HORIZON

User Manual

V3.1.0

CC1005G

5G CBRS AI Camera

This Manual is applicable
to the following product

CC1005G

Horizon Powered USA Inc.
www.horizonpowered.com

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Chapter 1 Introduction

1.1 General

Horizon Powered CC1005G 5G AI Camera series provides a comprehensive range of security and surveillance solution to meet users' requirement. The cameras can be set up in a network and controlled or managed locally and remotely. Users can use it as an independent monitoring camera or connect to an NVR to build a surveillance system. With the Application and cloud platform, users will be able to access the camera on a mobilephone and other computer devices.

Horizon Powered 5G use the high-performance CPU and other industrial-grade units, with the embedded real-time operating system as the software support platform. The cameras support H.265/H.264/MJPEG video compression algorithm and industry-leading FHD dual-stream technology to achieve the highest level of video image quality under the limited network resources. It is fully functional, supporting for flexible and comprehensive alarm linkage mechanism, day and night auto switch, smart PTZ control and privacy masking, etc.*
With its powerful performance and versatility, the CC1005G Series has been widely adopted for M2M applications across many industries, including:

Smart Grids and Cities
Banking and Finance
Intelligent Buildings and Venues
Healthcare and Digital Medicine
Transportation and Supply Chain Logistics
Industrial Automation
Public Safety and Environmental Monitoring
Agriculture and Natural Resource Management

Package Content

4 x 5G/4G LTE Antennas
1 x GPS/GNSS Magnetic Mount Antenna SMA - 3meters Wire
1 x Wifi Antenna
1 x SIM Card Jacket
1 x Power Adaptor
1 x Power Connector,
4 x I/O /Alarm Connectors
1 x Lens Cleaning Cloth
2 x Cable Gland
2 x Flexible Plastic Conduit Pipes
1 x Mounting Bracket Set and Accessories

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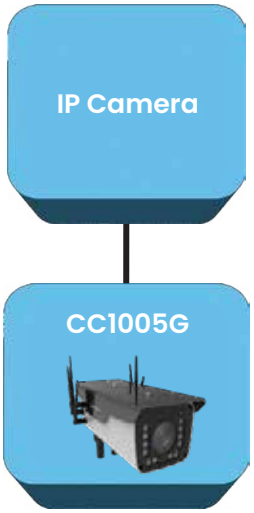
1.2 Product Line



1.3 Word Definition

Word	Explanation
IPC	IP Camera
H.264	Advanced Video Coding (MPEG-4 AVC) is a block-oriented motion-compensation-based video compression standard.
H.265	High Efficiency Video Coding (HEVC), also known as H.265 and MPEG-H Part 2, is a video compression standard, designed as a successor to the widely used AVC (H.264 or MPEG-4 Part 10).
MJPEG	Motion JPEG (M-JPEG or MJPEG) is a video compression format in which each video frame or interlaced field of a digital video sequence is compressed separately as a JPEG image.
SIP	The Session Initiation Protocol (SIP) is a signaling protocol used for initiating, maintaining, and terminating real-time sessions that include voice, video and messaging applications.
WDR	Wide Dynamic Range (WDR) is a term used in the surveillance camera industry to refer to high-dynamic-range imaging.
RTSP	The Real Time Streaming Protocol (RTSP) is a network control protocol designed for use in entertainment and communications systems to control streaming media servers.

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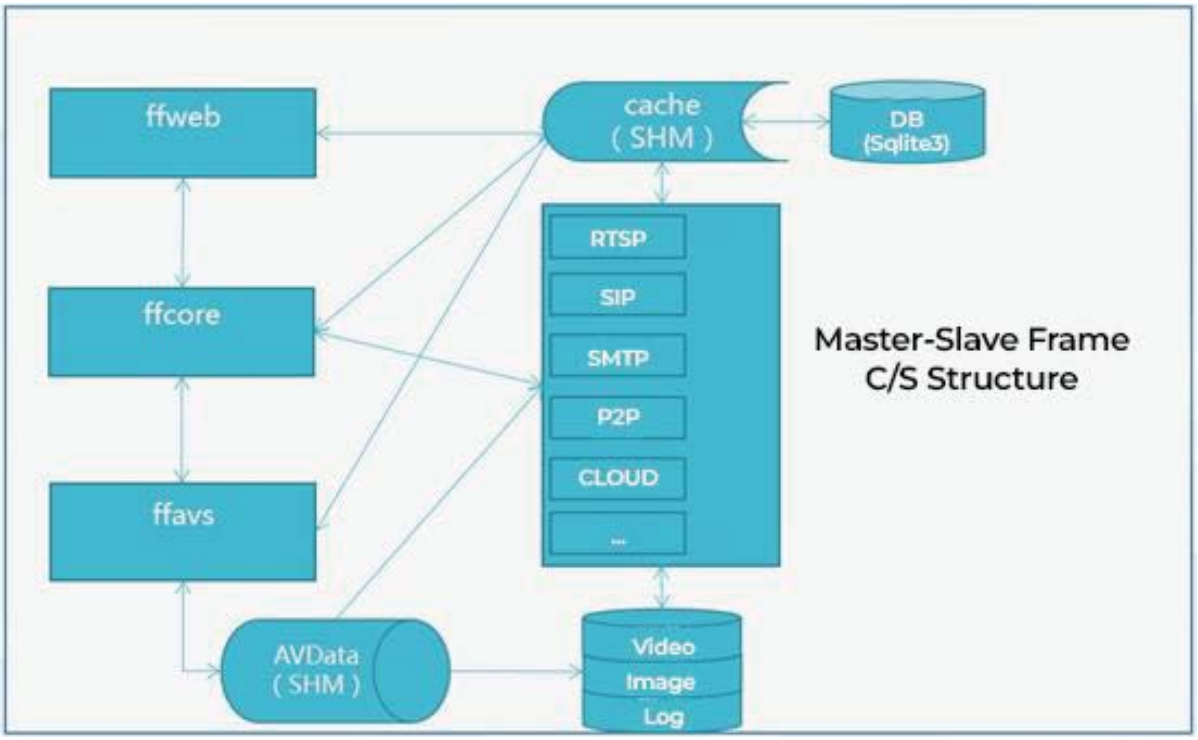
Chapter 2 System

2.1 Structure & Diagram

2.1.1 IPC Working Principal Diagram

Diagram 2.1.1 IPC System Structure



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2.2 Features

2.2.1 Network

- Ethernet: 1*RJ45 10M/100M Ethernet Port
- Network Storage: NFS, CIFS/SMB
- Protocol: IPv4/IPv6, TCP, UDP, RTP, RTSP, RTCP, HTTP, HTTPS, DNS, DDNS, DHCP, FTP, NTP, SMTP

2.2.2 System

- Storage: Support Micro SD/SDHC/SDXC Card Local Storage, up to 128G
- Advanced Function: Motion Detection, Privacy Masking, Backlight Compensation, HLC, 2D DNR, 3D DNR, ROI, Anti-fog, White Balance, EIS, IP Address Filtering
- Event Trigger: Motion Detection, Network Disconnection, External Input, Audio Alarm, etc.
- Event Action: FTP Upload/SMTP Upload/SD Card Record or Snapshot
- System Compatibility: Onvif Profile S, GB/T28181

2.2.3 External Interface

- Power: DC-12v or POE (IEEE 802.3at)
- Audio: 1*
- Alarm: 1 Alarm In+1 Alarm Out (Port can Drive 12V or 5V Relay) *
- Relay Out: 1 Relay OUT*
- ADC In: 1 8bit IN*
- UART Port: TTL@115200bps Or Expansion for RS485*

* = Optional

2.2.4 Cloud Platform

- Remote web server device management cloud platform for user to do remote status monitoring, configuration and update, etc.

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2.2.5 Other Web Functions

- Local web server for device configuration, system maintenance, storage management, video monitoring, etc.
- Video Playback: Support video playback on web browser
- NTP: NTP with RTC, support timed reboot, scheduled power on or off
- Internet: Support IPv4 & IPv6, including static IP and DHCP.
- External PTZ: RS232/RS485 + Pelco-D

2.3 Performance

2.3.1 Streaming Concurrency

Support maximum 10 ways video real-time streaming when all 3 stream types are on. (Primary, Secondary and Tertiary stream. 2 ways 1080P, 1 ways D1 30fps, using H264/H265/MJPEG)

2.3.2 Video Storage

Support 1 way SD card scheduled video recording & image capture, multi-way SD card alarm recording & capture.

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Chapter 3 Operating Environment

3.1 Computer Requirement

- Recommended Windows 8 and above.
- IE 11 or above.

3.2 Connection

3.2.1 Equipment Power Supply

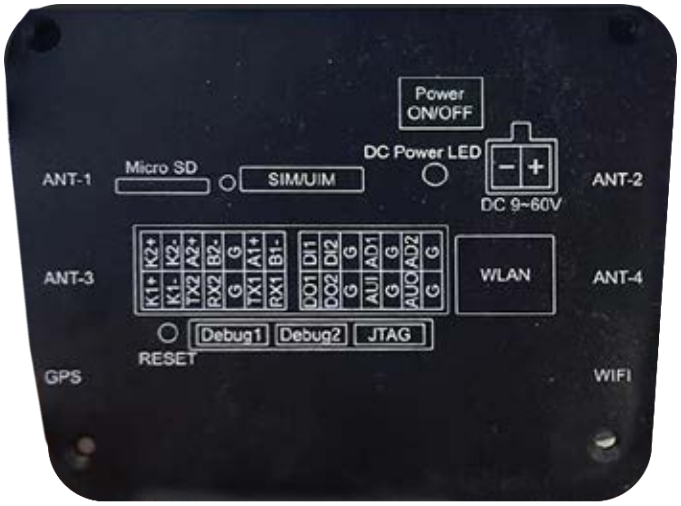
Horizon Powered 5G camera supports Power over Ethernet (PoE IEEE 802.3at) power supply and DC 9-60V wide voltage power supply. Users can choose one of the power supply modes to power the equipment. The power supply and network interface can be seen at the end of the camera after thescrews around the cover plate are removed.

When the device is normally powered on, the infrared light at the front of the camera will flash quickly, and there will be a slight clicking sound inside the lens. At the same time, when the back cover is opened, it can be seen that there are lights inside.

Power Interface Diagram:

DC Power Terminal Interface (CC1005G)

Figure 1 : Picture of Power Terminal from Different Angles



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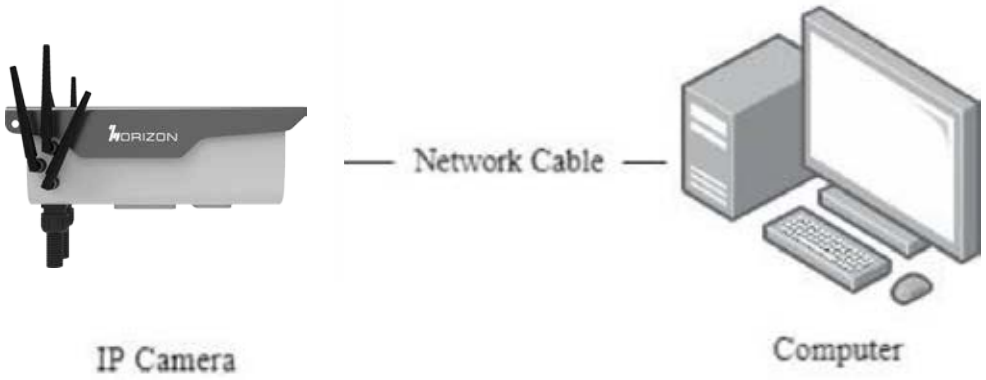
3.2.2 Network Connection

The camera can be connected to the computer for debugging and configuration in the following ways:

1. Direct Computer Connection



2. Connect through a Switch or Router

3.2.3 Access to Devices

Factory default configuration page address of IPC is http://192.168.1.100. Default user name is “admin”, the password is “**admin**”. If the computer and the camera are in a different network segment so that customer cannot directly access the camera from the computer.

In the case of a direct computer connection, it is necessary to set a fixed IP address for the computer first. The specific operation is as follows:

Accessing Camera

1. Open the Network Connections page of the computer and right-click the Ethernet and choose properties.

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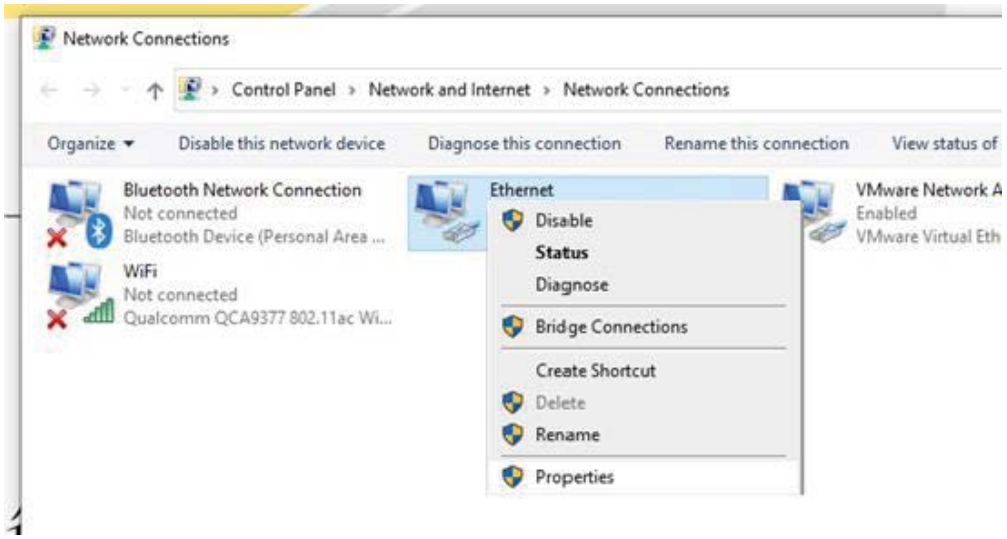
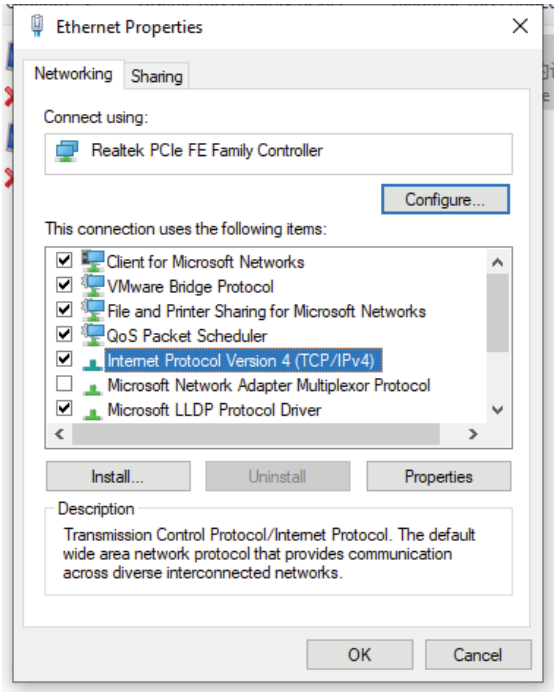


2. Modify IPv4.



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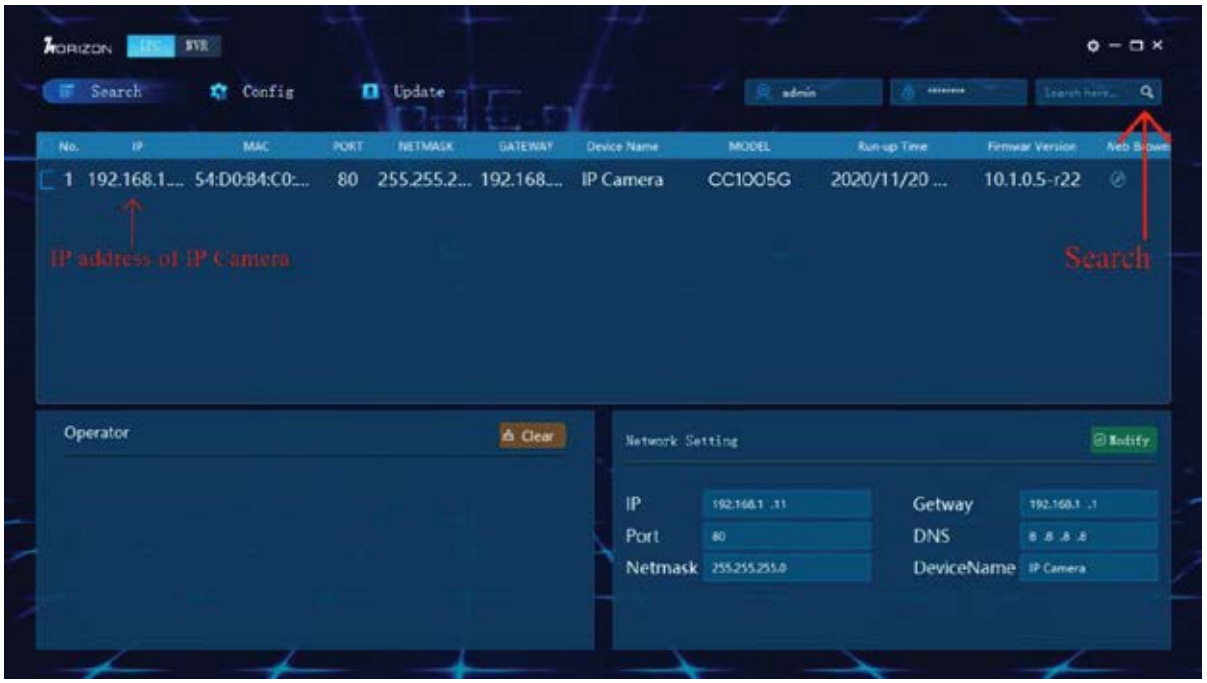
3. Set the COMPUTER IP to any address in 192.168.1.x network segment.

4. Try to access the IP camera configuration web page http://192.168.1.100 from Internet Explorer.

3.2.4 Device Search and IP Setting

When customer using a switch or router to connect, the device may not be able to access because the camera is in a different network segment from the computer and router. At this time, customer needs to use search tools to search IPC device for configuration.

Open Incisive Tools and click the search button. The tool will search all camera devices under the same LAN and list them together.



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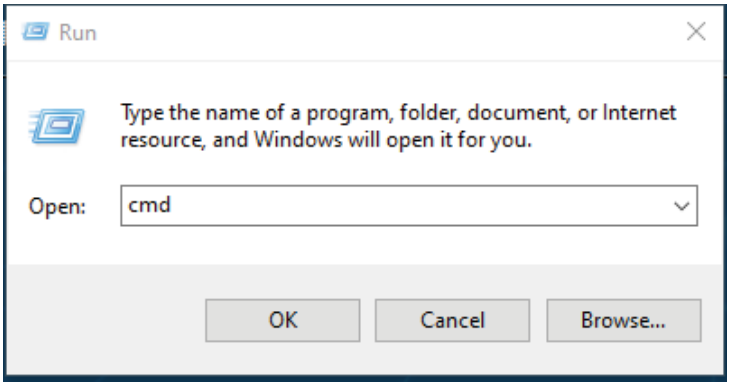
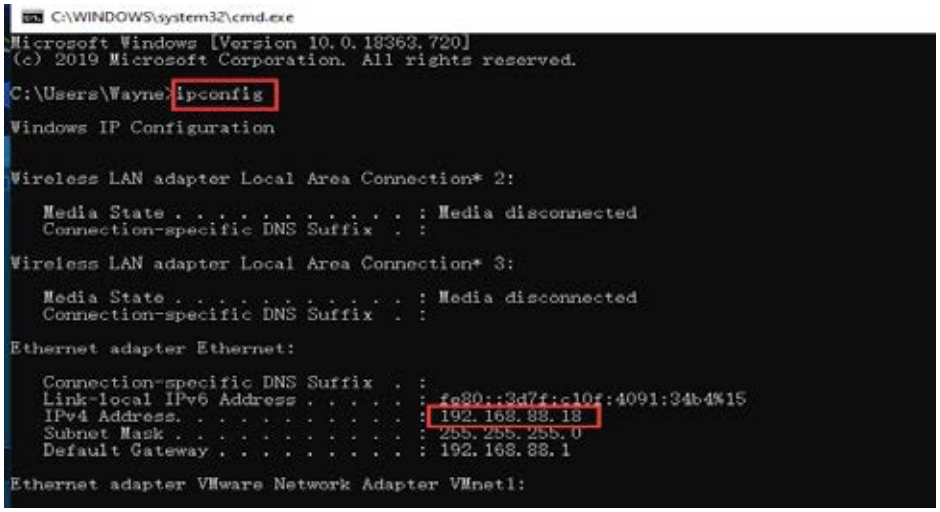
Please confirm whether the IP address of the IP camera is in the same network segment as the computer. Otherwise, the configuration of the camera cannot be accessed. The following processes can use for obtain the network segment where the computer is located:

Press Win+R on a Windows computer to open the CMD:



Enter ipconfig in the command bar and press Enter:



If the network segment of the computer is 192.168.88.x, the IP of the IP camera should also be changed to 192.168.88.x. If the network segment of the computer is 192.168.0.x, the IP of the camera should be changed to 192.168.0.x, and so on.

In the search tool, the IP of the device can be directly modified in batches. The specific processes are as follows:

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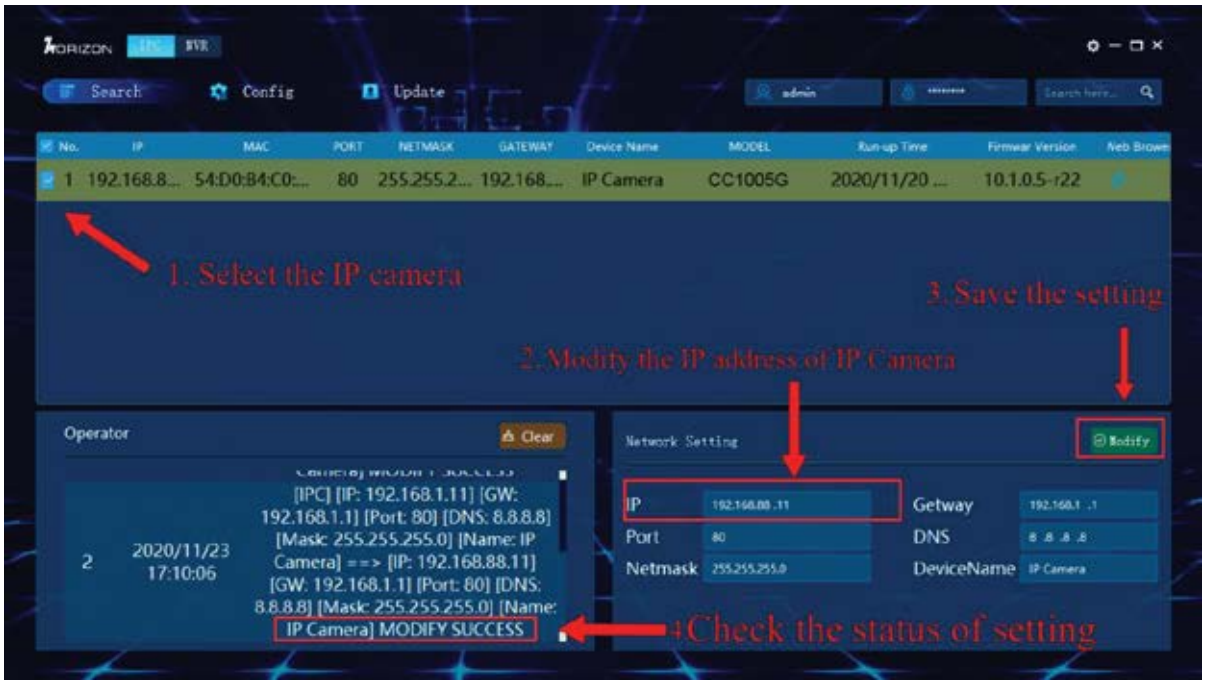
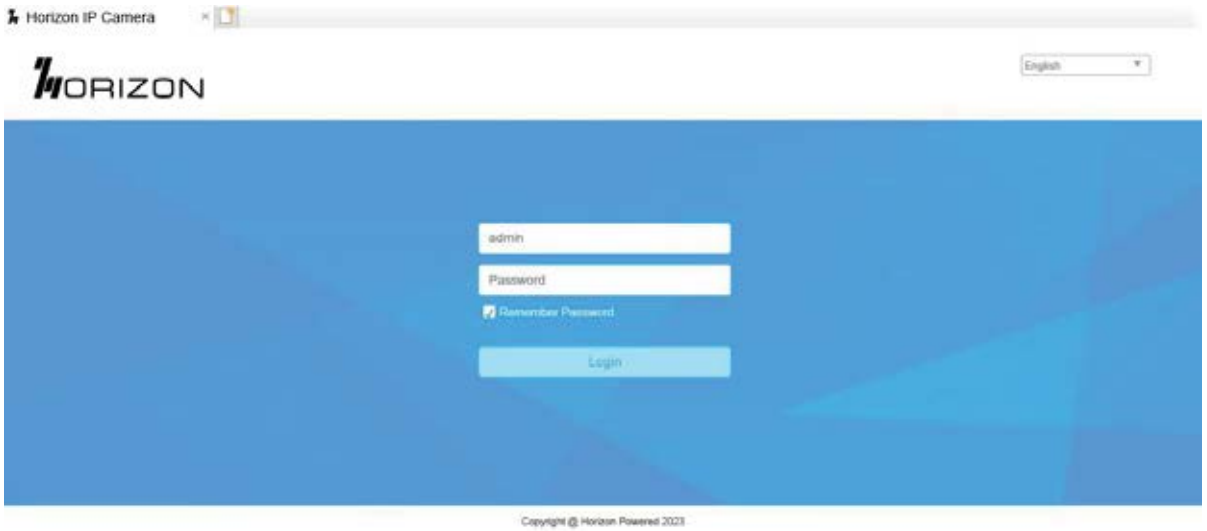


For information about the Incisive Tools, please refer to the user manual of the Incisive Tools.

3.2.5 Device Login

1. Open IE browser (IE 8.0 or above) and enter the IP address of IPC.
2. Enter ID and password to login.

Notice:
Initial account of standard version **Username: admin; Password: admin**



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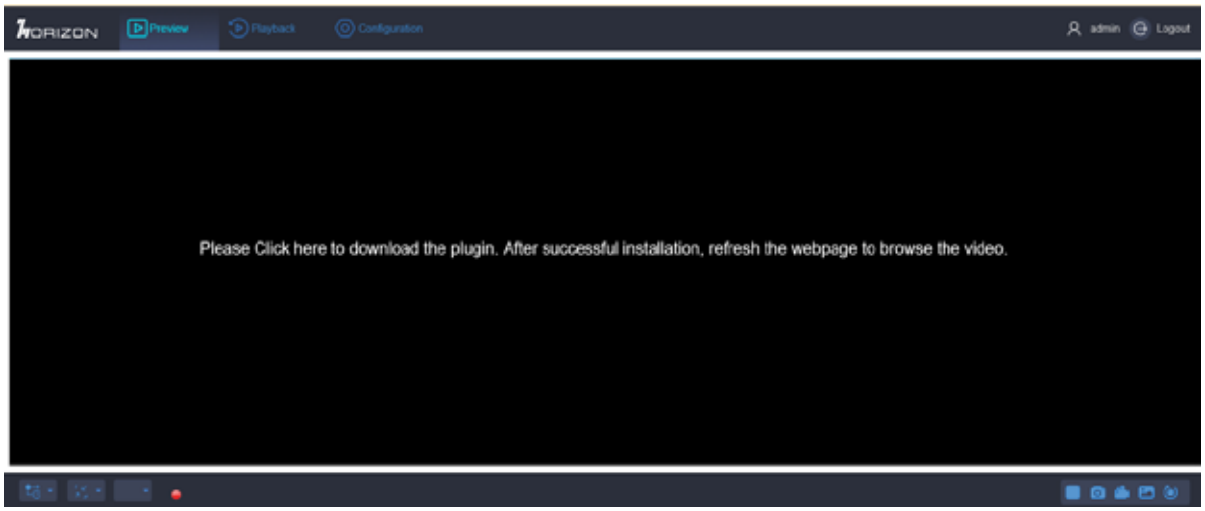
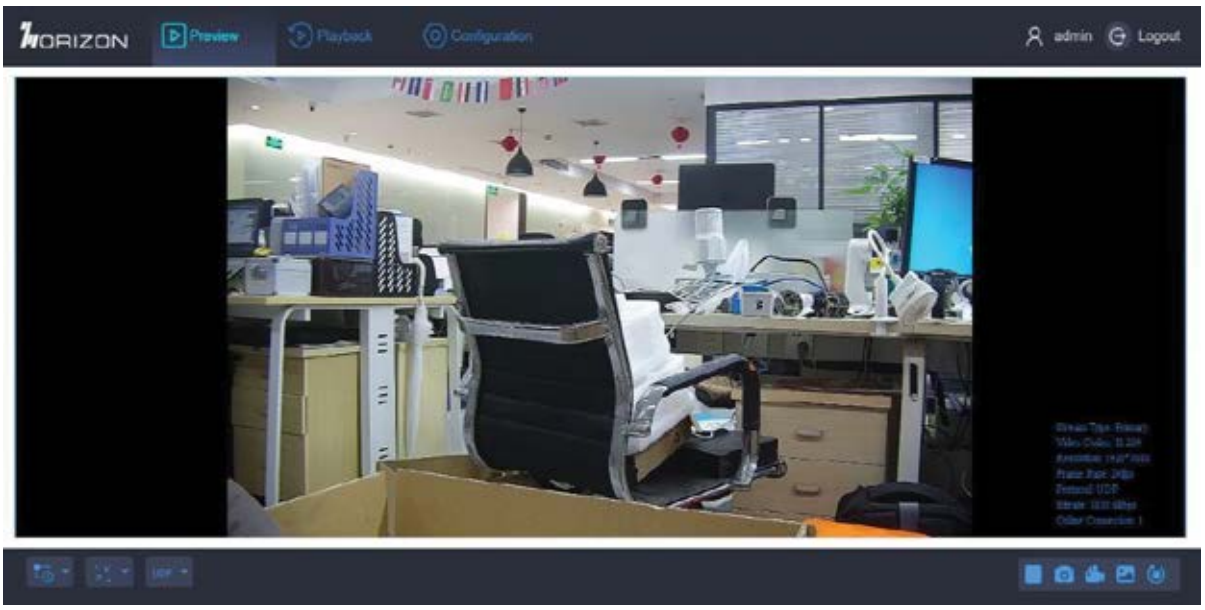
1. The user needs to install the video plug-in when the user login to IE for the first time. Click and download the video player plug-in.



2. After finish downloading, install the video plug-in.

3. After finish installing the video plug-in, refresh the IE. Users can check real-time video monitoring on IE and user can operate different functions of IPC on this web interface.



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Chapter 4 Main Function

4.1 Embedded System

4.1.1 Ethernet

1 x 10/100M auto-adaptive Ethernet port

4.1.2 SD/TF Card

SD card auto mount directory: /mnt/mmc/, for video recording and image capture. The related web page will show the usage information, user can also check the files inside the SD card.

Note: The SD card needs to be initialized when user use IPC at the first time.

4.1.3 RS485

The RS485 serial port control directory: /dev/ttyS1 (COM1 on the hardware), can be connect to external PTZ to realize PTZ control.

4.1.4 Audio Interface

Support 1 way MIC or Linear input. There is a reserved power amplifier interface inside the camera, user can connect it to a speaker directly. The IPC support web audio talkback, press the talk button to do real time talkback.

4.1.5 External I/O

Support external I/O, some models support external GPIO input and output, can be connected to other external alarm signal, such as smoke alarm, light alarm, etc. IPC can output TTL signal to trigger other action after received the alarm signal, such as control relay to send out alarm, or activate fire alarm system.

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4.1.6 External RELAY Interface

Support external RELAY OUT, can output signal to trigger other action.

4.1.7 ADC In

Support external ADC collection, can be used for real-time analog data collection in some specific environment. For example, to check the temperature of a fishpond, the IPC can be connected to an external temperature sensor to collect the voltage analog data. When there is an abnormal temperature, it will trigger the alarm to remind the fishman to adjust the temperature.

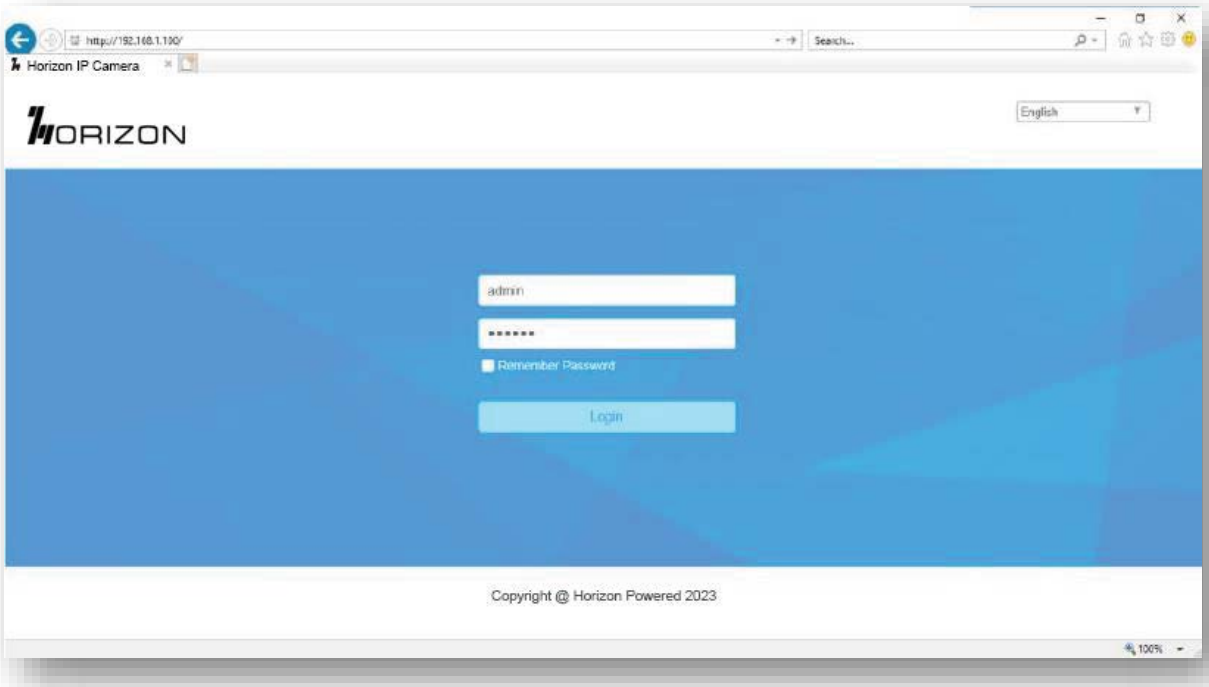
4.2 Local Web Management Portal

We recommend using Windows Internet Explorer to get the best user experience. You may require installing some plug-ins before you use the web portal.

4.2.1 Login

The default login credential is printed on a tag on your camera. The login IP address is 192.168.1.100, username is **admin**, and password is **admin** unless you have changed them before.

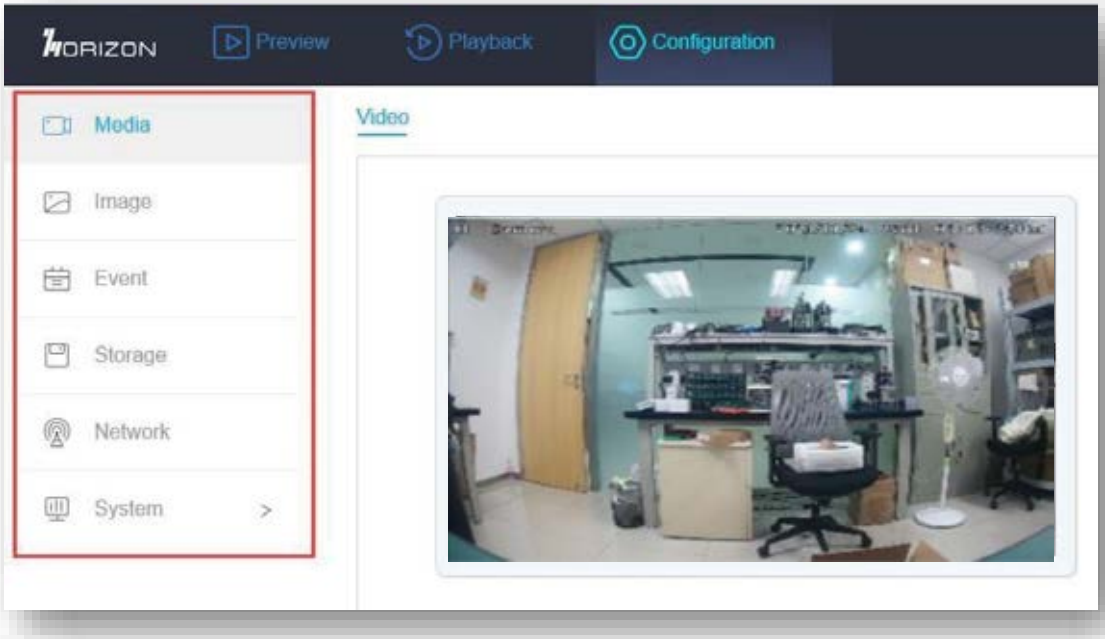
Type in the address and user info, click login to enter the management portal.



4.2.2 Configuration

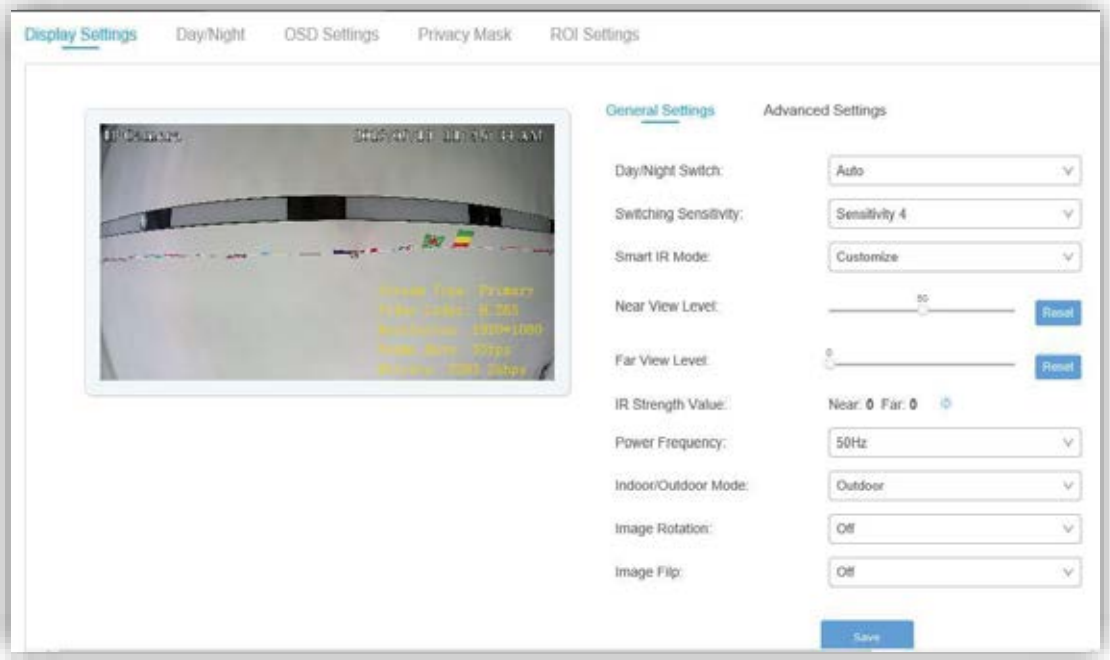
Click the 'Configuration' tab on the top menu, user can manage the IPC from the following page.

The side menu has list out all the items that user can configure. User can do detail configuration on the right side of the side menu after clicking the related item.



4.2.3 Display Setting

Support web video image adjustment, including Basic Settings, Day & Night Switch, OSD, Private Mask, ROI, etc.



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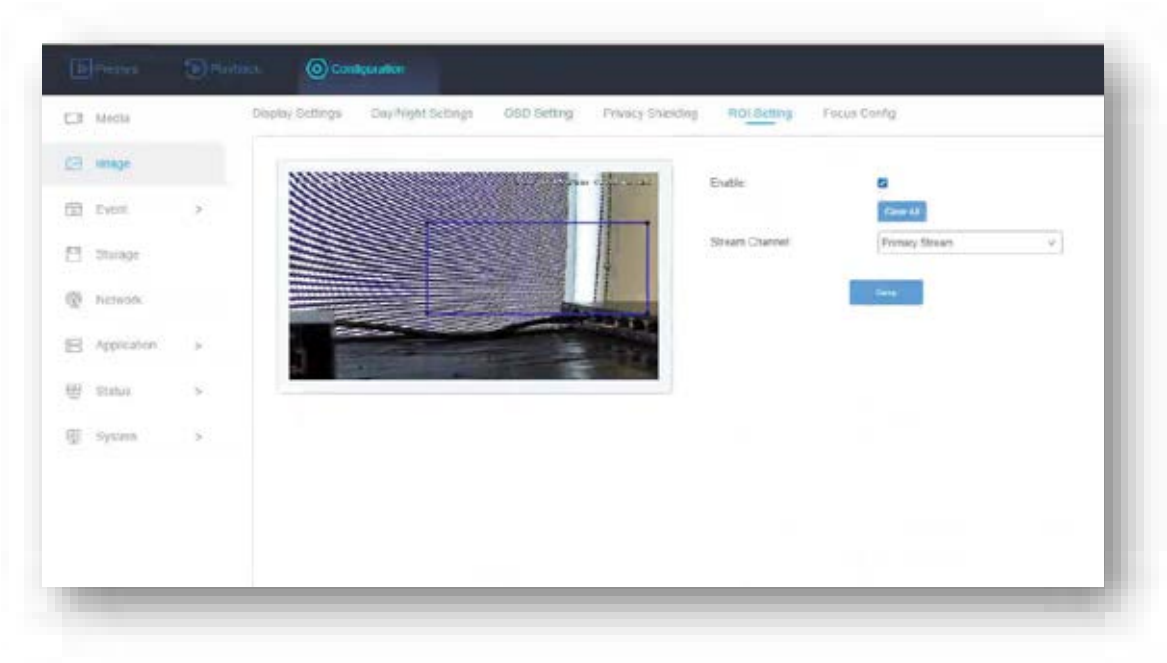
ROI

ROI (Region of Interest) encoding helps to discriminate the ROI and background information in video compression. The technology assigns more encoding resource to the region of interest, thus to increase the quality of the ROI whereas the background information is less focused

Set ROI

ROI (Region of Interest) encoding helps to assign more encoding resource to the region of interest, thus to increase the quality of the ROI whereas the background information is less focused.



Steps

1. Go to Image → ROI Settings .
2. Check Enable.
3. Select Stream Type.
4. Select Region No. in Fixed Region to draw ROI region.

1) Click Draw Area.
2) Click and drag the mouse on the view screen to draw the fixed region.
3) Click Stop Drawing.

Day/Night Switch

Day/Night Switch function can provide color images in the day mode and turn on fill light in the night mode. Switch mode is configurable.

Day

The image is always in color.

Night

The image is black/white or colorful and the supplement light will be enabled to ensure clear live view image at night

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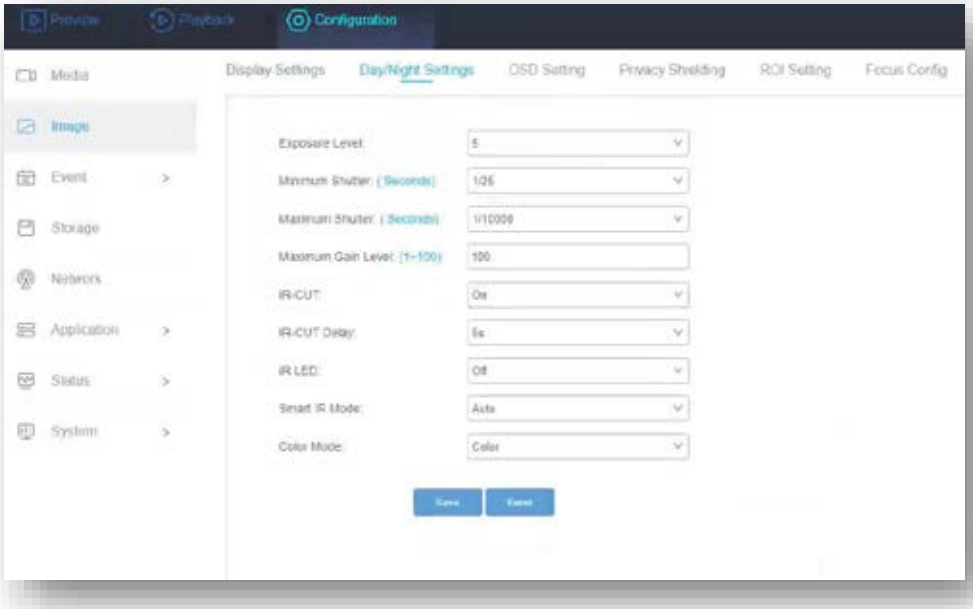


OSD

You can customize OSD (On-screen Display) information such as device name, time/date, font, color, and text overlay displayed on video stream.

Go to OSD setting page: Image → OSD Settings. Set the corresponding parameters, and click Save to take effect.

Displayed Information

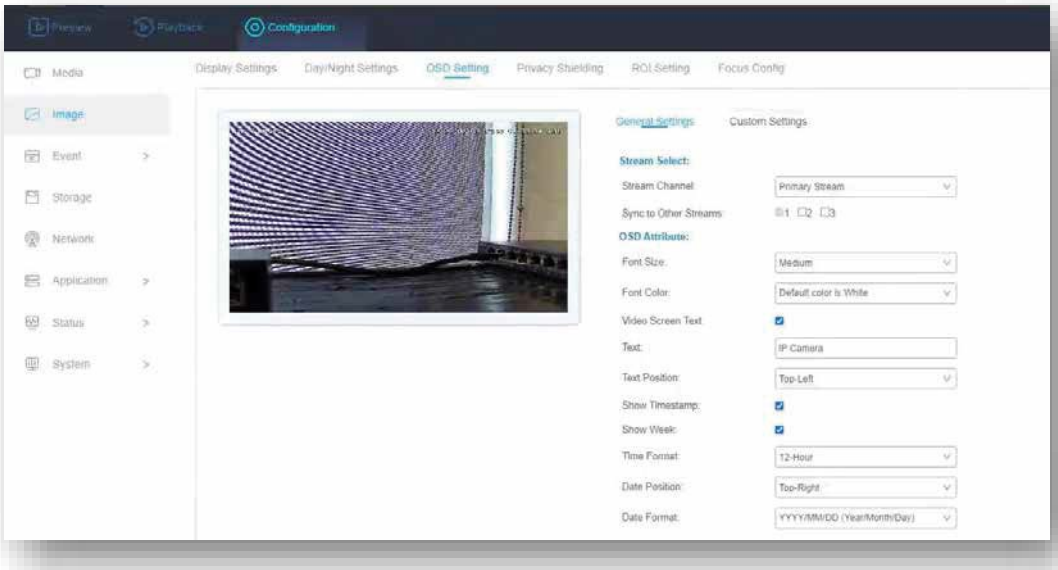
Set camera name, date, week, and their related display format.

Text Overlay

Set customized overlay text on image.

OSD Parameters

Set OSD parameters, such as Display Mode, OSD Size, Font Color, and Alignment



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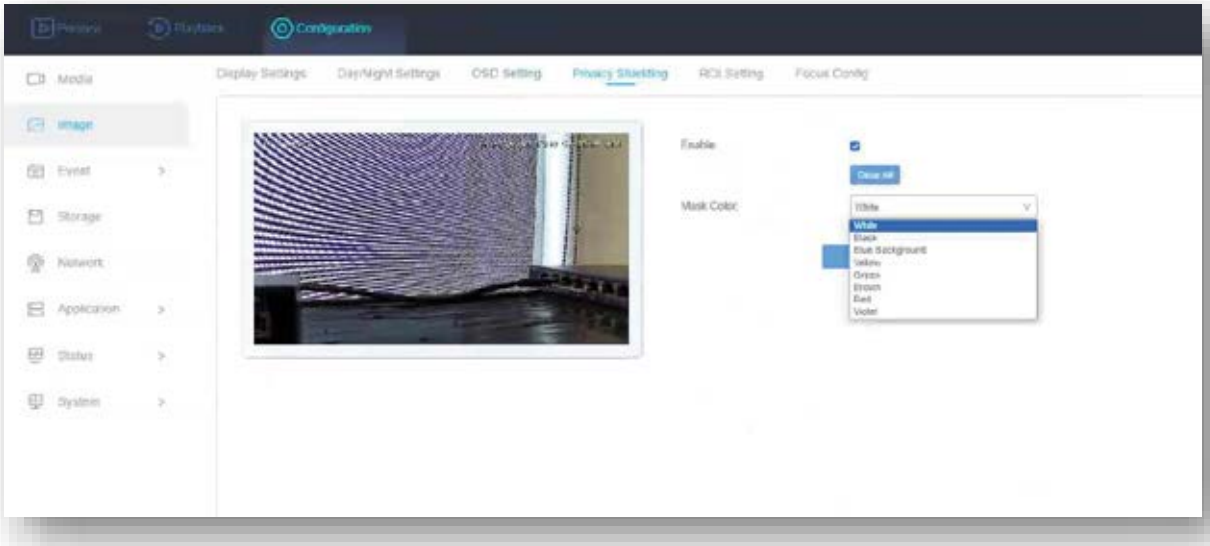
Privacy Shielding
The function blocks certain areas in the live view to protect privacy. No matter how the device moves, the blocked scene will never be seen.

Steps
1. Go to privacy mask setting page: Image → Privacy Shielding .
2. Check Enable and Select Mask Color.
3. Click Draw Area. Drag the mouse in the live view to draw a closed area.
Drag the corners of the area Adjust the size of the area.
Drag the area Adjust the position of the area.
Click Clear All Clear all the areas you set.
4. Click Stop Drawing.
5. Click Save



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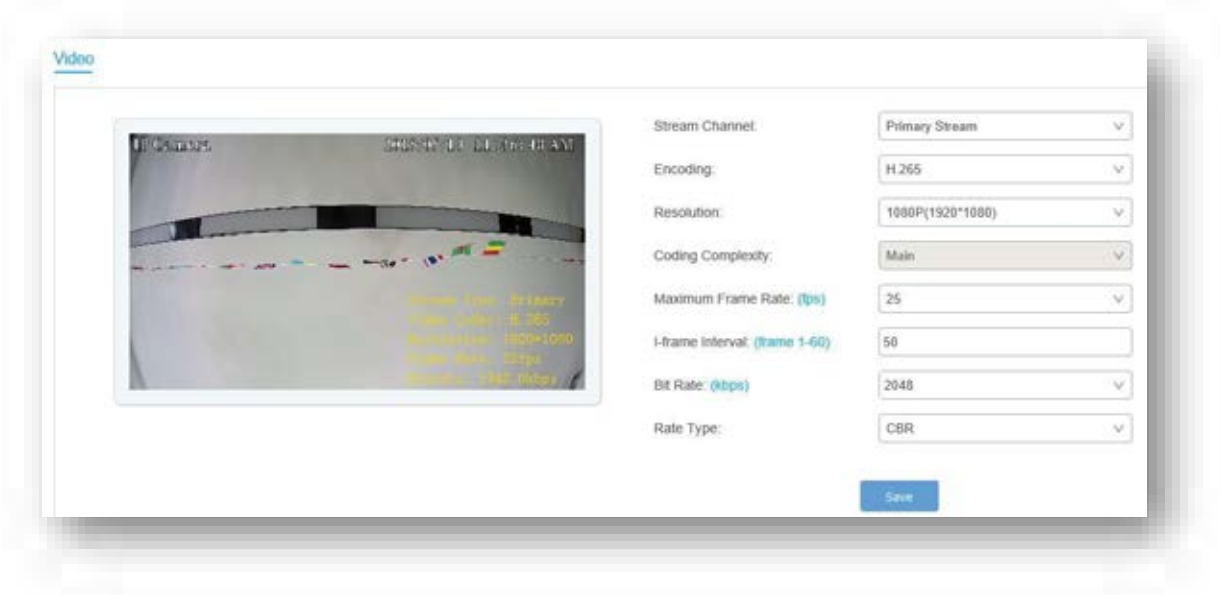
4.2.4 Video Setting

Support video configuration, including Stream Type, Video Format, Resolution, Quality, Time, Bit Rate, CBR (Constant Bit Rate)/VBR (Variable Bit Rate) Type, etc.



Resolution
Select video resolution according to actual needs. Higher resolution requires higher bandwidth and storage

Bitrate Type and Max. Bitrate

Constant Bitrate
It means that the stream is compressed and transmitted at a comparatively fixed bitrate. The compression speed is fast, but mosaic may occur on the image.

Variable Bitrate
It means that the device automatically adjust the bitrate under the set Max. Bitrate. The compression speed is slower than that of the constant bitrate. But it guarantees the image quality of complex scenes.

Video Quality
When Bitrate Type is set as Variable, video quality is configurable. Select a video quality according to actual needs. Note that higher video quality requires higher bandwidth.

Frame Rate
The frame rate is to describe the frequency at which the video stream is updated and it is measured by frames per second (fps).
A higher frame rate is advantageous when there is movement in the video stream, as it maintains image quality throughout. Note that higher frame rate requires higher bandwidth and larger storage space.

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Video Encoding
It stands for the compression standard the device adopts for video encoding.

H.264
H.264, also known as MPEG-4 Part 10, Advanced Video Coding, is a compression standard. Without compressing image quality, it increases compression ratio and reduces the size of video file than MJPEG or MPEG-4 Part 2.

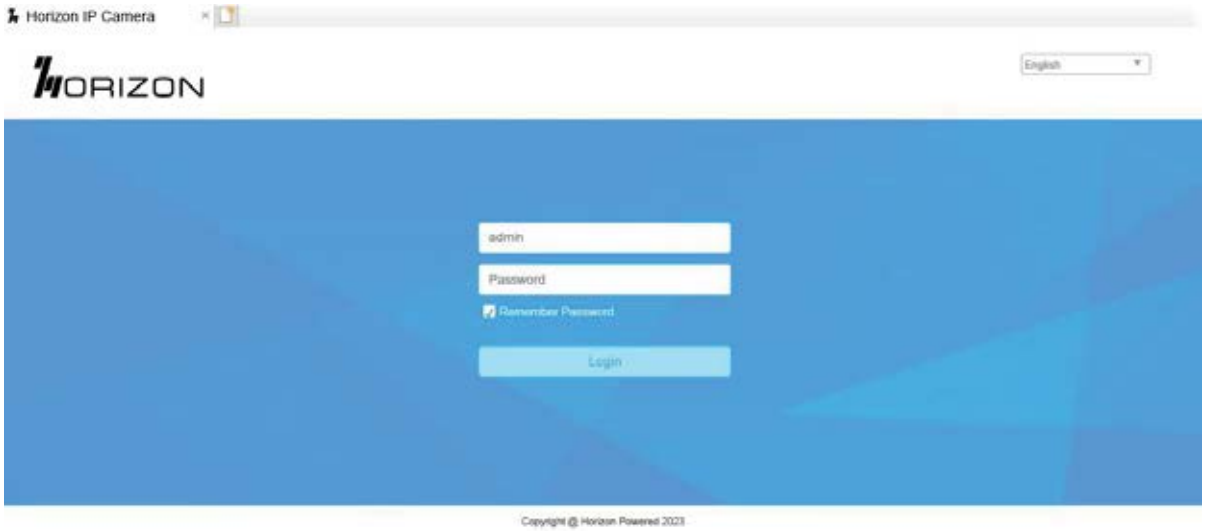
H.265
H.265, also known as High Efficiency Video Coding (HEVC) and MPEG-H Part 2, is a compression standard. In comparison to H.264, it offers better video compression at the same resolution, frame rate and image quality.

4.2.5 Real-time Video

Real-time video is supported in IPC web interface and user can control the IPC remotely at the same time.

Processes:

1. Login the IPC web interface.



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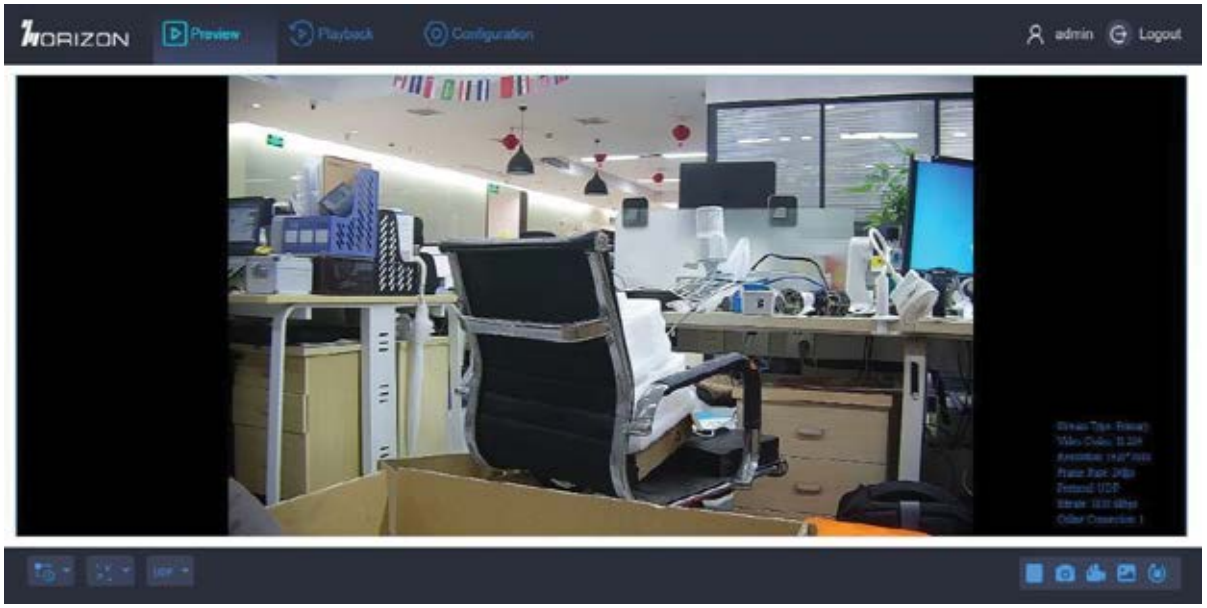
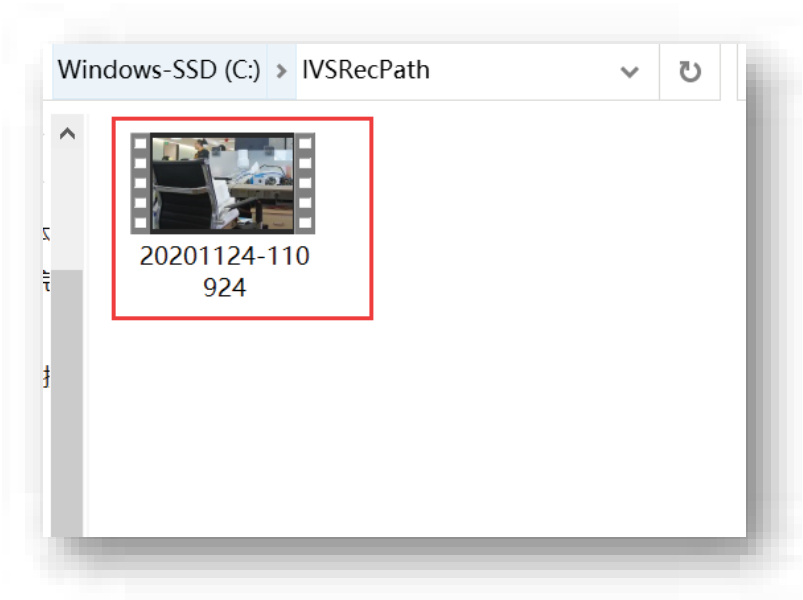
2. Click preview option on the top of the menu. At the lower right corner, user can remote control IPC such as play/stop live video, snapshots, video recording. Some cameras can support lens zoom, focus and other features.



3. On the video preview interface, the recording videos and snapshot are stored on the local disk. After finish record the video or snapshot, the system will automatically pop up the local disk window of the recording video/snapshot so that users can view it at the same time.



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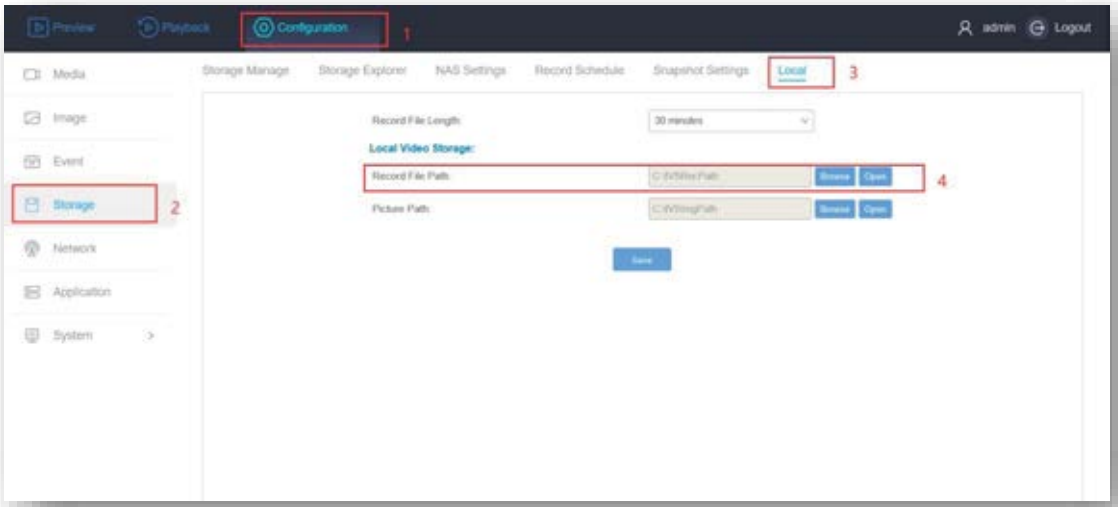
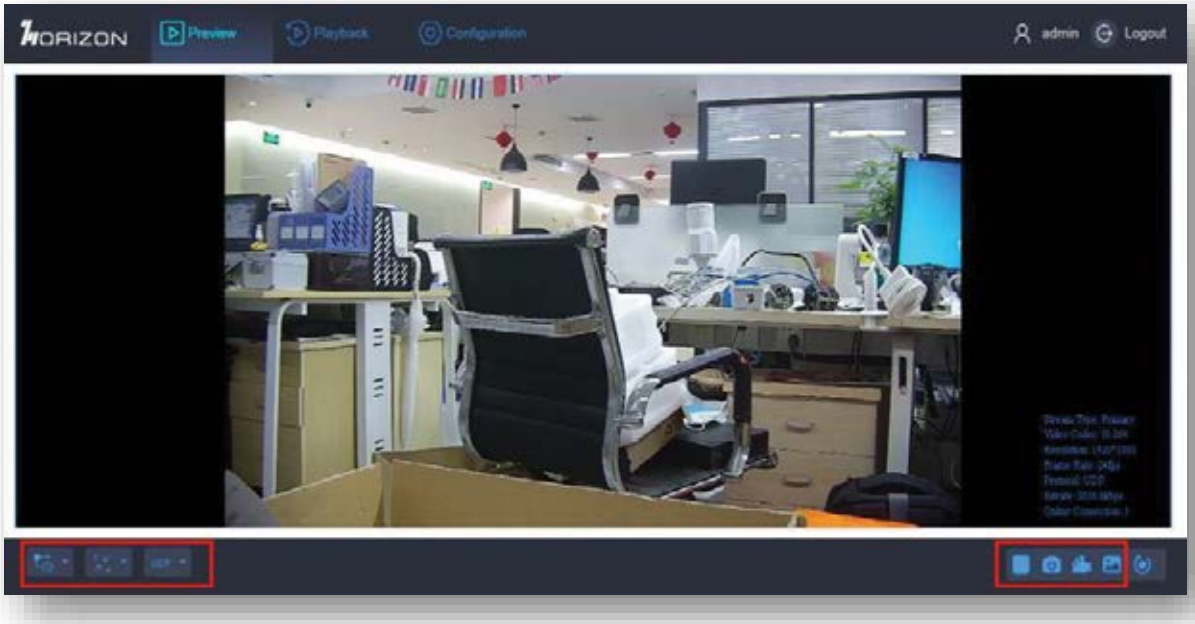
4. User can set the record video storage path on the IPC web interface.



Buttons of image setting:



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Button	Description
	Primary stream
	Secondary stream
	Window size
	Real size
	Full scream size
TCP	Protocol setting
	Play
	Stop
	Snapshot
	Brightness
	Contrast
	Sharpness
	Noise reduction level
	Default
	Video recording
	Saturation

Buttons of IPC remote control:

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Button	Description
	Len configuration
	Zoom in
	Zoom out
	Focus increase
	Focus reduce
	Iris increase
	Iris reduce
	Focus speed
	Lens initialization
	Auxiliary focus
	Auto iris

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4.2.6 Video Playback

The IPC web interface supports video playback function. User can use the IPC web interface to play the recorded video from the IPC storage directly. You may require to install plug-ins before you use this function.

Processes:

1. Click the playback on the top of menu.
2. Select the date and time on the right side.
3. Click the play button to playback the video.

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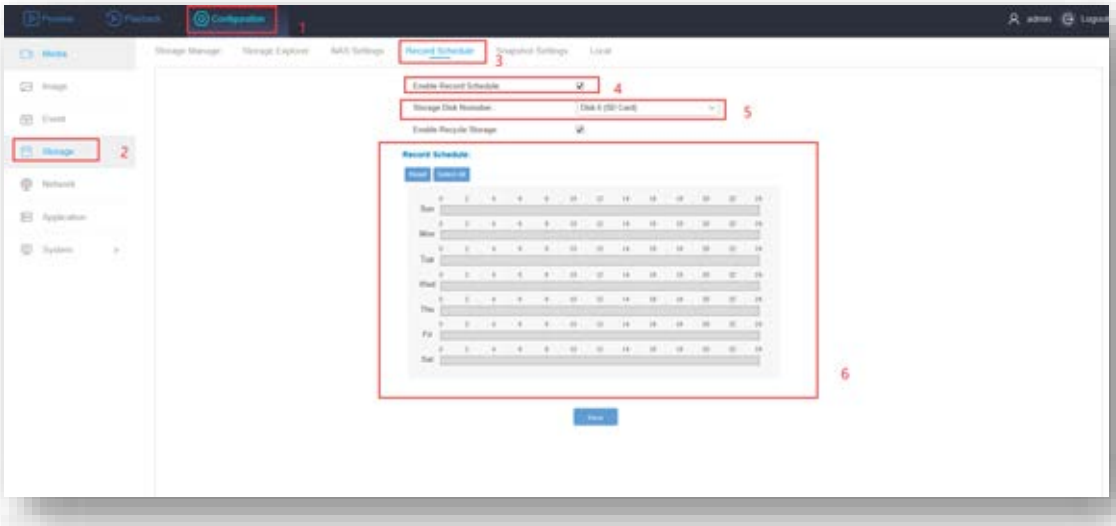
4.2.7 Video Record Schedule

User can set the recording schedule so that the IP camera can record automatically at regular intervals.

Processes:

1. Click the configuration on the top of menu.
2. Select the storage option on the left side.
3. Choose record schedule on the top.
4. Enable the record schedule.
5. Choose the disk.
6. Select the recording day & time period and save.



NAS Settings

Take network server as network disk to store the record files, captured images, etc.
Before You Start
Get the IP address of the network disk first.
Steps
1. Go to NAS setting page: Configuration → Storage → NAS Setting.
2. Click HDD No.. Enter the server address and file path for the disk.

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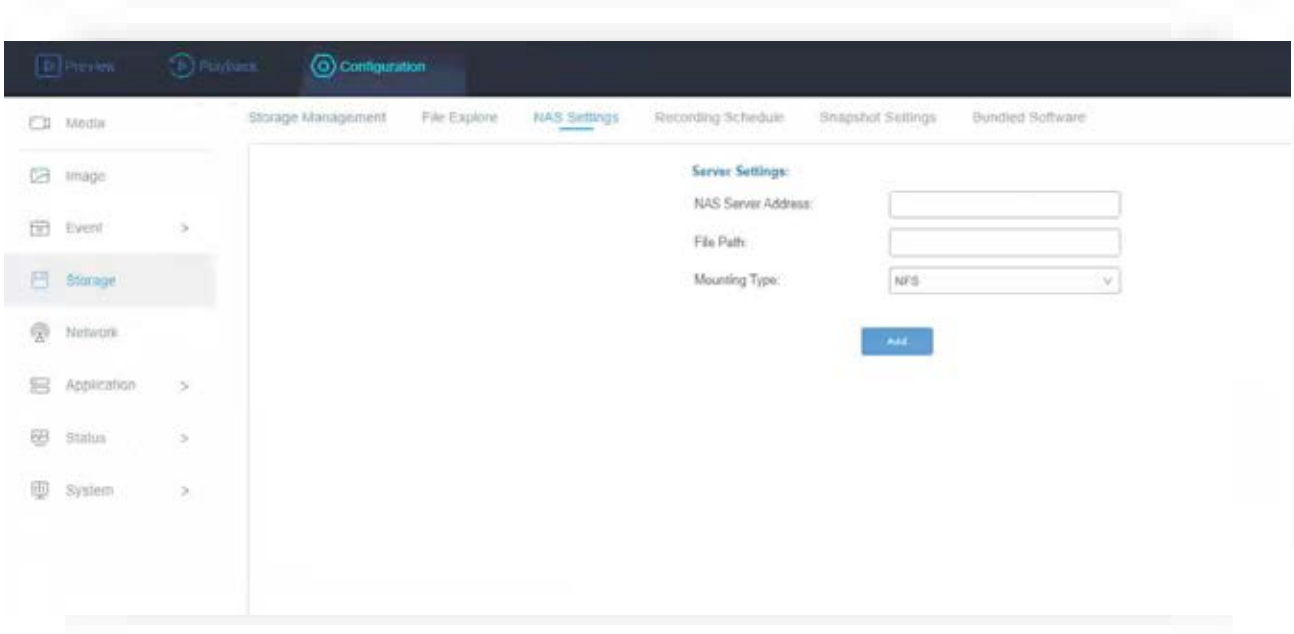
Server Address
The IP address of the network disk.

File Path
The saving path of network disk files.

Mounting Type
Select file system protocol according to the operation system.



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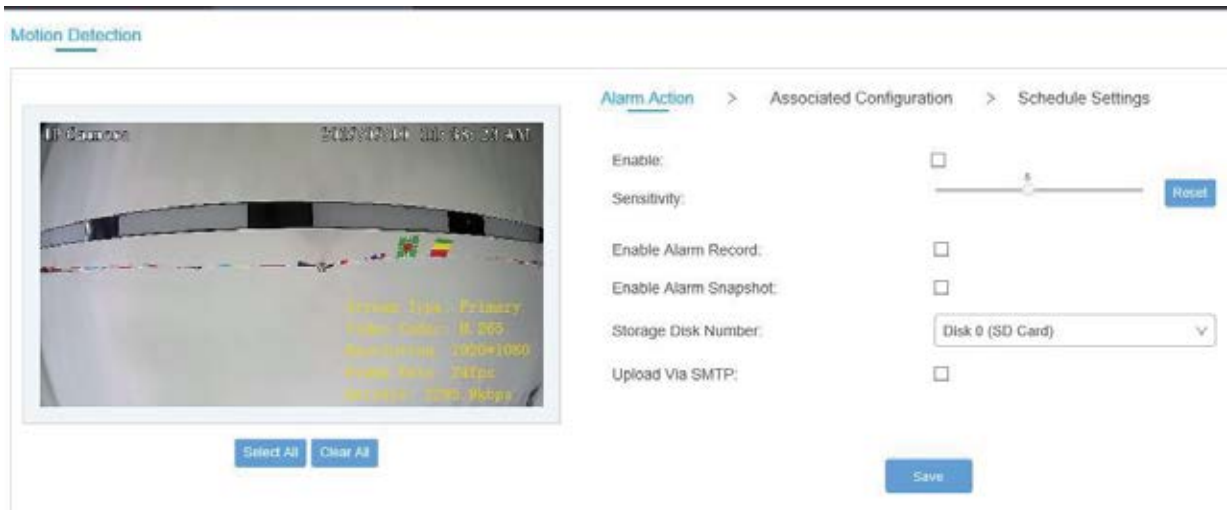
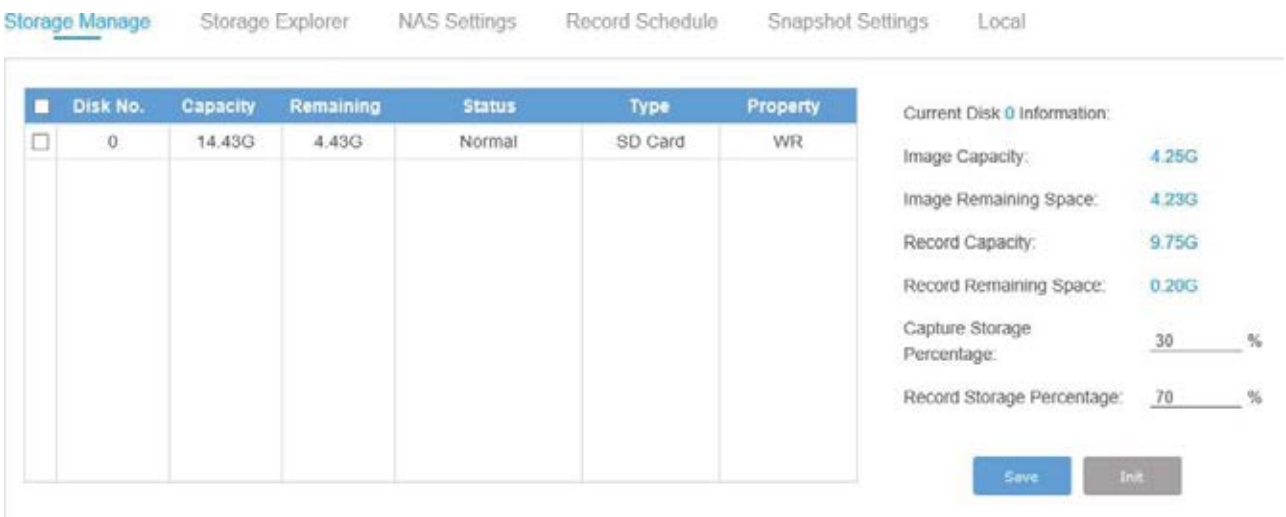
4.2.8 Alarm

The product supports various event alarm functions, by setting up some trigger conditions and the related actions to inform user to check and take action.



4.2.9 Storage Configuration

The product support storage management, storage configuration, file search, scheduled recording, scheduled image capture, etc.



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4.2.10 Network Configuration

Port Settings TCP/IP HTTPS SMTP Cloud

Http Port: (1-65535) 80

Https Port: (1-65535) 443

RTSP Port: (1-65535) 554

Save

Port Settings TCP/IP HTTPS SMTP Cloud

IPv4 Mode: Fixed IP

Device IP Address: 192 . 168 . 88 . 61 Test

IPv4 Subnet Mask: 255 . 255 . 255 . 0

IPv4 Default Gateway: 192 . 168 . 88 . 1

DNS Server: 192 . 168 . 88 . 1

Save

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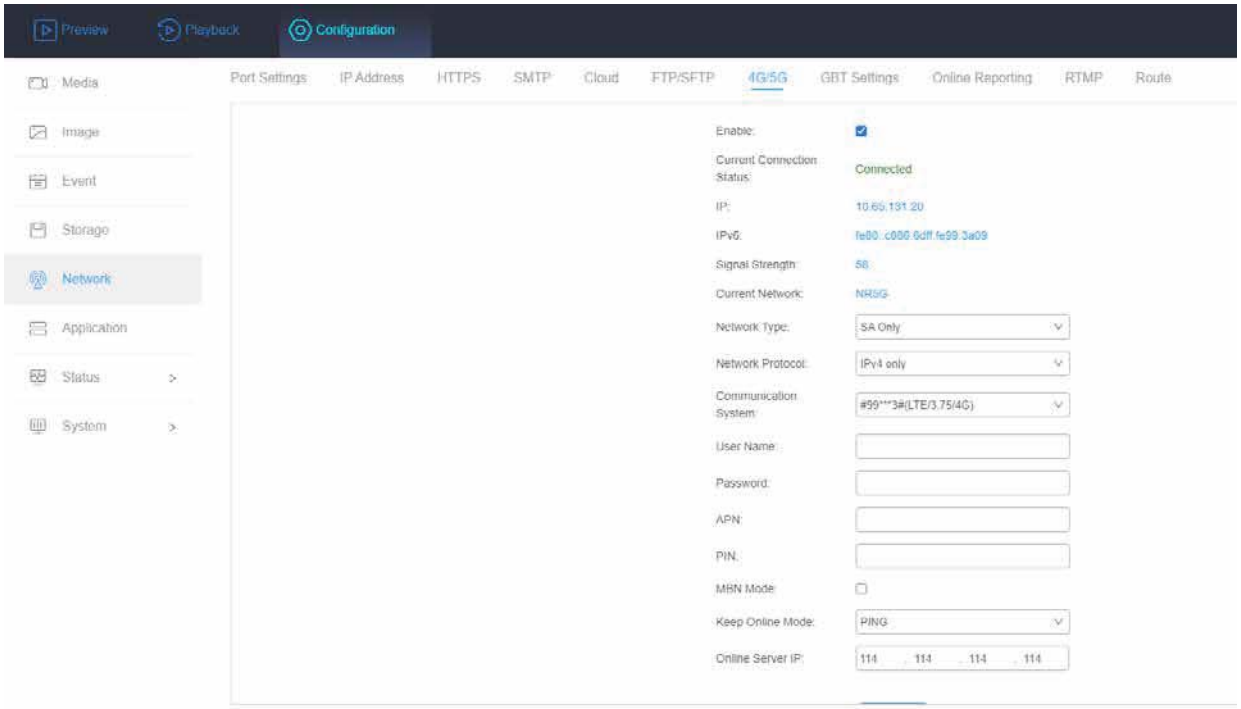
4.2.11 4G/5G Configuration

1. Insert the SIM card to the IPC. Click the 'Network' option on the left side of the IPC Web interface and choose 4G/5G on the top of the menu. Enable the 4G/5G

Notice:

1. Make sure the network state is connected, has an IP address and the signal value is above 15.

2. The network state is at least 4G or LTE.



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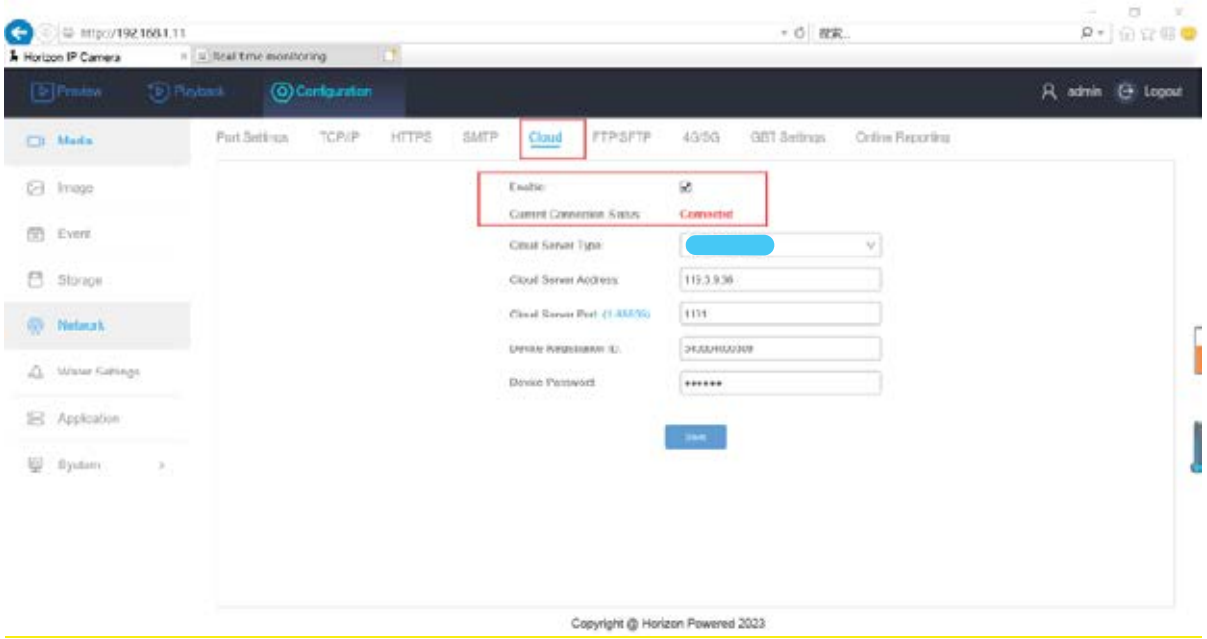
4.2.12 Cloud Platform Configuration

1. Click the 'Cloud' on the top of the menu, enable it and save. Check the status and copy the device registration ID. (The cloud server address and server port may change by the customer's local server and local port)

Notice:

1, Make sure the server address and port are correct, customer could check with the technician.

2, Make sure that the device registration ID is the same as the ID newly adde d on the platform and that the capital and small letter must be the same.



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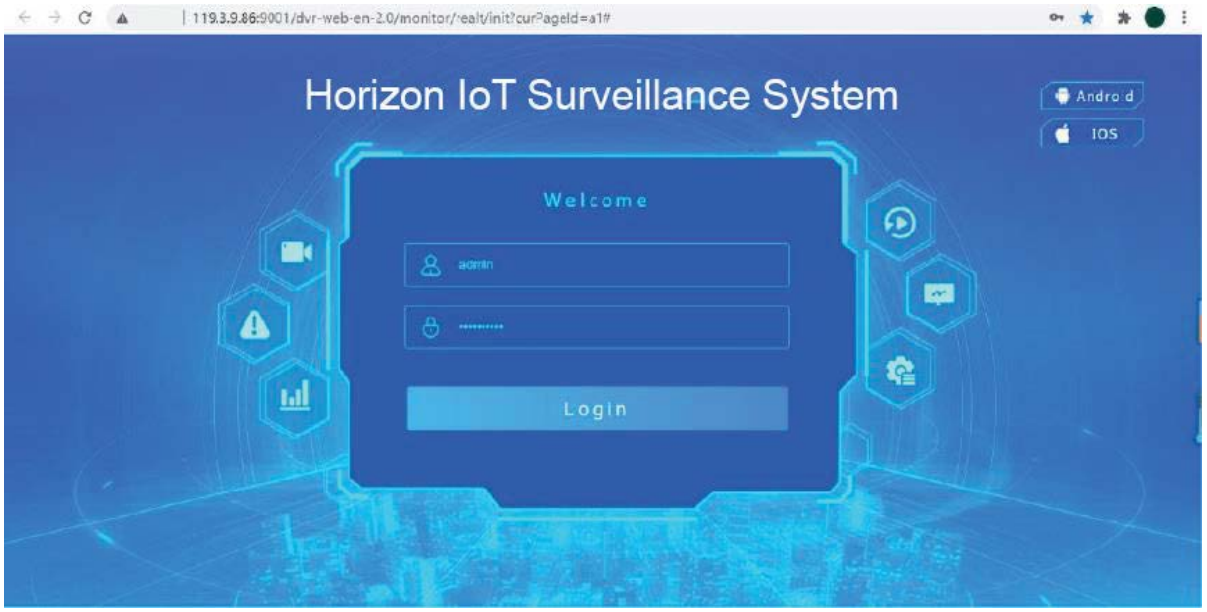
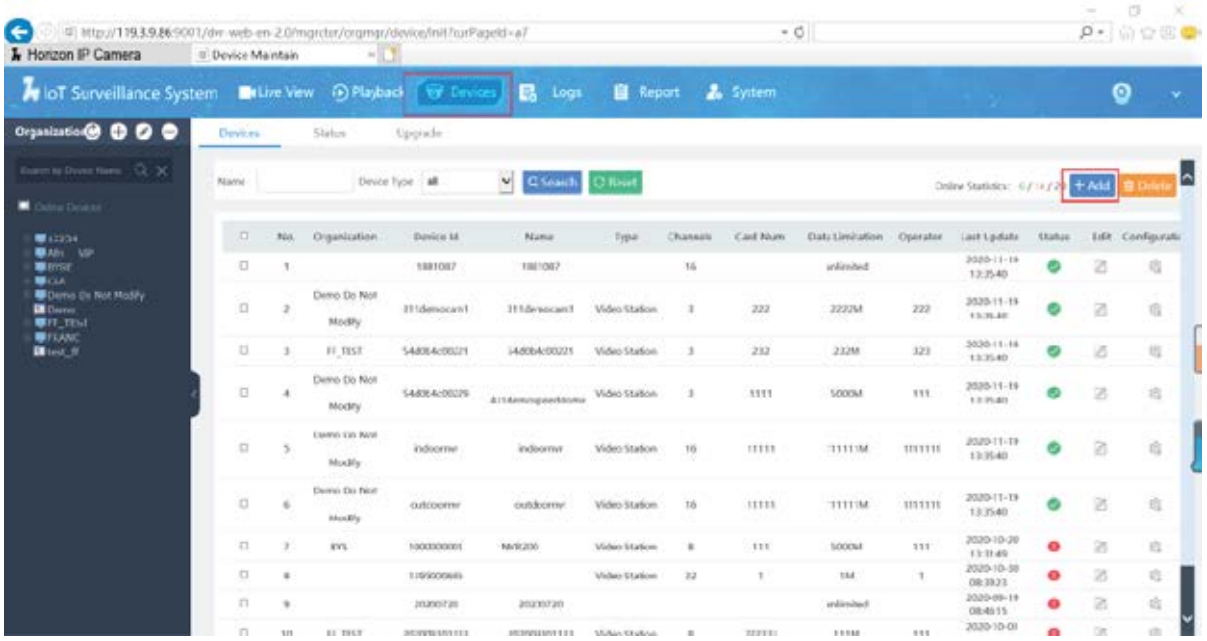
2. Enter the cloud server address on the IE and login to the Horizon Powered Could Platform.



3. Click the device and choose add option for adding the IPC device to the Horizon Powered Cloud Platform.



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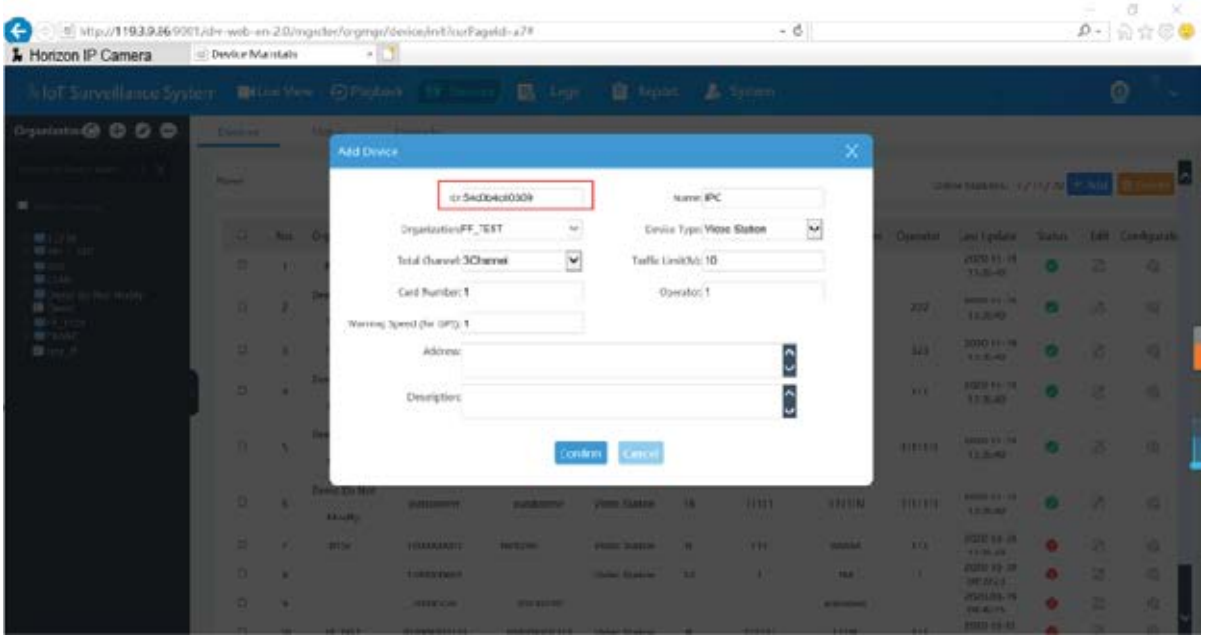
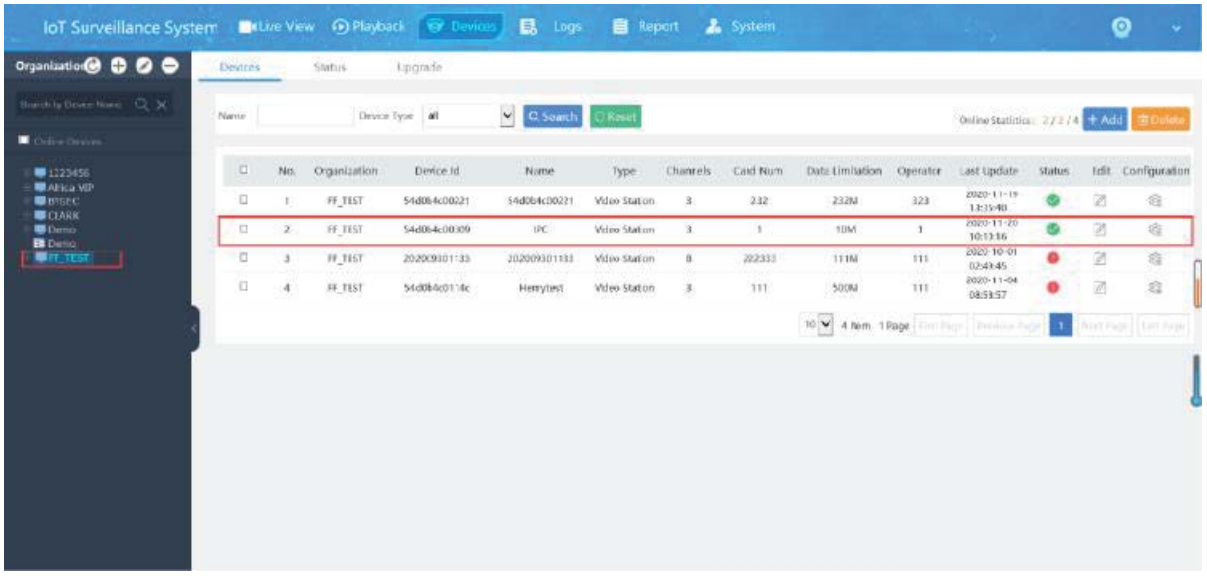
4. Paste the device registration ID that copy on the IPC Web interface. Select the organization, device type and total channel. Fill up the IPC information and click confirm.



5. Click the organization that select at the previous procedure on the left side and check the status.



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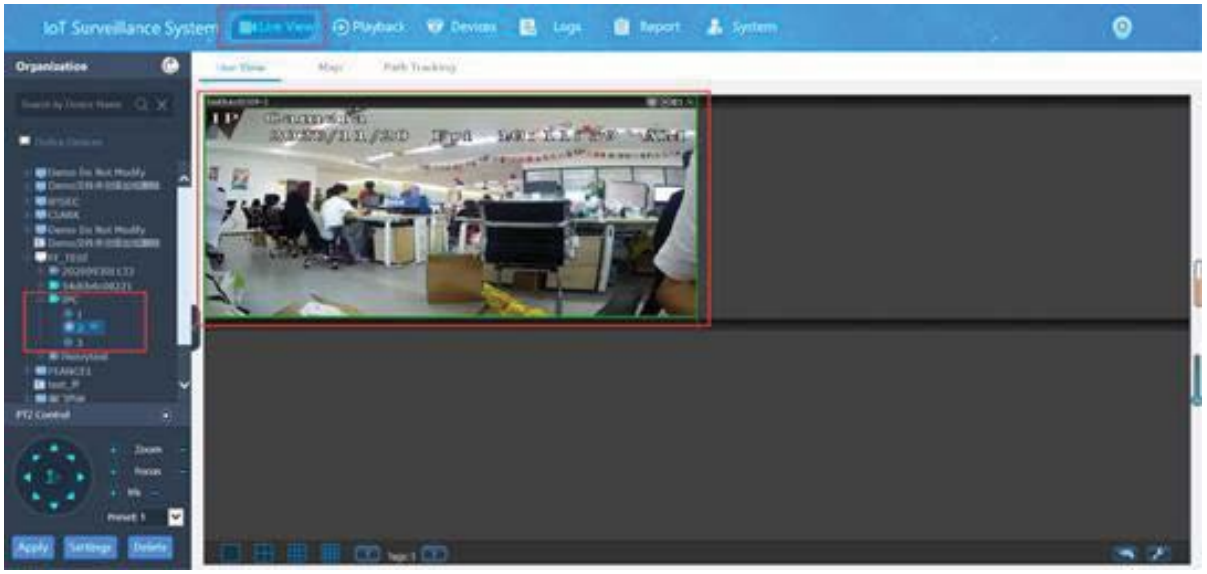
6. Click the ‘live view’ on the top of the menu. Choose organization on the right side and select the IPC to watch the live stream video on the Horizon Powered Cloud Management Platform.



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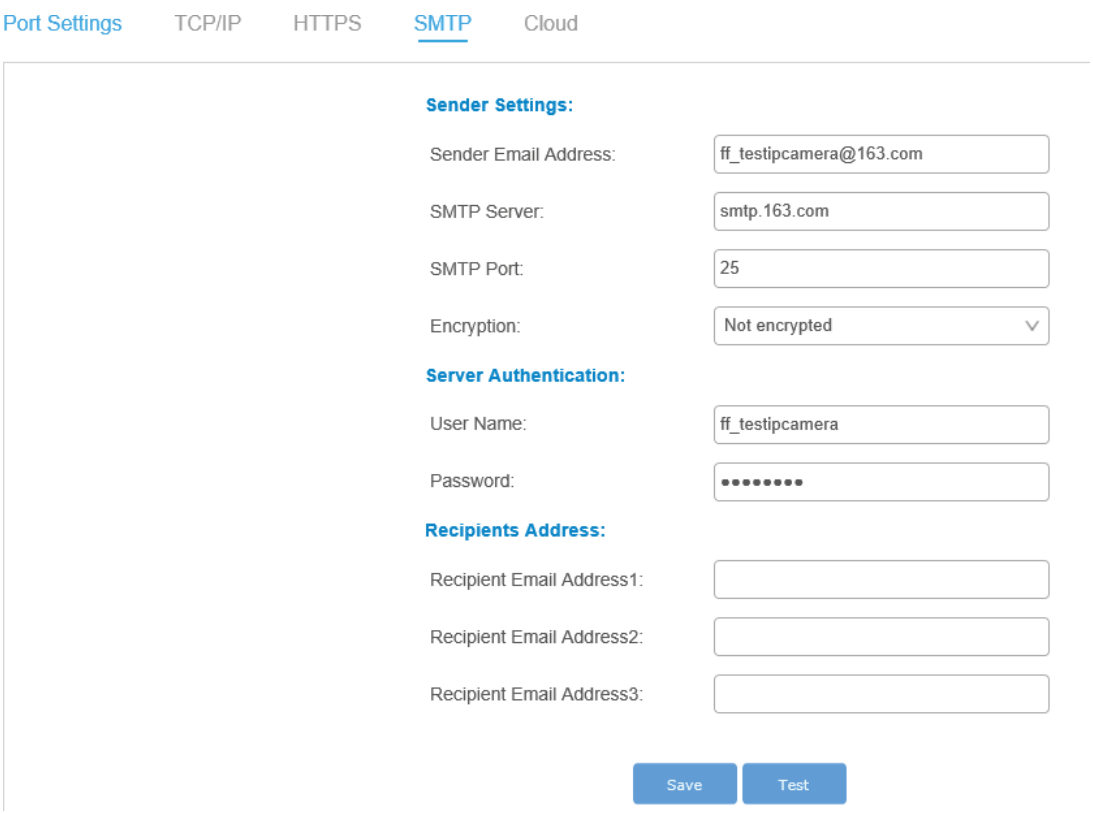
4.2.13 SMTP



4.2.14 Device Upgrade

1. Remote Upgrade: Upload the new firmware through the cloud server API, click the upgrade button on the related web page. The cloud server will automatically send the firmware to the IPC to finish the upgrade. After the upgrade, it will return the result to the web server.

2. Local Upgrade: Select the new firmware from the local web portal, the web page will send the firmware to the IPC to finish the upgrade. After the upgrade, it will return the result to the page.

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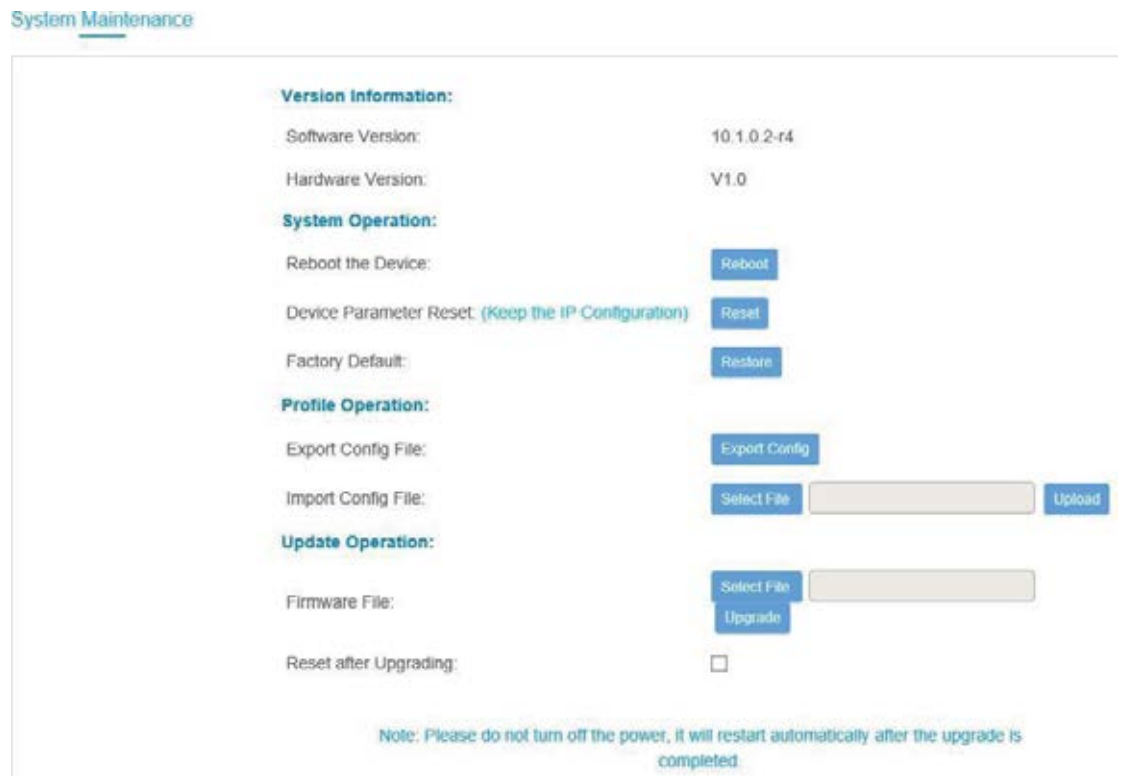

4.3 Video Coding

IPC system provides RTSP protocol to streaming video through network. By typing the RTSP address and port, verify the username and password, user will be able to watch the real-time video streaming on web page, VLC or network video players.
By typing the RTSP address and port, verify the username and password, user will be able to watch the real-time video streaming on web page, VLC or network video players. If you want to use RTSP to connect, please try to fill in the target address in the following format,
here is the example to rtsp streaming video through network.
rtsp://admin:admin@192.168.9.187:554/main // fill in your camera ip if want to do the rtsp streaming from camera

It also supports video streaming through cloud server or from APP. Contact your sales for cloud server license.

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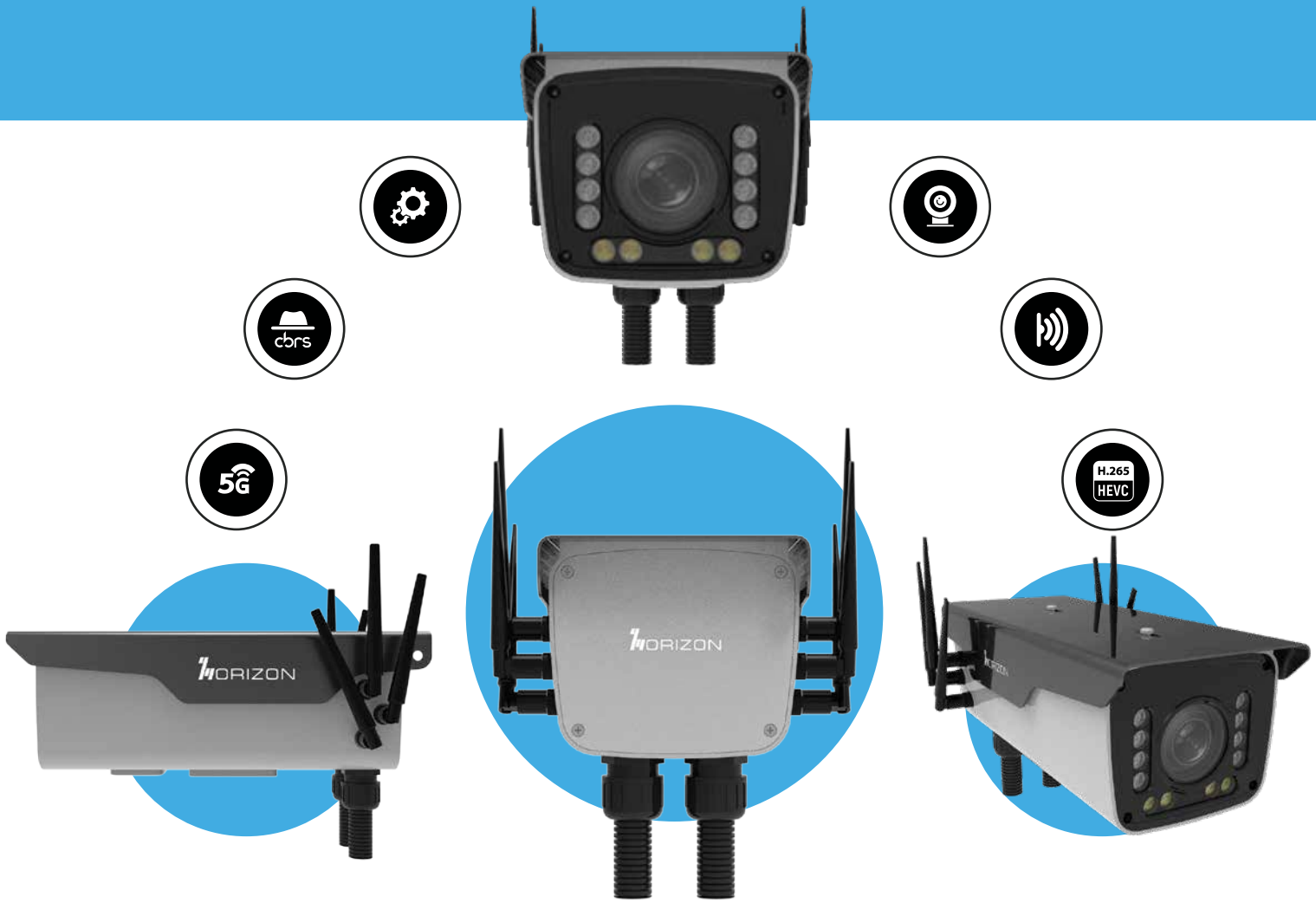
CC1005G

5G CBRS AI CAMERA



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This product includes a 1-year limited warranty that is valid only when purchased from an authorized Horizon reseller.

Actual data throughput and wireless coverage may vary and can be affected by network and environmental conditions, such as network traffic volume and building construction.

Horizon Powered USA Inc.
www.horizonpowered.com

HORIZON

FCC Warning

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 inte rference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interferenceto 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.
- Consult the dealer or an experienced radio/TV technician for help.

Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.