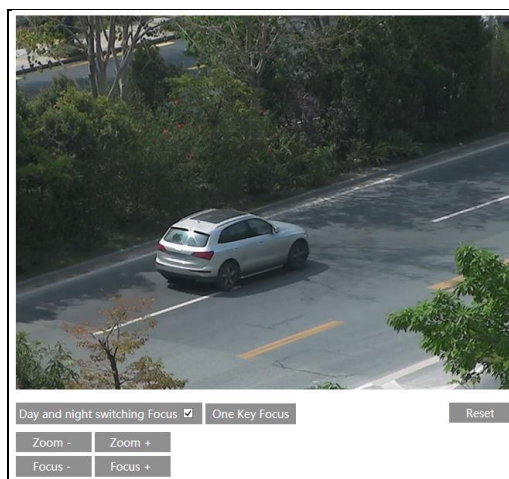
4.3   Event Setup

4.3.1   Motion Detection

Go to Event Setup →Motion Detection to set motion detection alarm.

1. Check "Enable" check box to activate motion based alarms. If unchecked, the camera will not send out any signals to trigger motion-based recording to the NVR or CMS, even if there is motion in the video.

Trigger Snapshot: If selected, the system will capture images on motion detection and save the images on an SD card.

Trigger SD Recording: If selected, video will be recorded on an SD card on motion detection.

Trigger Email: If "Trigger Email" and "Attach Picture" are checked (email address must be set first in the Email configuration interface), the captured pictures and triggered event will be sent into those addresses.

Trigger FTP: If "Trigger FTP" and "Attach Picture" are checked, the captured pictures will be sent into FTP server address. Please refer to FTP configuration chapter for more details.

2. Set motion detection area and sensitivity. Click the "Area and Sensitivity" tab to go to the interface as shown below.
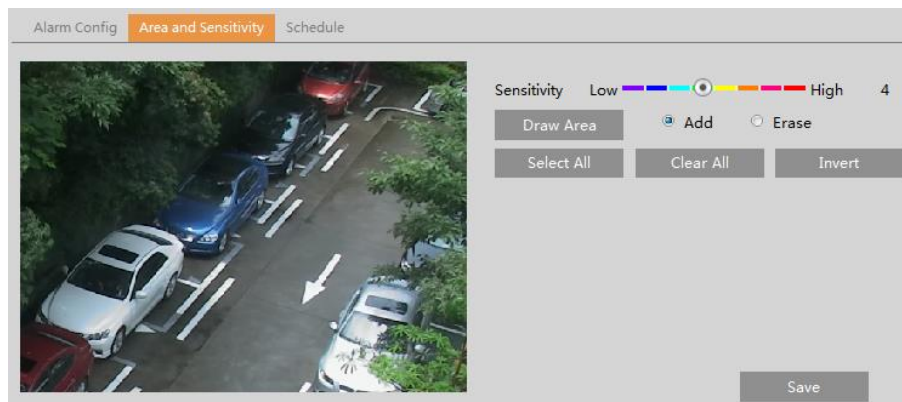
Move the "Sensitivity" scroll bar to set the sensitivity. Higher sensitivity value means that motion will be triggered more easily. Select "Add" and click "Draw". Drag the mouse to draw the motion detection area; Select "Erase" and drag the mouse to clear motion detection area.
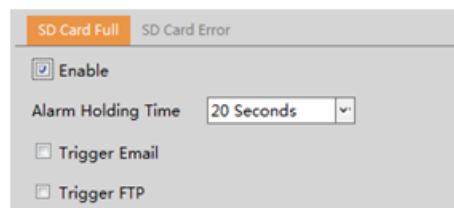
After that, click the "Save" to save the settings. "Clear All" can be used to clear out the entire motion zone.

3. Set the schedule for motion detection. The schedule setup steps of the motion detection are the same as the schedule recording setup (See Schedule Recording).

4.3.2   Other Alarms

● **SD Card Full**

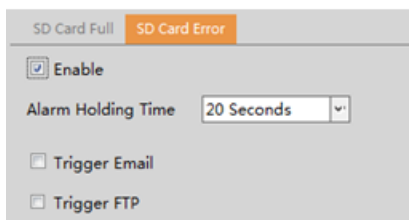1. Go to Event Setup →Anomaly→SD Card Full.

2. Click "Enable" and set the alarm holding time.

3. Set alarm trigger options. Trigger Email and FTP. The setup steps are the same as motion detection. Please refer to motion detection chapter for details.

- **SD Card Error**

When there are some errors in writing to SD card, the corresponding alarms will be triggered.

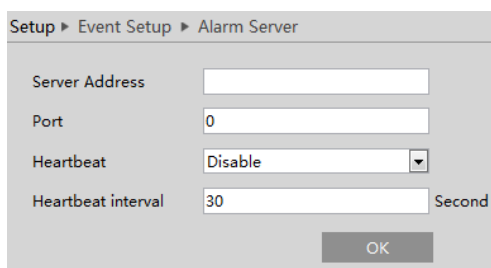1. Go to Event Setup →Anomaly→SD Card Error as shown below.

2. Click "Enable" and set the alarm holding time.

3. Set alarm trigger options. Trigger Email and FTP. The setup steps are the same as motion detection. Please refer to motion detection chapter for details.

4.3.3 Alarm Server

Go to Alarm→Alarm Server interface as shown below.

Set the server address, port, heartbeat and heartbeat interval. When an alarm occurs, the camera will transfer the alarm event to the alarm server. If an alarm server is not needed, there is no need to configure this section.

4.4 Analytics Configuration

This series of IP cameras supports certain smart functions, such as line crossing detection, region intrusion detection, etc. These events can be triggered as alarm events.

For more accuracy, here are some recommendations for installation.

- Cameras should be installed on stable surfaces, as vibrations can affect the accuracy of detection.
- Avoid pointing the camera at the reflective surfaces (like shiny floors, mirrors, glass, lake surfaces and so on).
- Avoid places that are narrow or have too much shadowing.
- Avoid scenario where the object's color is similar to the background color.
- At any time of day or night, please make sure the image of the camera is clear and with adequate and even light, avoiding overexposure or too much darkness on both sides.

4.4.1 Object removal

The alarm will be triggered when objects are removed from or left at the pre-defined area. To set object removal:

Go to the Analytics→Object Removal interface shown below.

1. Enable object removal detection and then select the detection type.

Enable Left Detection: Alarms will be triggered if there are items left in the pre-defined area.

Enable Item Missing Detection: Alarms will be triggered if there are items missing in the pre-defined alarm area.

2. Set the alarm holding time and alarm trigger options. The setup steps are the same as motion detection.
3. Click "Save" button to save the settings.
4. Set the alarm area of the object removal detection. Click the "Area" tab to go to the interface shown below.

Set the alarm area number and then enter the desired alarm area name. Up to 4 alarm areas can be added. Click the "Draw Area" button and then click around the area where you want to set as the alarm area in the image (the alarm area should be a closed area). Click the "Stop Draw" button to stop drawing. Click the "Clear" button to delete the alarm area. Click the "Save" button to save the settings.

5. Set the schedule of the object removal detection in the Schedule tab. The setup steps of the schedule are the same as motion detection schedule setup.

※Configuration requirements of camera and surrounding area

1. The range of the detection object should occupy from 1/50 to 1/3 of the entire image.
2. The detection time of objects in the camera should be from 3 to 5 seconds.
3. The defined area cannot be covered frequently and continuously (like people and traffic flow).
4. It is necessary for object removal detection that the drawn frame must be very close to the margin of the object in enhancing the sensitivity and accuracy of the detection.
5. Object removal detection cannot determine the objects' ownership. For instance, there is an unattended package in the station. Object removal detection can detect the package itself but it cannot determine to whom it belongs to.
6. Try not to enable object removal detection when light changes greatly in the scene.
7. Try not to enable object removal detection if there are complex and dynamic environments in the scene.
8. Adequate light and clear scenery are very important to object removal detection.

4.4.2   Abnormality

This function can detect changes in the surveillance environment affected by the external factors.
Go to Analytics→Abnormality interface as shown below.
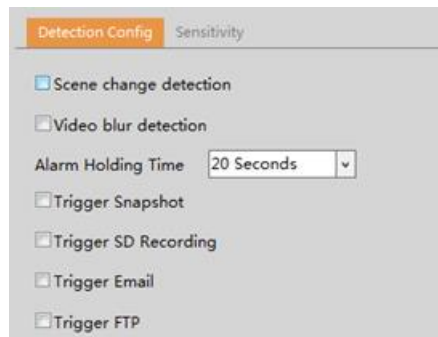
1. Enable the applicable detection that's desired.
Scene Change Detection: Alarms will be triggered if the scene of the video has changed.
Video Blur Detection: Alarms will be triggered if the video becomes blurry.
2. Set the alarm holding time and alarm trigger options. The setup steps are the same as motion detection. Please refer to motion detection chapter for details.
3. Click "Save" button to save the settings.
4. Set the sensitivity of the exception detection. Click "Sensitivity" tab to go to the interface as shown below.
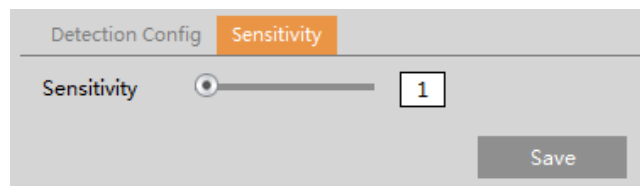
Drag the slider to set the sensitivity value or directly enter the sensitivity value in the textbox. Click "Save" button to save the settings.
The sensitivity value of Scene Change Detection: The higher the value is, the more sensitive the system responds to the amplitude of the scene change.
The sensitivity value of Video Blur Detection: The higher the value is, the more sensitive the system responds to the blurriness of the image.

※**The requirements of camera and surrounding area**
1. Auto-focusing function should not been enabled for exception detection.
2. Try not to enable exception detection when light changes greatly in the scene.

4.4.3   Line Crossing

Line Crossing: Alarms will be triggered if the target crosses the defined alarm lines.
Go to Analytics→Line Crossing interface as shown below.
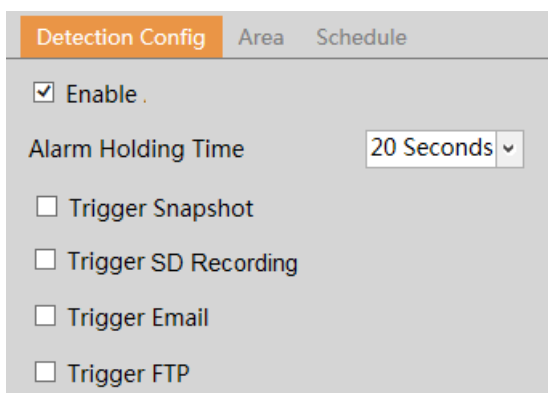
1. Enable line crossing alarm and set the alarm holding time.
2. Set alarm trigger options. The setup steps are the same as motion detection. Please refer to motion detection chapter for details.
3. Click "Save" button to save the settings.
4. Set area and sensitivity of the line crossing alarm. Click the "Area and Sensitivity" tab to go to the interface as shown below.
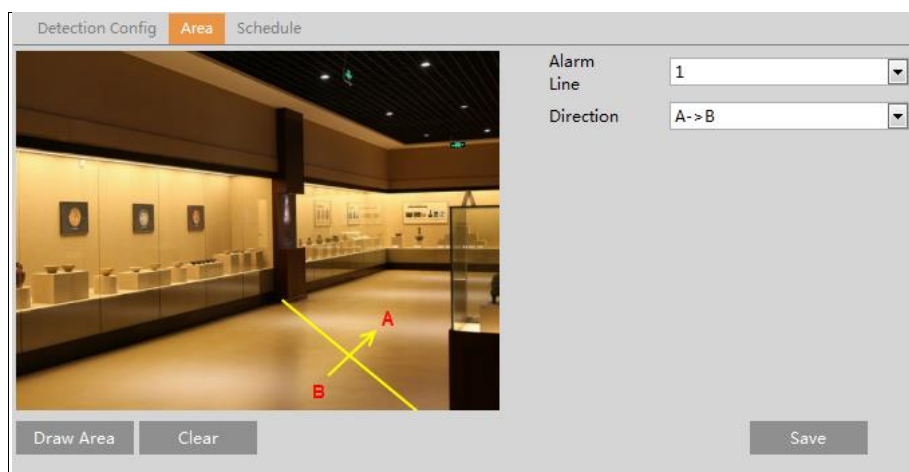
Set the alarm line number and direction. Only one line can be added. Multiple lines cannot be added simultaneously.
Direction：A<->B, A->B and A<-B optional. This indicates the direction of the intruder who crosses over the alarm line that would trigger the alarm.
A<->B: The alarm will be triggered when the intruder crosses over the alarm line from B to A or from A to B.
A->B: The alarm will be triggered when the intruder crosses over the alarm line from A to B.
A<-B: The alarm will be triggered when the intruder crosses over the alarm line from B to A.
Click the "Draw Area" button and then drag the mouse to draw a line in the image. Click the "Stop Draw" button to stop drawing. Click the "Clear" button to delete the lines. Click the "Save" button to save the settings.
5. Set the schedule of the line crossing alarm. The setup steps of schedule are the same as the schedule recording (See Schedule Recording).

※Configuration of camera and surrounding area
1. Auto-focusing function should not be enabled for line crossing detection.
2. Avoid the scenes with many trees or the scenes with various light changes (like many flashing headlights). The ambient brightness of the scenes shouldn't be too low.
3. Cameras should be mounted at a height of 2.8 meters or above.
4. Keep the mounting angle of the camera at about 45°.
5. The detected objects should not be less than 1% of the entire image and the largest sizes of the detected objects should not be more than 1/8 of the entire image.
6. Make sure cameras can view objects for at least 2 seconds in the detected area for accurate detection.
7. Adequate light and clear scenery are crucial for line crossing detection.

4.4.4 Intrusion

Intrusion: Alarms will be triggered if the target intrudes into the defined areas.

Go to Analytics→Intrusion interface as shown below.
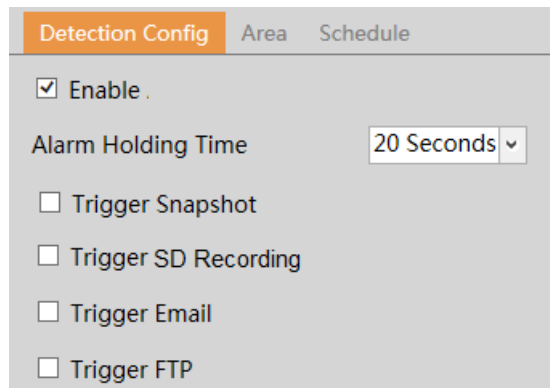
1. Enable region intrusion detection alarm and set the alarm holding time.
2. Set alarm trigger options. The setup steps are the same as motion detection. Please refer to motion detection chapter for details.
3. Click the "Save" button to save the settings.
4. Set the alarm area of the intrusion detection. Click the "Area" tab to go to the interface as shown below.
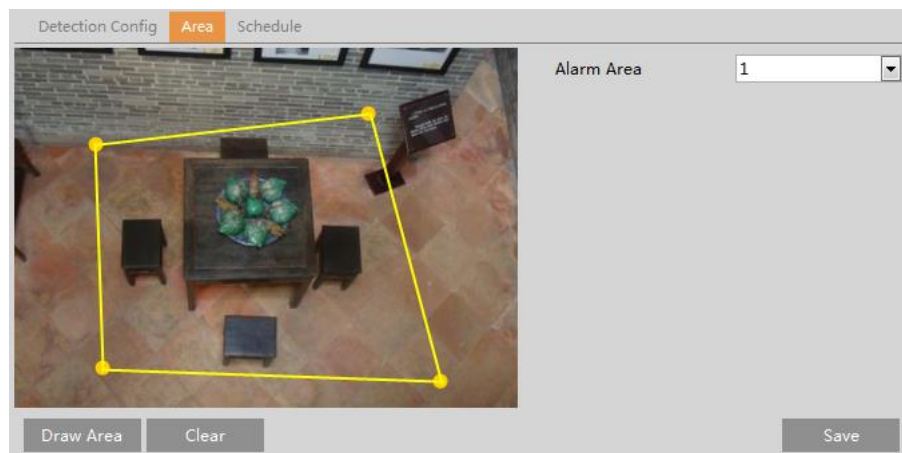
Set the alarm area number on the right side. Only one alarm area can be added.

Click the "Draw Area" button and then click around the area where you want to set as the alarm area in the image on the left side (the alarm area should be a closed area). Click the "Stop Draw" button to stop drawing. Click the "Clear" button to delete the alarm area. Click the "Save" button to save the settings.

5. Set the schedule of the intrusion detection. The setup steps of the schedule are the same as schedule recording setup (See Schedule Recording).
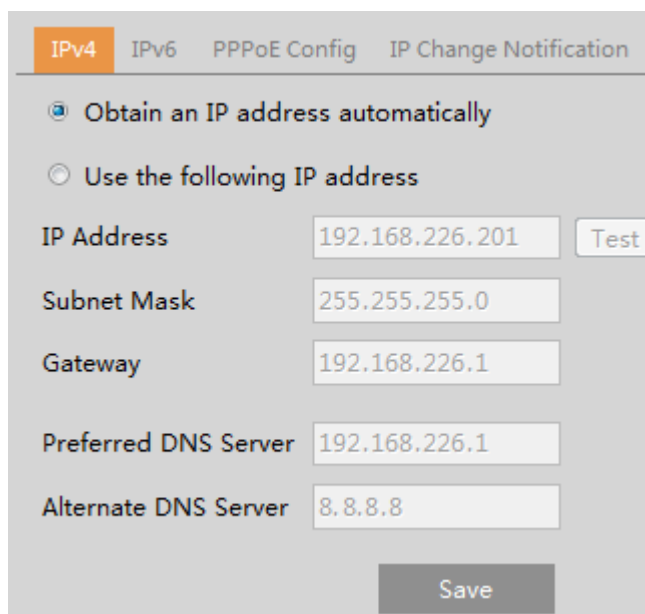
※**Configuration requirements of camera and surrounding area**

1. Auto-focusing function should not be enabled for intrusion detection.
2. Avoid the scenes with many trees or the scenes with various light changes (like many flashing headlights). The ambient brightness of the scenes shouldn't be too low.
3. Cameras should be mounted at a height of 10ft or above.
4. Keep the mounting angle of the camera at about 45°.
5. The detected objects should not be less than 1% of the entire image and the largest sizes of the detected objects should not be more than 1/8 of the entire image.
6. Make sure cameras can view objects for at least 2 seconds in the detected area for accurate detection.
7. Adequate light and clear scenery are crucial to line crossing detection.
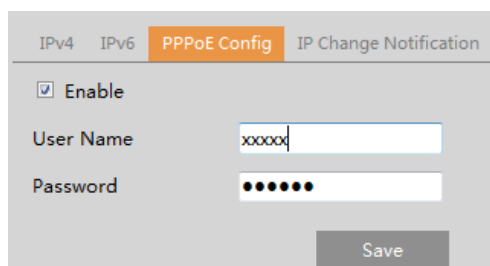
4.5   Network Configuration

4.5.1 TCP/IP

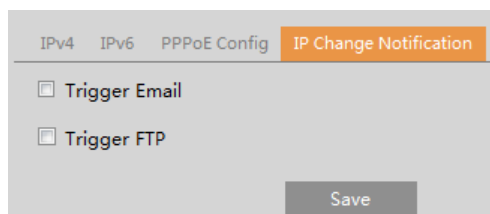Go to Network➔TCP/IP interface as shown below. There are two ways for network connection.

Use IP address (take IPv4 for example)-obtain a local IP address automatically through DHCP. A typical router has a DHCP server built in, and therefore is able to assign an IP address to the camera.

Use PPPoE-Click the "PPPoE Config" tab to go to the interface as shown below. Enable PPPoE and then enter the user name and password from your ISP.

Either method of network connection can be used. If PPPoE is used to connect internet, the camera will get a dynamic WAN IP address. This IP address will change frequently. To be notified, the IP change notification function can be used.
Click "IP Change Notification Config" to go to the interface as shown below.
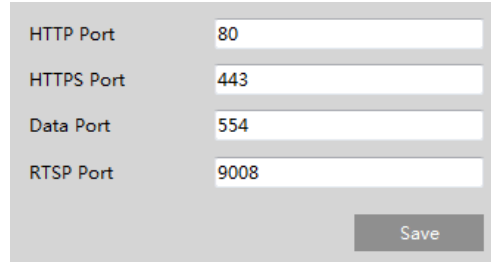
Trigger Email: when the IP address of the device is changed, the new IP address will be sent to the email address that has been set up.
Trigger FTP: when the IP address of the device is changed, the new IP address will be sent to FTP server that has been set up.

4.5.2   Port

Go to Network→Port interface as shown below. HTTP port, Data port and RTSP port can be set.

HTTP Port	80
HTTPS Port	443
Data Port	554
RTSP Port	9008

Save

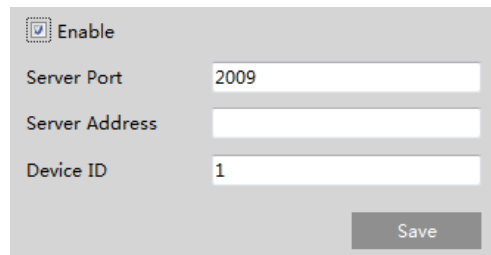**HTTP Port**: The default HTTP port is 80. It can be changed to any port which is not occupied.
HTTPS Port: The default HTTPs port is 443. It can be changed to any port which is not occupied.
Data Port: The default data port is 9008. Please change it as necessary.
RTSP Port: The default port is 554. Please change it as necessary.

4.5.3   Server Configuration

This function is mainly used for connecting network video management system.

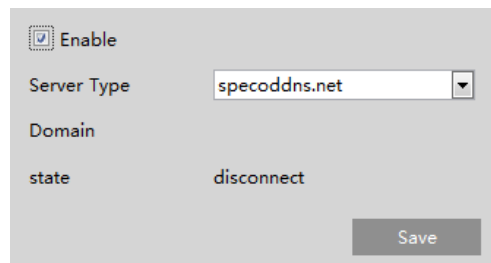|	
☑ Enable	
Server Port	2009
Server Address	
Device ID	1

Save

1. Check "Enable".
2. Check the IP address and port of the transfer media server in the VMS. Then enable the auto report in the VMS when adding a new device. Next, enter the remaining information of the device in the VMS. After that, the system will automatically allot a device ID. Please check it in the VMS.
3. Enter the above-mentioned server address, server port and device ID in the corresponding boxes. Click the "Save" button to save the settings.

4.5.4   DDNS

If the camera is set up with a DHCP connection, DDNS should be set for accessing the camera from the internet.
1. Go to Network→ DDNS.

☑ Enable	
Server Type	specoddns.net
Domain	
state	disconnect

Save

2. Enable, save and use DDNS to log in.

4.5.5 802.1x

If it is enabled, the camera's data can be protected. When the camera is connected to the network protected by the IEE802.1x, user authentication is needed.

To use this function, the camera shall be connected to a switch supporting 802.1x protocol. The switch can be reckoned as an authentication system to identify the device in a local network. If the camera connected to the network interface of the switch has passed the authentication of the switch, it can be accessed via the local network.
Protocol type and EAPOL version: Please use the default settings.
User name and password: The user name and password must be the same with the user name and password applied for and registered in the authentication server.

4.5.6 RTSP

Go to Network→RTSP.

Select "Enable" to enable the RTSP function.
Port: Access port of the streaming media. The default number is 554.
RTSP Address: The RTSP address (unicast) format that can be used to play the stream in a media player.

Multicast Address
Main stream: The address format is
  "rtsp://IP address: rtsp port/profile1?transportmode=mcast".

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Sub stream: The address format is
  "rtsp://IP address: rtsp port/profile2?transportmode=mcast".
Third stream: The address format is
  "rtsp://IP address: rtsp port/profile3?transportmode=mcast".
Audio: Having entered the main/sub stream in a media player(like VLC), the video and audio will play automatically.
If "Allow anonymous login…" is checked, there is no need to enter the username and password to view the video.
If "auto start" is enabled, the multicast received data should be added into a VLC player to play the video.
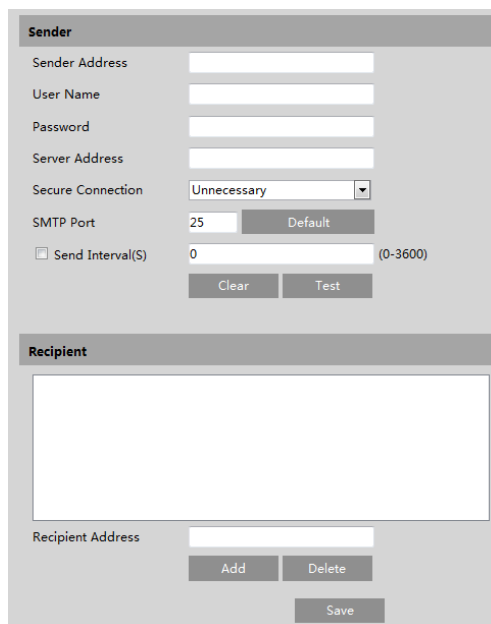
4.5.7 UPNP

If this function is enabled, the camera can be quickly accessed through the LAN.
Go to Network→UPnP. Enable UPNP and then enter UPnP name.

4.5.8 Email

If you need to trigger Email when an alarm happens or IP address is changed, please set the Email here first.
Go to Network →Email.

Sender Address: sender's e-mail address.
User name and password: sender's user name and password.
Server Address: The SMTP IP address or host name.
Select the secure connection type at the "Secure Connection" pull-down list according to what's required.
SMTP Port: The SMTP port.
Send Interval(S): The time interval of sending email. For example, if it is set to 60 seconds and multiple motion detection alarms are triggered within 60 seconds, they will be considered as only one alarm event and only one email will be sent. If one motion alarm event is triggered and then another motion detection alarm event is triggered after 60 seconds, two emails will be sent. When different alarms are triggered at the same time, multiple emails will be sent separately.
Click the "Test" button to test the connection of the account.
Recipient Address: receiver's e-mail address.

4.5.9 FTP

After an FTP server is set up, captured pictures from events will be uploaded to the FTP server.

Go to Network →FTP.

Server Name: The name of the FTP server.
Server Address: The IP address or domain name of the FTP.
Upload Path: The directory where files will be uploaded to.
Port: The port of the FTP server.
Use Name and Password: The username and password that are used to login to the FTP server.

4.5.10 HTTPS

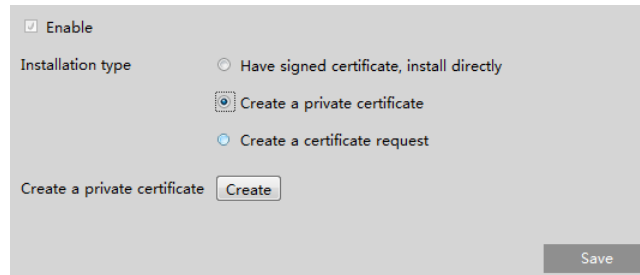HTTPs provides authentication of the web site and protects user privacy.
Go to Network→HTTPS as shown below.

There is a certificate installed by default as shown above. Enable this function and save it. Then the camera can be accessed by entering https://IP: https port via the web browser (eg. https://192.168.226.201:443).
A private certificate can be created if users don't want to use the default one. Click "Delete" to cancel the default certificate. Then the following interface will be displayed.

* If there is a signed certificate, click "Browse" to select it and then click "Install" to install it.

* Click "Create a private certificate" to enter the following creation interface.
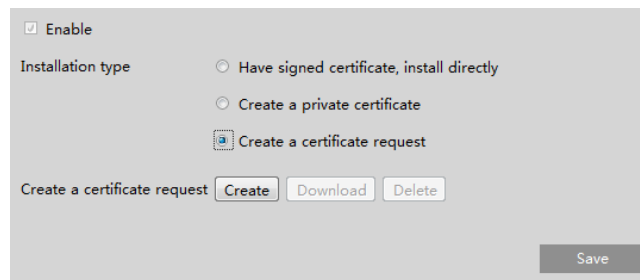
Click the "Create" button to create a private certificate. Enter the country (only two letters available), domain (camera's IP address/domain), validity date, password, province/state, region and so on. Then click "OK" to save the settings.
* Click "Create a certificate request" to enter the following interface.

Click "Create" to create the certificate request. Then download the certificate request and submit it to the trusted certificate authority for signature. After receiving the signed certificate, import the certificate to the device.

4.5.11 QoS

QoS (Quality of Service) function is used to provide different quality of services for different network applications. With the deficient bandwidth, the router or switch will sort the data streams and transfer them according to their priority to solve the network delay and network congestion by using this function.
Go to Network→QoS.

Video/Audio DSCP: The range is from 0 to 63.
Alarm DSCP: The range is from 0 to 63.
Manager DSCP: The range is from 0 to 63.
Generally speaking, the larger the number is, the higher the priority is.

4.6   Security Configuration

4.6.1   User Admin

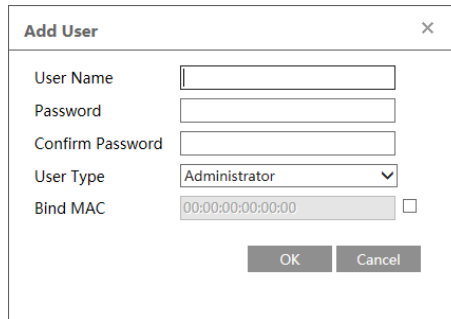Go to Security→User Admin interface as shown below.

Add user:

1. Click "Add" to pop up the following textbox.
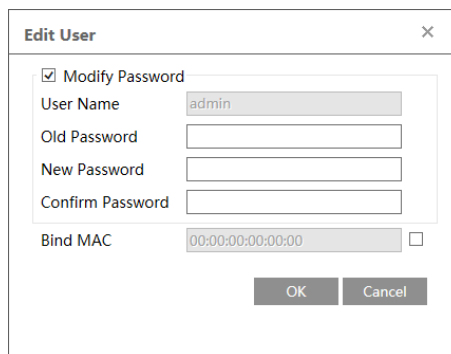
2. Enter user name in "User Name" textbox.

3. Enter letters or numbers in "Password" and "Confirm Password" textbox.

4. Choose the user type. Administrator has all permissions. Normal user can only view the live video. Advanced user has the same permissions as an Administrator except for; user, backup settings, factory reset, and upgrading the firmware.

5. Enter the MAC address of the PC in "Bind MAC" textbox.

If this option is enabled, only the PC with the specified MAC address can access the camera for that user.

6. Click the "OK" button and then the newly added user will be displayed in the user list.

Modify user:

1. Select a user to modify password and MAC address if necessary in the user configuration list box.

2. The "Edit user" dialog box pops up by clicking the "Modify" button.

3. Enter the old password of the user in the "Old Password" text box.

4. Enter the new password in the "New password" and "Confirm Password" text box.

5. Enter computer's MAC address as necessary.

6. Click the "OK" button to save the settings.

Note: To change the access level of a user, the user must be deleted and added again with the new access level.

Delete user:

1. Select the user to be deleted in the user configuration list box.

2. Click the "Delete" button to delete the user.

Note: The default administrator account cannot be deleted.

4.6.2 Online User

Go to Security→Online User to view the user who is viewing the live video.

Index	Client Address	Port	User Name	User Type	
1	192.168.17.232	55760	admin	Administrator	Kick Out

An administrator user can kick out all the other users (including other administrators).

4.6.3 Block and Allow Lists

Go to Security→Block and Allow Lists as shown below.

The setup steps are as follows:
Check the "Enable address filtering" check box.
Select "Block/Allow the following address", IPv4/IPv6/MAC and then enter IP address or MAC address in the address box and click the "Add" button.

4.6.4 Security Management

Go to Security→Security Management as shown below.

In order to prevent against malicious password unlocking, "locking once illegal login" function can be enabled here. If this function is enabled, login failure after trying six times will make the login interface locked. The camera can be logged in again after a half hour or after the camera reboots.

4.7 Maintenance Configuration

4.7.1 Backup and Restore

Go to Maintenance→Backup & Restore.
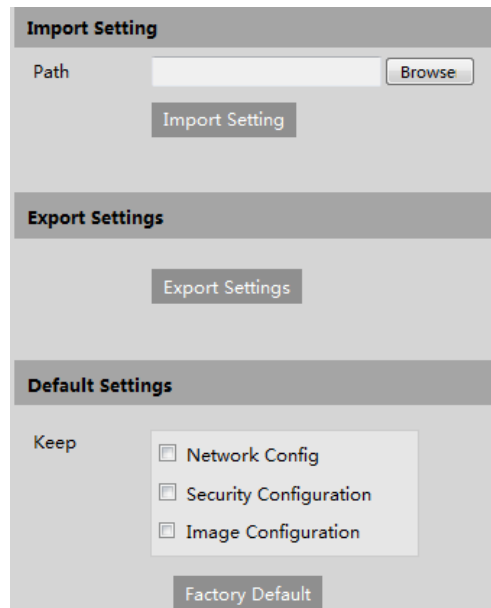
- **Import & Export Settings**

Configuration settings of the camera can be exported form a camera into another camera.
1. Click "Browse" to select the save path for import or export information on the PC.
2. Click the "Import Setting" or "Export Setting" button.

- **Default Settings**

Click the "Load Default" button to restore all system settings to the default factory settings except those you want to keep.

4.7.2 Reboot

Go to Maintenance➔Reboot.
Click the "Reboot" button to reboot the device.

Timed Reboot Setting:
If necessary, the camera can be set up to reboot on a time interval. Enable "Time Settings", set the date and time and then click the "Save" button to save the settings.

4.7.3 Upgrade

Go to Maintenance➔Upgrade. In this interface, the camera firmware can be updated.

1. Click the "Browse" button to select the save path of the upgrade file
2. Click the "Upgrade" button to start upgrading the firmware.
3. The device will restart automatically
Caution! Do not close the browser or disconnect the camera from the network during the upgrade.

4.7.4 Operation Log

To query and export log:
1. Go to Maintenance➔Operation Log.

Index	Time	Main Type	Sub Type	User Name	Login IP
1	2019-04-08 08:43:43	Alarm	Motion start		
2	2019-04-08 08:43:24	Alarm	Vfd Alarm		
3	2019-04-08 08:43:14	Alarm	Motion stop		
4	2019-04-08 08:41:20	Alarm	Motion start		
5	2019-04-08 08:40:26	Alarm	Motion stop		
6	2019-04-08 08:40:06	Alarm	Motion start		
7	2019-04-08 08:37:18	Alarm	Motion stop		
8	2019-04-08 08:34:43	Alarm	Motion start		

2. Select the main type, sub type, start and end time.

3. Click "Search" to view the operation log.

4. Click "Export" to export the operation log.

5 Search

5.1   Image Search

In the Setup interface, click Search to go to the interface as shown below. Images that are saved on the PC or SD card can be found here.
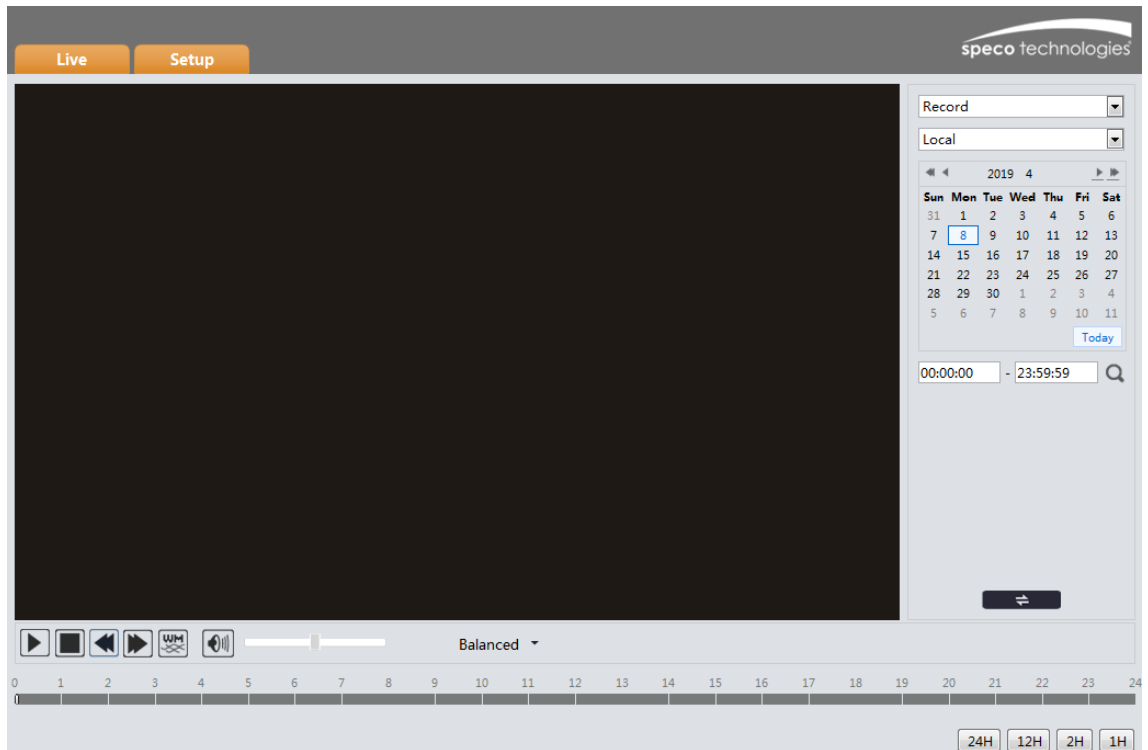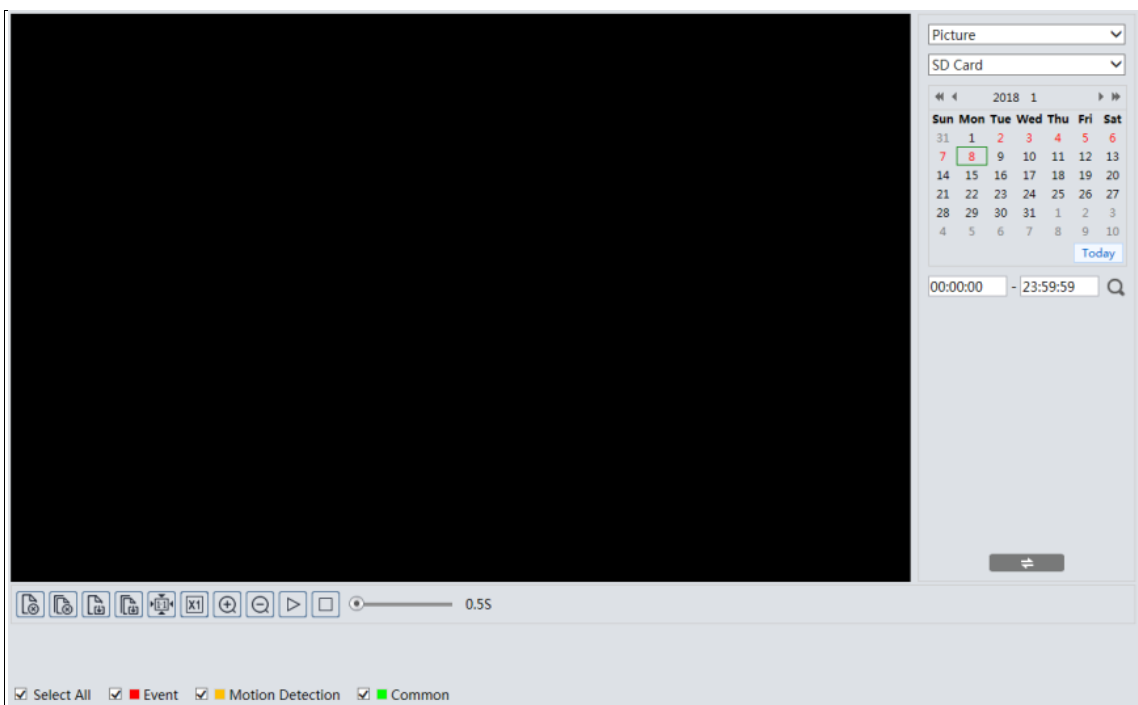

- **Local Image Search**
1. Choose "Picture"—"Local".
2. Set time: Select date and choose the start and end time.
3. Click   to search the images.
4. Double click a file name in the list to view the captured photos as shown above.
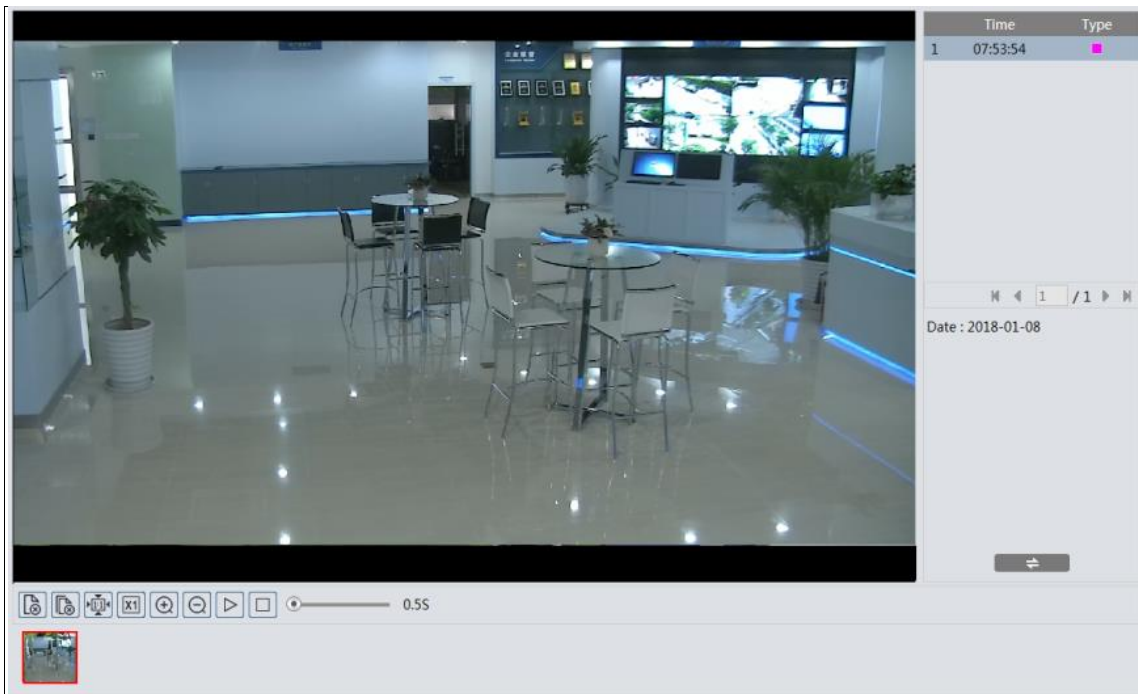
Click ⇌ to return to the previous interface.

- **SD Card Image Search**
1. Choose "Picture"—"SD Card".

2. Set time: Select date and choose the start and end time.
3. Choose the alarm events at the bottom of the interface.
4. Click 🔍 to search the images.
5. Double click a file name in the list to view the captured photos.

Click ⇌ to return to the previous interface.

The descriptions of the buttons are shown as follows.

Icon	Description	Icon	Description
	Close: Select an image and click this button to close the image.		Close all: Click this button to close all images.
	Save: Click this button to select the path for saving the image on the PC.		Save all: Click this button to select the path for saving all pictures on the PC.
	Fit size: Click to fit the image on the screen.	×1	Actual size: Click this button to display the actual size of the image.
	Zoom in: Click this button to digitally zoom in.		Zoom out: Click this button to digitally zoom out.
▷	Slide show play: Click this button to start the slide show mode.	□	Stop: Click this button to stop the slide show.
●━ 5.5S	Play speed: Play speed of the slide show.		

5.2 Video Search

5.2.1 Local Video Search

Click Search to go to the interface as shown below. Videos were recorded locally to the PC can be played in this interface.
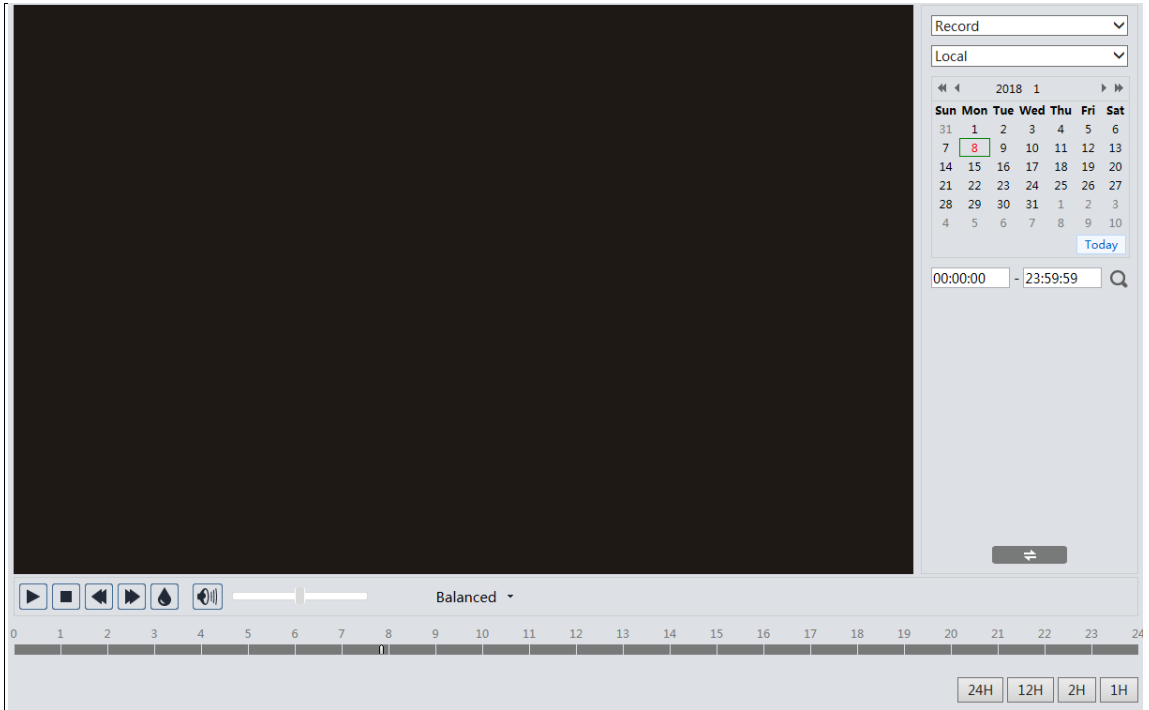
1. Choose "Record"—"Local".
2. Set search time: Select the date and choose the start and end time.
3. Click   🔍   to search the images.
4. Double click on a file name in the list to start playback.

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Icon	Description	Icon	Description
▶	Play button. After pausing the video, click this button to continue playing.	❚❚	Pause button
■	Stop button	◀◀	Speed down
▶▶	Speed up	◖	Watermark display
🔊 ▬▬▬▮▬▬▬	Enable / disable audio; drag the slider to adjust the volume after enabling audio. (only some models support this function)		

5.2.2 SD Card Video Search

Click Search to go to the interface as shown below. Videos that were recorded on the SD card can be played in this interface.

1. Choose "Record"—"SD Card".
2. Set search time: Select the date and choose the start and end time.
3. Click 🔍 to search the images.
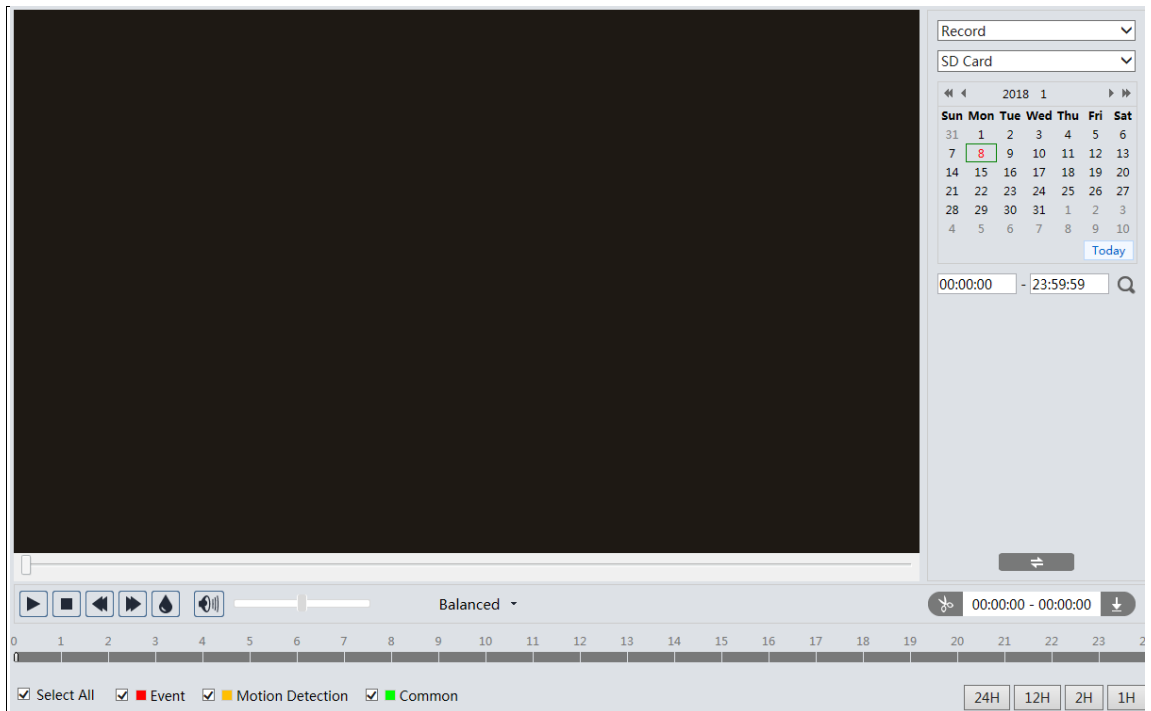
4. Select the alarm events at the bottom of the interface.
5. Select mix stream (video and audio stream) or video stream as needed.
6. Double click on a file name in the list to start playback.
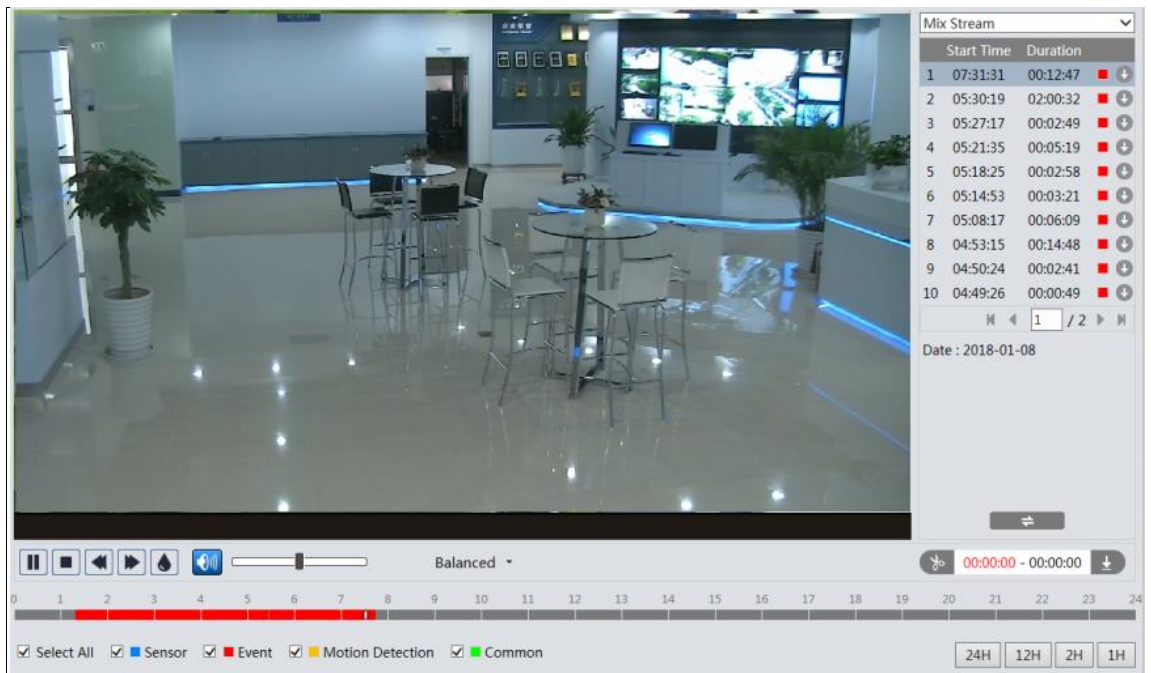
The time table can be shown in 24H/12H/2H/1H format by clicking the corresponding buttons.
Video clip and downloading
1. Search the video files according to the above mentioned steps.
2. Select the start time by clicking on the time table.
3. Click ✂ to set the start time and then this button turns blue (✂).
4. Select the end time by clicking on the time table. Then click ✂ to set the end time.
5. Click ⬇ to download the video file in the PC.

Index	Process	Record	Start Time	End Time	Path	Operate
1	100%	Cut	2018-01-16 01:1...	2018-01-16 01:1...	Favorites	Open

Set up   D:\Favorites   Clear List   Close

Click "Set up" to set the storage directory of the video files.
Click "Open" to play the video.
Click "Clear List" to clear the downloading list.
Click "Close" to close the downloading window.

Appendix

Appendix 1   Troubleshooting

IP Scanner does not show any device.
Make sure that the PC that's running IP Scanner is on the same local network as the devices.

Internet Explorer cannot download ActiveX control.
IE browser may be set up to block ActiveX. Follow the steps below.
1. Open IE browser and then click Tools→Internet Options.
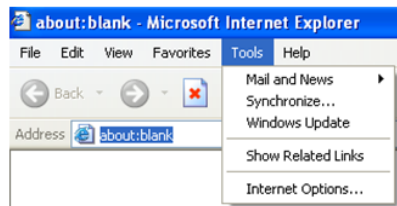
2. Select Security→Custom Level.
3. Enable all the options under "ActiveX controls and plug-ins".
4. Click OK to finish setup.
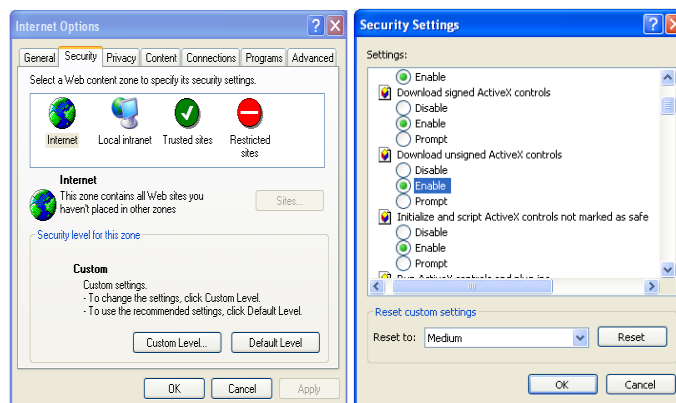
No sound can be heard.
1. Audio input device is not connected. Please connect and try again.
2. Audio function is not enabled at the corresponding channel. Please enable this function.

Appendix 2　　Specifications

Specification /Model		O4VB1
Camera	Image Sensor	1/2.7 " CMOS
	Image Size	2592×1944
	Electronic Shutter	1/25s~1/100000s
	Iris Type	Fixed Iris
	Min. llumination	0.011 lux@F1.2, AGC ON: 0 lux with IR 0.04 lux@F2.26, AGC ON: 0 lux with IR
	Lens	2.8mm@F2.0, horizontal field of view: 110° 3.6mm@F2.2, horizontal field of view: 89°
	Lens Mount	M12
	Day&Night	ICR
	WDR	3D DNR
	Digital NR	Digital WDR
	Angle Adjustment	Pan: 0°~360°; Tilt: 0°~80°; Rotation:0°~360°
Image	Video Compression	H.265/H.264
	H.264 Type	Main Profile @Leve4.1 High Tier
	Video Bit Rate	64Kbps~5Mbps
	Resolution	4MP(2560×1440), 3MP (2304 ×1296),1080P(1920×1080), 720P(1280×720), D1, CIF, 480×240
	Main Stream	60Hz: 4MP (1~30fps) /3MP(1~30fps)/1080P(1~30fps) 50Hz:4MP (1~25fps)/ 3MP (1~25fps)/ 1080P (1~25fps)
	Sub Stream	60Hz: 720P(1~15fps)/D1(1~30fps)/CIF(1~30fps) 50Hz: 720P(1~12fps)/D1(1~25fps)/CIF(1~25fps)
	Third Stream	60Hz:D1/CIF/480×240(1~30fps); 50Hz: D1/CIF/480×240(1~25fps)
	Image Settings	Saturation, Brightness, Chroma, Contrast, Wide Dynamic, Sharpen, NR, Anti-flicker, etc. adjustable through client or web browser
	ROI	Supported
Interfaces	Network	RJ45
	Storage	Built-in micro SD card slot; up to 128GB
Fucntion	Remote Monitoring	Web browser, CMS remote control
	Online Connection	Support simultaneous monitoring for up to4 users and multi-stream transmission
	Network Protocol	IPv4, IPv6, UDP, DHCP, NTP, RTSP, PPPoE, DDNS, SMTP, FTP, HTTP, HTTPS, 802.1x, QoS
	Interface Protocol	ONVIF, GB-T/28181-2016
	Storage	Network remote storage; micro SD card storage
	Smart Alarm	Motion detection; SD card Full, SD card error, scene change detection, video blur detection, line crossing , region intrusion, object removal
Others	IR Distance	66ft
	Protection Grade	IP67
	Power	DC12V/PoE
	Power Consumption	< 5W
	Opterating Environment	Temperature: -22°F~140°F;　　Relative Humidity: less than 95% (non-condensing)
	Dimension (mm)	2.9"(W) × 2.9" (H)×6.7"(D)
	Weight（net）	Approx.0.9lbs
	Installation	Wall mounting; ceiling mounting

Specification /Model		O4VB1M
Camera	Image Sensor	1/2.7 " CMOS
	Image Size	2592×1944
	Electronic Shutter	1/25s~1/100000s
	Iris Type	Fixed Iris
	Min. llumination	0.011 lux@F1.2, AGC ON: 0 lux with IR 0.04 lux@F2.26, AGC ON: 0 lux with IR
	Lens	2.8~12mm@F1.4, motorized zoom lens, horizontal FoV: 94°-35.7°
	Lens Mount	Ø14
	Day&Night	ICR
	WDR	Digital WDR
	Digital NR	3D DNR
	Angle Adjustment	Pan: 0°~360°; Tilt 0°~90°; Rotation:0°~360°
Image	Video Compression	H.265/H.264
	H.264 Type	Main Profile @Leve4.1 High Tier
	Video Bit Rate	64Kbps~5Mbps
	Resolution	4MP(2560×1440), 3MP (2304 ×1296),1080P(1920×1080), 720P(1280×720), D1, CIF, 480×240
	Main Stream	60Hz: 4MP (1~30fps) /3MP(1~30fps)/1080P(1~30fps) 50Hz:4MP (1~25fps)/ 3MP (1~25fps)/ 1080P (1~25fps)
	Sub Stream	60Hz: 720P(1~15fps)/D1(1~30fps)/CIF(1~30fps) 50Hz: 720P(1~12fps)/D1(1~25fps)/CIF(1~25fps)
	Third Stream	60Hz:D1/CIF/480×240(1~30fps); 50Hz: D1/CIF/480×240(1~25fps)
	Image Settings	Saturation, Brightness, Chroma, Contrast, Wide Dynamic, Sharpen, NR, Anti-flicker, etc. adjustable through client or web browser
	ROI	Supported
Interfaces	Network	RJ45
	Storage	Built-in micro SD card storage slot, up to 128 GB
Fucntion	Remote Monitoring	Web browser, CMS remote control
	Online Connection	Support simultaneous monitoring for up to 4 users and multi-stream transmission
	Network Protocol	IPv4, IPv6, UDP, DHCP, NTP, RTSP, PPPoE, DDNS, SMTP, FTP, HTTP, HTTPS, 802.1x, QoS
	Interface Protocol	ONVIF, GB-T/28181-2016
	Storage	Network remote storage, micro SD card storage
	Smart Alarm	Motion detection; SD card Full, SD card error, scene change detection, video blur detection, line crossing , region intrusion, object removal
Others	IR Distance	98ft
	Protection Grade	IP67
	Power	DC12V/PoE
	Power Consumption	< 9W
	Opterating Environment	Temperature: -22°F~140°F; Relative Humidity: less than 95% (non-condensing)
	Dimension (mm)	3.17"(W) × 3.17" (H)×8.57"(D)
	Weight（net）	Approx. 1.47lbs
	Installation	Wall mounting; ceiling mounting

Specification /Model		O4VT1
Camera	Image Sensor	1/2.7 " CMOS
	Image Size	2592×1944
	Electronic Shutter	1/25s~1/100000s
	Iris Type	Fixed Iris
	Min. llumination	0.011 lux@F1.2, AGC ON: 0 lux with IR 0.04 lux@F2.26, AGC ON: 0 lux with IR
	Lens	2.8mm@F2.0, horizontal field of view: 110° 3.6mm@F2.2, horizontal field of view: 89°
	Lens Mount	M12
	Day&Night	ICR
	WDR	120dB
	Digital NR	3D DNR
	Angle Adjustment	Pan: 0°~360°; Tilt 0°~75°; Rotation:0°~360°
Image	Video Compression	H.265/H.264
	H.264 Type	Main Profile @Leve4.1 High Tier
	Video Bit Rate	64Kbps~5Mbps
	Resolution	4MP(2560×1440), 3MP (2304 ×1296),1080P(1920×1080), 720P(1280×720), D1, CIF, 480×240
	Main Stream	60Hz: 4MP (1~30fps) /3MP(1~30fps)/1080P(1~30fps) 50Hz:4MP (1~25fps)/ 3MP (1~25fps)/ 1080P (1~25fps)
	Sub Stream	60Hz: 720P(1~15fps)/D1(1~30fps)/CIF(1~30fps) 50Hz: 720P(1~12fps)/D1(1~25fps)/CIF(1~25fps)
	Third Stream	60Hz:D1/CIF/480×240(1~30fps); 50Hz: D1/CIF/480×240(1~25fps)
	Image Settings	Saturation, Brightness, Chroma, Contrast, Wide Dynamic, Sharpen, NR, Anti-flicker, etc. adjustable through client or web browser
	ROI	Supported
Interfaces	Network	RJ45
	Storage	Built-in micro SD card slot; up to 128GB
Fucntion	Remote Monitoring	Web browser, CMS remote control
	Online Connection	Support simultaneous monitoring for up to 4 users and multi-stream transmission
	Network Protocol	IPv4, IPv6, UDP, DHCP, NTP, RTSP, PPPoE, DDNS, SMTP, FTP, HTTP, HTTPS, 802.1x, QoS
	Interface Protocol	ONVIF, GB-T/28181-2016
	Storage	Network remote storage; micro SD card storage
	Smart Alarm	Motion detection; SD card Full, SD card error, scene change detection, video blur detection, line crossing , region intrusion, object removal
Others	IR Distance	66ft
	Protection Grade	IP67
	Power	DC12V/PoE
	Power Consumption	< 5W
	Opterating Environment	Temperature: -22°F~140°F; Relative Humidity: less than 95% (non-condensing)
	Dimension (mm)	3.7" (Ø) ×3.3"
	Weight（net）	Approx.1lbs
	Installation	Wall mounting; ceiling mounting

Specification /Model		O4VT1M
Cam era	Image Sensor	1/2.7 " CMOS
	Image Size	2592×1944
	Electronic Shutter	1/25s~1/100000s
	Iris Type	Fixed Iris
	Min. llumination	0.011 lux@F1.2, AGC ON: 0 lux with IR 0.04 lux@F2.26, AGC ON: 0 lux with IR
	Lens	2.8~12mm@F1.4, motorized zoom lens, horizontal FoV: 94°-35.7°
	Lens Mount	Ø14
	Day&Night	ICR
	WDR	Digital WDR
	Digital NR	3D DNR
	Angle Adjustment	Pan: 0°~360°; Tilt 0°~80°; Rotation:0°~360°
Ima ge	Video Compression	H.265/H.264
	H.264 Type	Main Profile @Leve4.1 High Tier
	Video Bit Rate	64Kbps~5Mbps
	Resolution	4MP(2560×1440), 3MP (2304 ×1296),1080P(1920×1080), 720P(1280×720), D1, CIF, 480×240
	Main Stream	60Hz: 4MP (1~30fps) /3MP(1~30fps)/1080P(1~30fps) 50Hz:4MP (1~25fps)/ 3MP (1~25fps)/ 1080P (1~25fps)
	Sub Stream	60Hz: 720P(1~15fps)/D1(1~30fps)/CIF(1~30fps) 50Hz: 720P(1~12fps)/D1(1~25fps)/CIF(1~25fps)
	Third Stream	60Hz:D1/CIF/480×240(1~30fps); 50Hz: D1/CIF/480×240(1~25fps)
	Image Settings	Saturation, Brightness, Chroma, Contrast, Wide Dynamic, Sharpen, NR, Anti-flicker, etc. adjustable through client or web browser
	ROI	Supported
Interfaces	Network	RJ45
	Storage	Built-in micro SD card storage slot, up to 128 GB
Fucn tion	Remote Monitoring	Web browser, CMS remote control
	Online Connection	Support simultaneous monitoring for up to 4 users and multi-stream transmission
	Network Protocol	IPv4, IPv6, UDP, DHCP, NTP, RTSP, PPPoE, DDNS, SMTP, FTP, HTTP, HTTPS, 802.1x, QoS
	Interface Protocol	ONVIF, GB-T/28181-2016
	Storage	Network remote storage, micro SD card storage
	Smart Alarm	Motion detection; SD card Full, SD card error, scene change detection, video blur detection, line crossing , region intrusion, object removal
Oth ers	IR Distance	98ft
	Protection Grade	IP67
	Power	DC12V/PoE
	Power Consumption	< 9.5W
	Opterating Environment	Temperature: -22°F~140°F; Relative Humidity: less than 95% (non-condensing)
	Dimension (mm)	4.39" (Ø) ×3.92"
	Weight（net）	Approx. 1.47lbs
	Installation	Wall mounting; ceiling mounting

Models: O4VB1/O4VB1M/O4VT1/O4VT1M

Federal Communications Commission (FCC) Statements

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

FCC Responsible Party:

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